Why economics will never make firms sustainable (and an alternative which might)

The scientific foundation and limits of economic theories of the firm

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1. Introduction

Economic science is ascendant, and its reasoning is often viewed as broadly synonymous with right, rational decision-making in government, business, and elsewhere.[1] And while the discipline occasionally has harsh edges which need to be tempered, its centrality is never displaced with regards to the general allocation of money, people, and resources. In this regard there is little doubt that *economics is the primary discipline that our societies use to frame structural decisions on who gets what and why*.

This primacy is reflected, for example, in the global influence of economic institutions such as the G7, World Economic Forum (WEF), International Monetary Fund (IMF) and World Bank, and in the high concentration of economic expertise in the upper echelons of major organisations with vast resources at their disposal.[2] Just a cursory glance at the leadership of central banks, ministries of finance, large corporations, and financial institutions is enough to show that it is typically professionals with economic or economically-oriented expertise, for example in finance, accounting, tax, and law, who determine the ends for our means.

The influence of economics is also reflected in our societies' enduring pursuit of economic growth and concern with economic competitiveness.[3] These aims have long been criticised[4] but continue to be treated as a universal good because economics implies that their neglect will result in universal bads by undermining, for example, the creation of wealth, social utility, employment, and innovation.[5] Such neglect is maligned, moreover, in economic terms as a politically subjective, discretionary, inefficient, and even market distorting way to approach the allocation of scarce resources.[6]

Economic influence is also evident in many areas of law and regulation.[7] Its objectives underpin the design of the international framework for free trade as embodied in the work of the World Trade

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[1] As Raworth notes, "Economics is the mother tongue of public policy, the language of public life, and the mindset that shapes society" (K. Raworth, *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist* (London: Random House, 2017), 6).

[2] "Firstly, as key policy experts and advisors, economists largely run many of the most powerful public-sector organisations in the world: central banks, ministries of finance, social and economic affairs, the IMF and the World Bank. In the private sector, economists co-direct the behaviour of banks and other large companies" (S. de Muijnck and J. Tieleman, *Economy studies: a guide to rethinking economics education* (Amsterdam University Press, 2022), 9). See also: B.B. Allan, *Scientific cosmology and international orders* (Cambridge University Press, 2018), 250; T. Mitchell, 'The work of economics: how a discipline makes its world', *European Journal of Sociology/Archives Européennes de Sociologie* 46, no. 2 (2005); Raworth, *Doughnut Economics*, 6-8.

[3] W. Davies, *The Limits of Neoliberalism: Authority, Sovereignty and the Logic of Competition* (California: Sage Publishing, 2014); K. Schwab and S. Zahidi, *The Global Competitiveness Report: special edition 2020*, World Economic Forum (2020); World Bank, 'World Bank Group & Competitiveness: Overview', accessed 05-03-2024, https://www.worldbank.org/en/topic/competitiveness/overview; United Nations Conference on Trade and Development (UNCTAD), *Growth, Debt, and Climate: Realigning the Global Financial Architecture*, Trade and Development Report, UNCTAD (2023). [*add reference to book on GDP at home*]

[4] E.P. Fenichel and Y. Hashida, 'Choices and the value of natural capital', *Oxford Review of Economic Policy* 35, no. 1 (2019), 121.

[5] [*Find source that refers to bad results if we deviate from economic rationality. Hayek and Friedman perhaps?*]

[6] "The single market has an intrinsic logic that is purely functional, not political. This is reflected in the basic design… All EU countries want the single market, but then again they all act like trade negotiators trying to 'bring back something home' or define 'defensive interests', thereby reducing step by step the single market accomplishments or preventing those from being realised. Defensive interests against what? Against their 'own asset'? This makes no sense, whether from a long-term economic perspective or from a 'single-market-logic' one." (F. Coricelli et al., *A strategy for completing the Single Market: "the trillion euro bonus"*, Summary Report of the High-Level Panel of Experts to the IMCO Committee, European Parliamentary Research Service (2016)).

[7] Examples include trade law, tax law, commercial law, contract law, property law, and environmental law.

Organization (WTO) and the content of bilateral investment treaties.[8] They are key, moreover, to the contemporary regulation of market actors such as firms, and are especially evident in leading fields of corporate regulation such as corporate governance and corporate social responsibility.[9] Economic objectives are also central to the legal and regulatory design of the European Union's (EU) single market, and the fundamental freedoms that it provides for market actors, including the freedom of movement of capital.[10] At heart, this project aims to establish nothing less than an economically efficient free market utopia.[11]

To understand the ascendance of economics, at least in part, it helps to look at its self-identification as an objective science.[12] This idea is embedded in the standard distinction between positive and normative economics that is taught to all students of this discipline, and suggests that it is a science which focuses, in the first instance, on facts and not values.[13] This claim towards being value free is important because it posits, in effect, that economics has access to insights about reality which are universally applicable and permit no reasonable deviation. These claims are highly contested,[14] but are sufficiently accepted within the discipline and throughout our societies to make it unremarkable, even self-evident, for economics to be used by people in all kinds of institutions and organisations, and for them to think of it as the best, even the only, rational way to manage the allocation of money, people, and resources.[15]

Alongside this self-evidence of economics, it must also be remarked that *our societies are struggling to mobilise sufficient money, people, and resources for a wide range of sustainability issues which threaten the long-term continuity and thriving, even the survival, of our societies*.[16] This failed mobilisation is evident, for example, in the ongoing rise of greenhouse gas emissions,[17] the unsatisfied promises of developed countries to donate sufficient funds for climate change adaptation,[18] the absence of global

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[8] [*Find source that refers to the influence of economic objectives in trade law and the content of international trade agreements*]

[9] C.W. van Aartsen, *A journey into causes of corporate misbehaviour: Why corporate legal disciplines and regulation need to be structurally reformed*, PhD Dissertation (Maastricht: ProefschriftMaken, 2020).

[10] European Council & Council of the European Union, 'EU single market', accessed 05-03-2024, https://www.consilium.europa.eu/en/policies/deeper-single-market/.

[11] Coricelli et al., *A strategy for completing the Single Market: "the trillion euro bonus"*, 27-31.

[12] See, for example: M. Fourcade, 'The construction of a global profession: The transnationalization of economics', *American journal of sociology* 112, no. 1 (2006), 158-160.

[13] The dominant economic textbook for many decades notes that: "When considering economic issues, we must carefully distinguish questions of fact from questions of fairness. Positive economics describes the facts of an economy, while normative economics involves value judgments." (**Samuelson and Nordhaus, p. 6**). For firms and the positive-normative distinction see: P. Walker, *Foundations of organisational economics: Histories and theories of the firm and production* (Routledge, 2021), 8.

[14] Fourcade, 'The construction of a global profession: The transnationalization of economics', 158-160.

[15] As Robbins once remarked, "The efforts of economists over the last hundred and fifty years have resulted in the establishment of a body of generalizations whose substantial accuracy and importance are only open to questioning by the ignorant or the perverse" (L. Robbins, 'The nature and significance of economic science', *The philosophy of economics: An anthology* 1 (1932), 1). See also: E.P. Lazear, 'Economic imperialism', *the Quarterly Journal of economics* 115, no. 1 (2000). [*Find other examples which see it as normal and natural to apply economics to mobilise resources. Also include reference to Robbin's scarce resources*]

[16] See, for example: Intergovernmental Panel on Climate Change (IPCC), 'Summary for Policymakers' in *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, ed. H. Lee et al. (Geneva, Switzerland: IPCC, 2023); J.A. Du Pisani, 'Sustainable development–historical roots of the concept', *Environmental sciences* 3, no. 2 (2006); G.H. Brundtland, *Report of the World Commission on Environment and Development: Our Common Future*, WCED (1987); T. Waas et al., 'Sustainable development: a bird's eye view', *Sustainability* 3, no. 10 (2011); W. Steffen et al., 'Planetary boundaries: Guiding human development on a changing planet', *Science* 347, no. 6223 (2015).

[17] NASA, 'Global climate change: vital signs of the planet', accessed 05-03-2021, https://climate.nasa.gov/vital-signs/carbon-dioxide/.

[18] J. Timperley, 'The broken $100-billion promise of climate finance — and how to fix it', *nature*, 20 Oct 2021, https://www.nature.com/articles/d41586-021-02846-3. D. Carrington, 'Action to protect against climate crisis

solidarity during the COVID-19 pandemic,[19] the "chronic underfunding of global biodiversity conservation",[20] and the escalation of wealth inequality while more than half a billion people still live in absolute poverty.[21]

It is unfair, of course, to simply blame these issues on economics, especially in light of repeated failures by people, states, and firms to make ethical and sustainable decisions. We can, however, reasonably say that economics is implicated due to its structural presence in the halls of power and its relation to the allocation of money, people, and resources. Also relevant is that strong action on sustainability is often, though not always, challenged by economic counter-arguments and the policy activities of powerful economic interests.[22] The arguments are well-known: the expense involved, job losses in key sectors, reduced tax income, decreased international competitiveness, less innovation, and threats by firms to move abroad.[23] And they are repeated often enough so we can discern *a recurring pattern of antagonism between economic reasoning and ideas to make our societies more sustainable*. This recurrence is suspicious because it suggests that there may be something inherent to economics that makes it naturally suited as a sword to attack the shield of non-economic concerns.

This proposition, that economics may be unsustainable, is likely to be unpalatable to most economists, and to seem baseless and ill-informed. And with good reason. As any economist will tell you, there are many economic and economically-oriented sub-disciplines that are concerned with sustainability, such as environmental economics, sustainable finance, and corporate social responsibility. Moreover, there is no reason, by and large, to doubt that scientists in these disciplines are personally and professionally concerned about sustainability issues and are committed to their resolution. Lastly, and perhaps most persuasively, there is abundant empirical evidence that an increasing number of people, firms, financial institutions, business schools, lobby groups, and other market actors are engaged with sustainability issues, and are taking action to address the negative externalities of economic activities.[24]

The unifying vision behind these activities is that they will result in a sustainable economy by shifting us from 'shareholder capitalism' to 'stakeholder capitalism'.[25] The former, traditional kind of capitalism

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'woefully inadequate', UN warns', *Guardian*, 2 Nov 2023, https://www.theguardian.com/environment/2023/nov/02/action-to-protect-against-climate-crisis-woefully-inadequate-un-warns

[19] United Nations, 'Secretary-General Highlights 'Essential' Failure of International Cooperation, in Address to Security Council Meeting on Post-Coronavirus Global Governance (SC/14312)', news release, 24 Sep, 2020, https://press.un.org/en/2020/sc14312.doc.htm.

[20] E.B. Barbier, J.C. Burgess, and T.J. Dean, 'How to pay for saving biodiversity', *Science* 360, no. 6388 (2018).

[21] S.K.T. Baahr et al., 'March 2023 global poverty update from the World Bank: the challenge of estimating poverty in the pandemic', *World Bank Blogs*, 29 Mar, 2023, https://blogs.worldbank.org/opendata/march-2023-global-poverty-update-world-bank-challenge-estimating-poverty-pandemic.

[22] E. Corlett, 'New Zealand scraps world-first smoking 'generation ban' to fund tax cuts', *The Guardian*, 27 Nov 2023, https://www.theguardian.com/world/2023/nov/27/new-zealand-scraps-world-first-smoking-generation-ban-to-fund-tax-cuts; M. Copley and J. Simon, 'The world is awash in plastic. Oil producers want a say in how it's cleaned up', *National Public Radio (NPR)*, 13 Nov 2023, The world is awash in plastic. Oil producers want a say in how it's cleaned up; T. Rösken, 'Schiphol hoeft komend jaar toch niet te krimpen na druk van VS en EU', *NU.nl*, 14 Nov 2023, https://www.nu.nl/economie/6289676/schiphol-hoeft-komend-jaar-toch-niet-te-krimpen-na-druk-van-vs-en-eu.html.

[23] [*Find examples of / sources which outline economic arguments which are often used to counter regulation. Maybe something in PhD?*]

[24] [*Find sources which show the increasing engagement of business with sustainability. Could refer to Eumedion report*]

[25] Some proponents include: R.G. Eccles and B. Spiesshofer, 'Integrated reporting for a re-imagined capitalism', *Harvard Business School General Management Unit* Working Paper 16-032 (2015); K. Schwab, *Stakeholder capitalism: A global economy that works for progress, people and planet* (John Wiley & Sons, 2021); J.P. Balkenende and G. Buijs, *Capitalism Reconnected: Toward a Sustainable, Inclusive and Innovative Market Economy in Europe* (Amsterdam University Press, 2024); Global Reporting Initiative (GRI), *Towards stakeholder capitalism: how we can get there*, The GRI Perspective, GRI (2022); WEF, *Measuring Stakeholder Capitalism:*

is often criticised as unsustainable due to its short-term focus on the creation of financial value for shareholders.[26] And the latter, it is suggested, is sustainable due to its focus on the long-term creation of financial and non-financial value for all stakeholders. To implement this transition, the idea is that we need to address the externalities and other market failures of economic activities and ensure that their costs and benefits to stakeholders are accurately identified, valued, and accounted for.[27] In theory, this will re-optimise individual decision-making so that it focuses on the economically efficient creation of value for all stakeholders. Importantly, this is a sustainable transformation *via economics*, and not a sustainable transformation *of economics*.

A comparative advantage of this approach is that it offers a pragmatic reply to arguments for stronger, more radical action on sustainability issues. Its economic solutions are relatively more actionable and implementable by states and firms as compared to the findings of other disciplines, such as earth systems science which warns about the transgression of planetary boundaries.[28] To give an example, it is more straightforward and, at first glance, less political to require corporations to report on their sustainability impacts than to manage the rapid reduction of as many of greenhouse gas emission sources as possible.

Another comparative advantage of sustainability via economics is that it seems to transcend and resolve the antagonism between economic reasoning and sustainability. It does so by promising that we can resolve conflicts of interest and benefit economically, socially, environmentally, i.e. universally, if we follow its logic to address market failures and search for value-creating win-wins between market actors and their stakeholders. This line of reasoning is not marginal by any means; it underpins most of the currently leading intellectual, business, and regulatory approaches to sustainability.

It is present, for example, in the claims of prominent scholars in finance, law, and management that a sustainable transformation of corporate purposes will be able to transform our societies and economies in a more sustainable direction.[29] As Henderson writes in her highly influential *Reimagining Capitalism in a World on Fire*:

> "In a world that has reimagined capitalism, if you're in business, you work for a high-commitment firm that is deeply rooted in shared values, provides great jobs, and takes for granted the idea that while it is essential to be profitable, the firm's primary goal should be to create value, not to make money at any price. Everyone shares a common understanding of the need to balance short-term returns with the public good and the long-term potential of the business. Firms that deny the reality

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Towards Common Metrics and Consistent Reporting of Sustainable Value Creation, White Paper, (WEF, 2020). Prominent critics include: L. Bebchuk and R. Tallarita, 'The Illusory Promise of Stakeholder Capitalism', *Cornell Law Review* 106 (2020). [*see if I can find more critics*].

[26] M.R. Kramer and M. Porter, 'Creating Shared Value: How to reinvent capitalism—and unleash a wave of innovation and growth', *Harvard Business Review* 17, The Big Idea, no. January–February (2011); B. Sjåfjell et al., 'Shareholder primacy: the main barrier to sustainable companies' in *Company Law and Sustainability: Legal Barriers and Opportunities*, ed. B. Sjåfjell and B.J. Richardson (2015); Eccles and Spiesshofer, 'Integrated reporting for a re-imagined capitalism'; M. Lipton, 'Corporate Governance: The New Paradigm', Harvard Law School Forum on Corporate Governance and Financial Regulation (2017); Ernst & Young (EY), *Study on directors' duties and sustainable corporate governance*, Report commissioned by European Commission DG Justice and Consumers, European Commission (2020); European Commission, 'The European Green Deal' (COM(2019) 640 final), 17.

[27] Generally, see: A. Battistoni, 'Rethinking Domination in the Age of the Externality', Annual Conference 2023 of the American Society for Political and Legal Philosophy (2023)

[28] Steffen et al., 'Planetary boundaries'.

[29] Edmans. Henderson. C. Mayer, *Prosperity: Better business makes the greater good* (Oxford University Press, 2018). Critically, see: P.L. Davies, 'Shareholder Voice and Corporate Purpose: The Purposelessness of Mandatory Corporate Purpose Statements', *ECGI Working Paper Series in Law* Working Paper N° 666/2022 (2023). Bebchuk and Tallarita, 'The Illusory Promise of Stakeholder Capitalism'; H. Fleischer, 'Corporate purpose: A management concept and its implications for company law', *European Company and Financial Law Review* 18, no. 2 (2021).

> of climate change, treat their employees badly, or actively support corrupt or oppressive political regimes are shunned by their peers and punished by their investors….
>
> As more and more firms respond to these incentives and focus on transforming their business models to create great jobs, minimize environmental damage, and create the products and services needed to support a sustainable and equitable world, climate change is slowing, inequality is falling, and economic growth continues to be strong."[30]

An economic approach to sustainability also underpins the *Principles of Responsible Investment* (PRI), which covers most of the world's professionally managed assets (around $120 trillion),[31] and states in its mission that: "We believe that an economically efficient, sustainable global financial system is a necessity for long-term value creation. Such a system will reward long-term, responsible investment and benefit the environment and society as a whole."[32] The same vision is shared by the World Business Council for Sustainable Development (WBCSD)[33] and the WEF, the latter explaining in its *Measuring Stakeholder Capitalism* report that:

> "…those corporations that align their goals to the long-term goals of society, as articulated in the SDGs, are the most likely to create long-term sustainable value, while driving positive outcomes for business, the economy, society and the planet. This is the true definition of stakeholder capitalism."[34]

Economics also underpins the design of most national, regional, and international state efforts to address sustainability issues.[35] In the EU, for example, we can identify the Green Deal, the Taxonomy, the Corporate Sustainability Reporting Directive, the Emissions Trading Scheme, and the Carbon Border Adjustment Mechanism.[36] Some international examples include the World Bank Global Program on Sustainability, the United Nations (UN) System of Environmental-Economic Accounting (SEEA), and the Organisation for Economic Co-operation and Development (OECD) *Guidelines for Multinational Enterprises on Responsible Business Conduct*.[37]

To be sure, we can identify that not all sustainability policies are economically inspired. An important exception is the European Ecodesign Directive which sets "ecodesign requirements for specific product groups to significantly improve their circularity, energy performance and other environmental sustainability aspects."[38] It constrains the market freedoms of producers and does not set out to address

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[30] Henderson (2021) Reimagining Capitalism in a World on Fire, p. 221-222 [pdf doesnt have proper page numbers].
[31] PRI, 'About us: About the PRI', accessed 08-03-2024, https://www.unpri.org/about-us/about-the-pri.
[32] PRI, 'About us: About the PRI'.
[33] WBCSD, *Vision 2050: Time to transform - how business can lead the transformations the world needs*, WBCSD (2021).
[34] WEF, *Measuring Stakeholder Capitalism*, 7.
[35] Generally, see: Battistoni, 'Short Rethinking Domination in the Age of the Externality' [need more examples]
[36] As an example, we can look at the European Commission (EC) 2018 Action plan on Financing Sustainable Growth: "Sustainability and the transition to a low-carbon, more resource-efficient and circular economy are key in ensuring long-term competitiveness of the EU economy… The EU is committed to development that meets the needs of present and future generations, while opening up new employment and investment opportunities and ensuring economic growth… Sustainability and long-termism go hand in hand. Long-termism describes the practice of making decisions that have long-term objectives or consequences. Investments into environmental and social objectives require a long-term orientation. However, current market practices often focus on producing high returns over a short timeframe. Therefore, a central focus of the sustainability agenda is to reduce the undue pressure for short-term performance in financial and economic decision-making, notably by increased transparency, so that investors, whether corporate or retail, can take better informed and more responsible investment decisions" (European Commission, 'Action Plan: Financing Sustainable Growth' (COM(2018) 97 final), 1, 3-4).
[37] van Aartsen, *A journey into causes of corporate misbehaviour*.
[38] European Commission, 'Ecodesign for Sustainable Products Regulation', accessed 11-03-2024, https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/sustainable-products/ecodesign-sustainable-products-regulation_en.

market failures or optimise individual decision-making and value creation. Nevertheless, it should be emphasised that this and other measures (such as the creation of a national park) are only exceptions to the general economic framework for mobilising resources. They temper it slightly, and only affect a small part of its overall influence on the flow of money, people, and resources. It should therefore be emphasised that *the bulk of the sustainability transition, as least in terms of how we organise money, people, and resources, is expected to take place via economics*.

This allows us to reasonably identify that our societies are trying to implement the best of economics for the best of sustainability results. For many people in academia, business, government, and civil society this is a sincere commitment. It is no longer 'just' about making money but about solving the issues of the world through ethical, sustainable, accountable, and properly informed economic decision-making.

Having said that, *the urgency of global sustainability issues means that we need to be certain about putting the future of the sustainability transition, our future, in the hands of economics*. The threat and severity of issues such as climate change and biodiversity loss are rapidly increasing, and their expected impacts on social and economic dynamics mean that we have little margin for error, and even less room for doubt about the sustainable potential of economics. As UN Secretary-General Guterres remarked on these issues in 2022:

> "We face a triple planetary crisis. A climate emergency that is killing and displacing ever more people each year. Ecosystems degradation that are escalating the loss of biodiversity and compromising the well-being of more than 3 billion people. And a growing tide of pollution and waste that is costing some 9 million lives a year. We need to change course – now – and end our senseless and suicidal war against nature."[39]

There is, moreover, alarming research which suggests that we are close to, or may have already,[40] set in motion irreversible tipping points that could lead, for example, to the disappearance of the Amazon Rainforest, the collapse of the Greenland and Antarctic Ice Sheets, the failure of the Atlantic Meridional Overturning Circulation (AMOC), and the permanent loss of coral reefs and boreal forests.[41] Especially concerning is that these tipping points can be mutually reinforcing, lead to a global cascade, and result in a "new, less habitable, 'hothouse' climate state."[42] Even if we do *not* enter such a hothouse state the possible impacts of climate change are beyond stark. As Kemp et al. indicate:

> "Even without considering worst-case climate responses [and tipping points], the current trajectory puts the world on track for *a temperature rise between 2.1 °C and 3.9 °C by 2100*".[43]

Ketcham puts these figures into context:

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[39] A. Guterres, 'Secretary-General's remarks to Stockholm+50 international meeting', news release, 2022, https://www.un.org/sg/en/content/sg/statement/2022-06-02/secretary-generals-remarks-stockholm50-international-meeting-delivered.

[40] G. Monbiot, 'The 'flickering' of Earth systems is warning us: act now, or see our already degraded paradise lost', *The Guardian*, 31 Oct 2023, Opinion, https://www.theguardian.com/commentisfree/2023/oct/31/flickering-earth-systems-warning-act-now-rishi-sunak-north-sea.

[41] D.I. Armstrong McKay et al., 'Exceeding 1.5 C global warming could trigger multiple climate tipping points', *Science* 377, no. 6611 (2022); A. Flis, 'Beyond the tipping point: The Collapse of Ocean Currents and its Weather impact on the United States and Europe', *Severe Weather Europe*, 21 Feb 2024, https://www.severe-weather.eu/global-weather/ocean-currents-near-a-tipping-point-of-collapse-weather-effects-united-states-europe-fa/.

[42] T.M. Lenton et al., 'Climate tipping points—too risky to bet against', *Nature* 575, no. 7784 (2019).

[43] L. Kemp et al., 'Climate Endgame: Exploring catastrophic climate change scenarios', *Proceedings of the National Academy of Sciences* 119, no. 34 (2022), 2.

> "This is a horrific prospect. Earth systems analysts tell us that habitable and cultivable land in a 3 C to 4 C warming regime would be so reduced and ecosystem services so battered that the deaths of billions of people could occur *in the next eight decades or less*.
>
> Terrible numbers get thrown around. But scientists mean what they say. Kevin Anderson, professor of energy and climate change at the University of Manchester in the U.K. and Uppsala University in Sweden, asserts that "something like 10 percent of the planet's population — around half a billion people — will survive if global temperatures rise by 4 C." He notes, with a modicum of hopefulness, that we "will not make all human beings extinct as a few people with the right sort of resources may put themselves in the right parts of the world and survive. But I think it's extremely unlikely that we wouldn't have mass death at 4 C."
>
> Johan Rockström, director of the Potsdam Institute for Climate Impact Research in Germany and a leading researcher on climate tipping points and "safe boundaries" for humanity, projects that in a 4 C warmer world, "it's difficult to see how we could accommodate a billion people or even half of that." Global population today stands at 7.6 billion, with 80 million people added every year."[44]

There is a general consensus among climate scientists that temperature increases of several degrees are an existential threat to our societies and current ways of living.[45] They present, for example, a fundamental threat to global food security since they are likely to result in "Simultaneous harvest failures across major crop-producing regions".[46] It has been suggested, moreover, that "in less than 50 years a third of the world's people could be living in places as hot as the hottest parts of the Sahara are today, many of them in regions that are already highly politically unstable."[47] An extra concern is that temperatures in more and more places will reach, for a longer time each year, 'wet bulb' temperature and humidity levels which prevent our bodies from dissipating excess heat and will kill people who cannot find shelter within several hours.[48]

Another way to understand the risks involved with an inadequate response to sustainability issues is to look at the historical levels of Carbon Dioxide (CO_2) in the atmosphere. For context, our species evolved in a period where the concentrations of this greenhouse gas never exceeded 300 parts per million (ppm). Recently, however, CO_2 levels have risen to 420 ppm due to human activities and continue to increase each year,[49] as shown in Figure 1.

Figure 1: Global atmospheric CO2 concentrations from 1700 to 2021[50]

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[44] C. Ketcham, 'When Idiot Savants Do Climate Economics: How an elite clique of math-addled economists hijacked climate policy', *The Intercept*, 29 Oct 2023, https://theintercept.com/2023/10/29/william-nordhaus-climate-economics/.

[45] [*Find sources on existential threat presented by several degrees of warming. Hothouse earth?*]

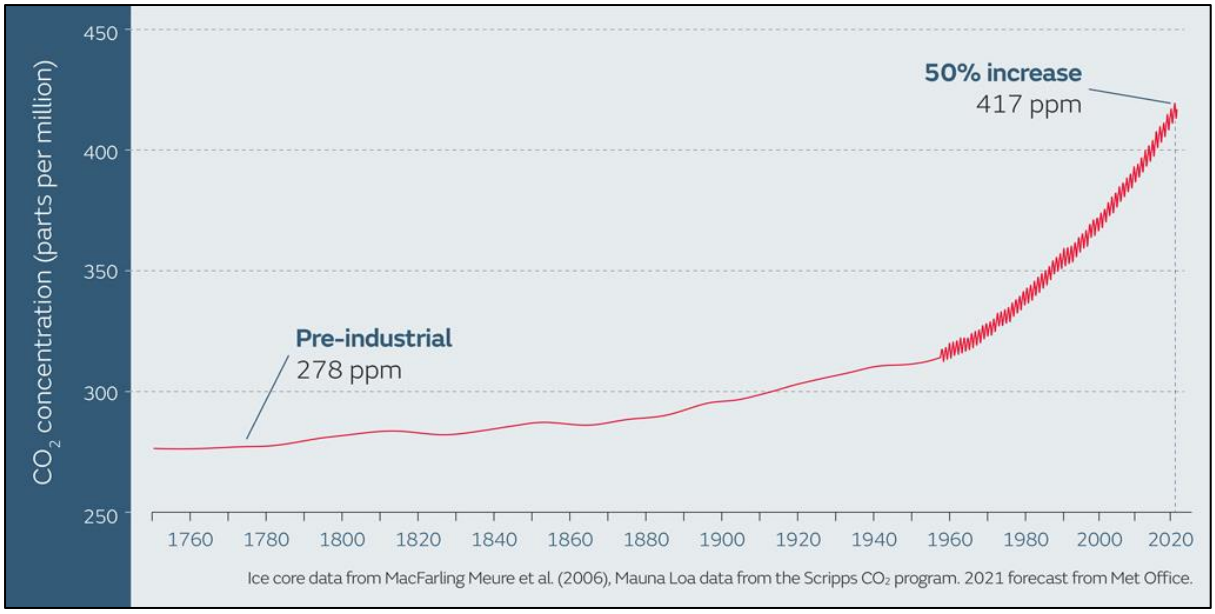
[46] K. Kornhuber et al., 'Risks of synchronized low yields are underestimated in climate and crop model projections', *Nature Communications* 14, no. 1 (2023/07/04 2023).

[47] Monbiot, 'The 'flickering' of Earth systems is warning us'.

[48] G. Dickie, 'Explainer: How is climate change driving dangerous 'wet-bulb' temperatures?', *Reuters*, 10 Aug 2023, https://www.reuters.com/business/environment/how-is-climate-change-driving-dangerous-wet-bulb-temperatures-2023-08-09/

[49] NASA, 'Global climate change: vital signs of the planet'.

[50] Image from the Met Office used by R. Betts, 'Met Office: Atmospheric CO2 now hitting 50% higher than pre-industrial levels', *Carbon Brief*, 16 Mar 2021, https://www.carbonbrief.org/met-office-atmospheric-co2-now-hitting-50-higher-than-pre-industrial-levels/.



There were no humans the last time our planet experienced such high CO_2 levels. When it did, the earth was much warmer, largely ice free,[51] and ocean levels were more than 30m higher than today.[52] More significantly, research shows that numerous societal collapses and mass extinction events have been connected to climate change, for example due to high concentrations of CO_2.[53] As Wells-Wallace writes in *The Uninhabitable Earth* regarding the Permian-Triassic extinction event:

> "The most notorious [mass extinction event] was 250 million years ago; it began when carbon dioxide warmed the planet by five degrees Celsius, accelerated when that warming triggered the release of methane, another greenhouse gas, and ended with all but a sliver of life on Earth dead."[54]

If the broad thrust of research on sustainability issues such as climate change is correct, as I believe it is, then the stakes are unthinkably high. We therefore need to be sure that our bet on economics is the right one. There should be no doubt that we are using economic approaches to sustainability because they are effective, and not simply because they appeal to the professional education of powerful people, provide pragmatic and readily implementable solutions, and posit that universal win-wins are able to transcend the long-standing antagonism between economics and sustainability.

In light of the above, it is necessary to consider *compelling evidence which suggests that the sustainable potential of economics might be overstated*. There is, for example, the fact that economic reasoning has been ascendant in the halls of power for many decades, and that numerous sustainability issues such as climate change, biodiversity loss, and inequality have intensified during the time that it has held sway. Also relevant is that, during this time, structural priority has been given to economic goals such as economic growth and competitiveness, with a promise from economists that this would lead to broader win-wins in terms of social and environmental benefits.[55] This was theoretically justified from the mid-

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[51] E. Holthaus, 'Humans didn't exist the last time there was this much CO2 in the air', *Grist*, 3 May 2018, https://grist.org/article/humans-didnt-exist-the-last-time-there-was-this-much-co2-in-the-air/

[52] P. 4 The Uninhabitable Earth.

[53] "Climate change (either regional or global) has played a role in the collapse or transformation of numerous previous societies and in each of the five mass extinction events in Phanerozoic Earth history. The current carbon pulse is occurring at an unprecedented geological speed and, by the end of the century, may surpass thresholds that triggered previous mass extinctions. The worst-case scenarios in the IPCC report project temperatures by the 22nd century that last prevailed in the Early Eocene, reversing 50 million years of cooler climates in the space of two centuries" (Kemp et al., 'Climate Endgame: Exploring catastrophic climate change scenarios', 3).

[54] P. 4 The Uninhabitable Earth

[55] This was theoretically justified, for example, by the Kuznets curve and its environmental variant.

1950s onwards by the Kuznets curve for inequality, and by the 1991 environmental Kuznets curve, which suggested that increases in the per capita Gross Domestic Product (GDP) of a country would first lead to an increase in inequality or pollution, and then would lead to a decrease as the country became more developed.[56] It is significant that a more than tripling of global GDP per capita since the 1960s has done little to resolve these sustainability issues.[57] *The expected win-wins have not arisen*, and the increased environmental impact of economic activities has made these issues more urgent, as we can infer from the sharp increase in CO_2 levels over this same period (Figure 1).[58]

Another point of concern is the 2018 Nobel Prize for economics which was given to William Nordhaus for his work on climate change.[59] This work included the development of Integrated Assessment Models (IAMs) which have "largely guided the political responses to climate change" and were included, for example, in various reports of the Intergovernmental Panel on Climate Change (IPCC).[60] What is worrying about these models is that *their use is often disconnected from the severity of climate change issues as identified by researchers in other sciences*. This has been recognised, for instance, by other economists such as Stern, Stiglitz, and Taylor, who explain that:

> "Much of the economics of climate change has centred on Integrated Assessment Models (IAMs). Using standard IAMs, with their choice of calibration, has led some prominent economists to conclude that *'societal optimisation' entails accepting an increase in temperature of around 3.5–4 degrees Celsius* (Nordhaus, 2018a), an increase seen as catastrophic by many, especially climate scientists…
>
> Moreover, many economists, using such models, have argued that public interventions should focus on getting the price of carbon emissions correct, and, consistent with their target, argue for a price (reflecting the 'social cost of carbon' – SCC) of around $50 a ton of carbon by 2030…, much lower than the numbers advocated even by those suggesting the use of a far wider range of instruments. In this perspective, policy analysts need not worry about how to foster and manage the multiple, large structural changes that might accompany the green transition – *with the right carbon price, the market will take care of it all*." [emphasis added][61]

Another example of this disconnect is given by economist Keen, who draws attention to an assumption by Nordhaus that 87% of US GDP will be unaffected by climate change for the simple reason that most of this activity takes place indoors.[62] This assumption has been relied on by others, and even found its way into the 2014 version of the IPCC report.[63] As Nordhaus explains it:

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[56] H.W. Arndt, 'The" trickle-down" myth', *Economic Development and Cultural Change* 32, no. 1 (1983); D.I. Stern, 'The environmental Kuznets curve after 25 years', *Journal of Bioeconomics* 19 (2017).

[57] World Bank, 'GDP per capita (constant 2015 US$): World Bank national accounts data, and OECD National Accounts data files', accessed 11-03-2024, https://data.worldbank.org/indicator/NY.GDP.PCAP.KD.

[58] More generally, we can also refer to the long history of detrimental results for society and the environment after the application of economic policies for development, ranging from the decimation of colonial populations, the rise of oligarchy in the post-Soviet states, the insurmountable debt burden of developing countries, and the widening gap between rich and poorer states. See, for example: F. Jara and E. Magana, 'Rules of imperialist method', *Dialectical Anthropology* (1982). [*add sources*]

[59] NobelPrize.org, 'William D. Nordhaus: Facts', 2018, accessed 11-03-2024, https://www.nobelprize.org/prizes/economic-sciences/2018/nordhaus/facts/.

[60] S. Keen, 'The appallingly bad neoclassical economics of climate change' in *Economics and Climate Emergency*, ed. B. Gills and J. Morgan (Routledge, 2022), 1151.

[61] N. Stern, J. Stiglitz, and C. Taylor, 'The economics of immense risk, urgent action and radical change: towards new approaches to the economics of climate change', *Journal of Economic Methodology* 29, no. 3 (2022), 181-182.

[62] Keen, 'The appallingly bad neoclassical economics of climate change', 1152.

[63] "Economic activities such as agriculture, forestry, fisheries, and mining are exposed to the weather and thus vulnerable to climate change. *Other economic activities, such as manufacturing and services, largely take place in controlled environments and are not really exposed to climate change*. However, markets connect sectors so that the impacts of climate change spill over from one activity to all others. The impact of climate change on

> "The most sensitive sectors are likely to be those, such as agriculture and forestry, in which output depends in a significant way upon climatic variables. At the other extreme are activities, such as cardiovascular surgery or microprocessor fabrication in 'clean rooms', which are undertaken in carefully controlled environments that will not be directly affected by climate change. Our estimate is that approximately 3% of United States national output is produced in highly sensitive sectors, another 10% in moderately sensitive sectors, and about 87% in sectors that are negligibly affected by climate change… for the bulk of the economy – manufacturing, mining, utilities, finance, trade, and most service industries – it is difficult to find major direct impacts of the projected climate changes over the next 50–75 years."[64]

Armed with such assumptions and the most recent IAM, Nordhaus concluded in a 2023 article with Barrage that damages from climate change to total GDP "are estimated to be around 3.12% of output at a 3°C global warming over pre-industrial temperatures and 12.5% of output with 6°C warming".[65] To make the contrast between disciplines explicit, the last time there was a 5°C spike in global warming due to CO_2 levels this killed off a majority of the species on our planet and resulted in the Permian-Triassic extinction event, from which it took around four million years for biodiversity levels to recover.[66] Earth systems scientists anticipate, moreover, that this will result in the death of billions of persons. Fortunately, we have the comforting news from a Nobel prize-winning economist that this will only have a relatively limited effect on GDP.

A third point of concern, the last to discuss in this introduction, is that *the mainstream scientific practice of economists has been highly resistant to change in response to social and intellectual developments*. There is, for example, the Financial Crisis of 2008 which challenged many leading ideas in economics but ultimately led to no structural change in the traditional content of economic education and theory.[67] It has, moreover, been widely recognised since at least the 1970s that scientific activities cannot be truly objective.[68] One reason is that all scientific practices are socially constructed, for example through human language, cognition, and metaphors.[69] A second is that, even if we assume that most of reality is not socially constructed, then we do not have access, because of our human ontology, to an objective epistemological foundation which we could use to describe it in objective terms.[70] Even physics and mathematics, often seen as paragons of objective research,[71] do not have such an epistemology on which they can place their theories and findings.[72] Unfortunately, these insights over the past 50 years have

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economic development and growth also affects all sectors" [emphasis added] (D.J. Arent et al., 'Key economic sectors and services' in *Climate change 2014 impacts, adaptation and vulnerability: Part a: Global and sectoral aspects*, ed. C.B. Field et al. (2015), 688.

[64] W.D. Nordhaus, 'To slow or not to slow: the economics of the greenhouse effect', *The economic journal* 101, no. 407 (1991), 930-932.

[65] L. Barrage and W.D. Nordhaus, *Policies, Projections, and the Social Cost of Carbon: Results from the DICE-2023 Model*, National Bureau of Economic Research (2023).

[66] S. Sahney and M.J. Benton, 'Recovery from the most profound mass extinction of all time', *Proceedings of the Royal Society B: Biological Sciences* 275, no. 1636 (2008).

[67] D. Acemoglu, 'The Crisis of 2008: Lessons for and from Economics', *Critical Review* 21, no. 2-3 (2009), 185. M. Blyth and M. Matthijs, 'Black Swans, Lame Ducks, and the mystery of IPE's missing macroeconomy', *Review of international political economy* 24, no. 2 (2017); J. Kapeller, S. Puehringer, and C. Grimm, 'Paradigms and policies: the state of economics in the German-speaking countries', *Review of International Political Economy* 29, no. 4 (2022); D. Graeber, 'It is value that brings universes into being', *HAU: Journal of ethnographic Theory* 3, no. 2 (2013), 235. [add 1. Rethinking Capitalism: An Introduction MICHAEL JACOBS AND MARIANA MAZZUCATO]

[68] [*Find sources: Thomas Kuhn. Book on objectivity. Feyerabend. Ian Hacking*]

[69] [*Add references from later in the book. Phenomenology. Berger & Luckmann*]

[70] [*Add references from later in the book*]

[71] C. Rovelli, 'Physics needs philosophy. Philosophy needs physics', *Foundations of Physics* 48, no. 5 (2018). [*Still need reference to mathematics*].

[72] For mathematics see: Y. Varoufakis, 'Pristine equations, tainted economics and the postwar order', Heymann Centre for the Humanities, Columbia University (2009), 13.[*Still need reference for physics*].

been unable to challenge the self-identification of economics as an objective science, and have not pushed its scientific foundation much beyond the default use of older theories of science such as those developed by Popper in the 1940s and mathematical formalists such as Hilbert in the 1910s.[73] This is a problem for economic approaches to sustainability because the effectiveness of its universal win-wins are contingent on the ability of economics to operate in fact, not just in theory, as an objective science.

Overall, it seems that there are good reasons to doubt the sustainable potential of economics. We need, however, to be certain that the issues above are *not just examples of bad apples but are symptomatic of deeper problems in the scientific foundation of economics*. It is necessary, moreover, to establish a link between these problems and sustainability so that we can evaluate whether we are justified to rely on economics for the bulk of the sustainability transition. With this aim in mind, it helps to discuss the leading role which has been given to firms in economic approaches to sustainability.[74]

Firms are the primary vehicles for economic approaches to sustainability for at least three reasons. First, because they are often the largest and, excepting consumers, the most numerous market actor. Second, the status of firms as producers gives them influence over inputs (money, people, and resources) and outputs (goods, services, and wastes). And third, the commercial focus of firms and their exposure to market discipline gives them, in economic theory at least, the best incentives to create sustainable value and respond efficiently to the financial and non-financial preferences of individuals.[75]

Consumers are unable to play a similarly leading role because their preferences are generally taken as a given,[76] and because they only have an indirect ability to affect the sustainability of inputs and outputs via their purchasing decisions. States are also unable to take this leading economic role since they are relatively shielded from market discipline, for example due to political processes, and do not have the same incentives to respond efficiently to individual preferences.[77] This does not, of course, mean that states cannot play an important ancillary economic role, for example by limiting unfair competition, subsidising sustainable activities, promoting innovation, and improving transparency for investors and consumers.[78]

In any case, the leading role of firms in the sustainability transition is important because, *if economics cannot make firms sustainable, then the transition via economics cannot be successful*. It is significant, moreover, that many large firms have been subject since at least the 1990s to economic approaches to sustainability, as reflected for example in the historical development of corporate governance, corporate

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[73] As an example of this reliance see: Lazear, 'Economic imperialism'. [*Add reference to Hilbert, Open society, and critique from later discussions in book*]

[74] Balkenende and Buijs, for example, describe that "To be more precise: without good businesses, the transition to responsible capitalism will be impossible. The creativity and 'realization power' of business is essential. Not only can businesses with the right mindset survive disruptive changes, they can even play a leading role in the transition to a new inclusive and sustainable economy" (Balkenende and Buijs, *Capitalism Reconnected*, 174).

[75] [*Find source on relevance of market discipline for 'right' and efficient decision making by firms*]

[76] Individual preferences are usually taken as given and fixed, i.e. as exogenous or external to market dynamics. There is a rich literature in and outside of economics which criticises this approach, and suggests for example that preferences should be seen as endogenous or internal to market dynamics, it does not constitute the mainstream approach. See, for example: S. Bowles, 'Endogenous preferences: The cultural consequences of markets and other economic institutions', *Journal of economic literature* 36, no. 1 (1998); B. Norton, R. Costanza, and R.C. Bishop, 'The evolution of preferences: why 'sovereign' preferences may not lead to sustainable policies and what to do about it', *Ecological economics* 24, no. 2-3 (1998).

[77] [*Giulia suggested to add reference here*]

[78] Such policies are included, for example, in the EU Green Deal Industrial Plan (European Commission, 'A Green Deal Industrial Plan for the Net-Zero Age' (COM(2023) 62 final)) and are advised as part of a 'smart mix' policy approach by the Organization for Economic Cooperation and Development (OECD) *Guidelines for Multinational Enterprises on Responsible Business Conduct* (OECD, *Guidelines for Multinational Enterprises on Responsible Business Conduct*, OECD Publishing (Paris, 2023), 10-11).

social responsibility (CSR), and ESG (environmental, social, governance) investing.[79] Also relevant is that many large firms have been involved in the design of, and have actively promoted and adopted, these and other economic approaches to sustainability while trying to become sustainability front-runners.[80] It follows that if these approaches are effective then this should be identifiable from the activities of these firms.

Unfortunately, we can once again find *compelling evidence to suggest that the effectiveness of economic approaches for the sustainability of firms might be overstated.* There are, for example, deep concerns about the relevance of corporate sustainability reporting in terms of what it really says about individual firms and, in the aggregate, about the overall sustainability transition.[81] As Elkington, one of the early and most prominent supporters of CSR, lamented in 2018:

> "Thousands of TBL [Triple Bottom Line, i.e. People, Planet, and Profit] reports are now produced annually, though it is far from clear that the resulting data are being aggregated and analyzed in ways that genuinely help decision-takers and policy-makers to track, understand, and manage the systemic effects of human activity.
>
> Fundamentally, we have a hard-wired cultural problem in business, finance and markets. Whereas CEOs, CFOs, and other corporate leaders move heaven and earth to ensure that they hit their profit targets, the same is very rarely true of their people and planet targets. Clearly, the Triple Bottom Line has failed to bury the single bottom line paradigm."[82]

The past decades have seen, moreover, the propagation of various highly successful business models with acute sustainability concerns. These include, for example, the rise of fast fashion,[83] digital platform business models,[84] shadow banking,[85] and e-cigarettes.[86] While there have also been other, relatively more sustainable new business models, it is still a point of concern that the former have emerged and thrived alongside the use of economic approaches to sustainability. It is also concerning that, while we

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[79] Generally, see: A. Crane et al., *The Oxford handbook of corporate social responsibility* (OUP Oxford, 2008). P. Câmara and F. Morais, *The Palgrave Handbook of ESG and Corporate Governance* (Springer, 2022); van Aartsen, *A journey into causes of corporate misbehaviour*.

[80] Examples of initiatives which have involved business input include the Global Reporting Initiative (GRI), the UN *Guiding Principles on Business and Human Rights*, and the Taskforces on Climate- and Nature-related Disclosures (TCFD and TNFD) (GRI, 'Global reporting', accessed 11-03-2024, https://www.globalreporting.org/. UN, *Guiding Principles on Business and Human Rights: Implementing the United Nations "Protect, Respect and Remedy" Framework*, United Nations Human Rights Office of the High Commissioner (New York and Geneva, 2011); Financial Stability Board, 'Taskforce on Climate-Related Financial Disclosures', accessed 11-03-2024, https://www.fsb-tcfd.org/; TNFD, 'About us', accessed 11-03-2024, https://tnfd.global/about/).

[81] "Generally speaking, the reporting process seems not sufficient, in itself, to increase stakeholder confidence in corporate sustainability and guarantee the reliability of information" (O. Boiral and I. Heras-Saizarbitoria, 'Sustainability reporting assurance: Creating stakeholder accountability through hyperreality?', *Journal of Cleaner Production* 243 (2020), 1). See also: O. Boiral, 'Sustainability reports as simulacra? A counter-account of A and A+ GRI reports', *Accounting, auditing & accountability journal* 26, no. 7 (2013); M. Laine et al., 'Ambiguity of financial environmental information: A case study of a Finnish energy company', *Accounting, Auditing & Accountability Journal* 30, no. 3 (2017); C. Simpson, A. Rathi, and S. Kishan, 'MSCI, the largest ESG rating company, doesn't even try to measure the impact of a corporation on the world. It's all about whether the world might mess with the bottom line.', *Bloomberg*, 10 Dec 2021, https://www.bloomberg.com/graphics/2021-what-is-esg-investing-msci-ratings-focus-on-corporate-bottom-line/.

[82] J. Elkington, '25 years ago I coined the phrase "triple bottom line." Here's why it's time to rethink it', *Harvard business review* 25 (2018).

[83] V. Bhardwaj and A. Fairhurst, 'Fast fashion: response to changes in the fashion industry', *The international review of retail, distribution and consumer research* 20, no. 1 (2010).

[84] [Zuboff, *Surveillance Capitalism* [*see if I can find a quote*]. Maybe also refer to Varoufakis' new book]

[85] G. Gorton et al., 'Regulating the shadow banking system', *Brookings papers on economic activity* (2010); A.M. Pacces and H. Nabilou, 'The law and economics of shadow banking' in *Research Handbook on Shadow Banking: Legal and Regulatory Aspects*, ed. I.H.-Y. Chiu and I.G. MacNeil (Edward Elgar, 2017).

[86] J.E. Gotts et al., 'What are the respiratory effects of e-cigarettes?', *bmj* 366 (2019).

have many examples of best practices and front-running firms in various industries, it is not clear that these activities are leading to a long-term, structural transformation rather than the mere coexistence of sustainable and unsustainable activities. Also relevant in this regard is the blowback that firms such as Unilever and Danone have received from investors for focusing too much on sustainability, and the nascent anti-ESG movement that is seeking to curtail and even ban sustainable investment.[87] Overall, these developments invite us to doubt whether economic approaches to sustainability are able to resolve conflicts of interest and identify sufficient win-wins for an effective sustainability transformation. As before, however, we need to be certain that these examples are not just bad apples but are due to deeper issues in the scientific foundation of economics.

To recap, we have identified thus far that economics is the main discipline that our societies are using to mobilise money, people, and resources. It is highly influential, and its use and self-conception as an objective science are accepted and largely unquestioned throughout our societies. In this context it is unsurprising, as we have seen, that economics has become the primary scientific approach which our societies are using to implement the sustainability transition. We also saw, however, that sustainability issues are becoming increasingly urgent and that we are struggling to mobilise sufficient money, people, and resources to address them effectively. This led us to question the sustainable potential of economics, and the effectiveness of its sustainability approach which grants firms an apex role in the transition. It remains to be determined, however, whether our struggle to address sustainability issues is due, at least in part, to an antagonism between economics and sustainability, or is simply due to other reasons. To resolve this question it helps to identify that it consists of two parts: (1) an issue of attribution; and (2) an assessment of antagonism.

To address the issue of attribution, we will need to examine the scientific foundation of economics. This is necessary because, if we were to focus only on sustainability issues, problems with firms, or failures to mobilise resources, then we would only be able to say that the expected results of economics are failing to materialise. This does not rule out that an application of more, or better economics might not be able to solve the problem. It is therefore unable to establish that there is a problem with this discipline. We have seen, moreover, that the economic mainstream has been highly resistant to change in response to external developments. The mere evidence of suboptimal results is therefore unlikely to challenge the discipline itself unless it is also shown that this suboptimality is due to its inner workings. It follows that our analysis needs to focus centrally on the scientific foundation of economics.

To assess whether there is antagonism between economics and sustainability, we can look at the limits of the former's scientific foundation. The logic is that, once we understand the scientific foundation of economics, in terms of how it examines the world and identifies problems, then we can also identify the reasonable scope of its application and what it is likely to achieve. By extension, this will allow us to identify when it should not be applied and what it cannot be expected to achieve. This, in turn, will allow us to determine whether the scientific methods and objectives of economics provide an approach to sustainability issues which is consistent with their effective resolution. A key part of this assessment will be to later define and explain our approach to 'sustainability'. For now, however, it is sufficient to rely on a conventional understanding of the concept as is reflected, for example, in ideas on sustainable development, corporate social responsibility, and circularity, and in sustainability issues such as climate change, biodiversity loss, and inequality.

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[87] E. Pollman, 'The making and meaning of ESG', *U of Penn, Inst for Law & Econ Research Paper*, no. 22-23 (2022), 26-29; R. Naidu and R. Kerber, 'Unilever under pressure to show sustainability focus is good for business', *Reuters*, Feb 9 2022, https://www.reuters.com/business/retail-consumer/unilever-under-pressure-show-sustainability-focus-is-good-business-2022-02-09/. F.V. Gansbeke, 'Sustainability And The Downfall Of Danone CEO Faber (1/2)', *Forbes*, 20 Mar 2021, https://www.forbes.com/sites/frankvangansbeke/2021/03/20/sustainability-and-the-downfall-of-danone-ceo-faber-12/.

Ultimately, the aim of this analysis is to shine a critical light on the role of economics in relation to the difficulties that our societies are facing in mobilising sufficient money, people, and resources for the sustainability transition. In line with this aim, *it will be helpful to enrich our analysis of economics with a complementary focus on firms*. This can be justified, first, by the leading role of firms in economic approaches to sustainability and, second, by the great deal of attention which is generally given to the sustainability issues of firms. A complementary focus on firms will also help tether our rather abstract discussion of the scientific foundation of economics to a concrete social phenomenon. This will allow us to explore more practical examples of potential issues with economics, make our analysis of the limits of economics more tangible, and make our discussion more policy relevant. It also provides, as we will see, an anchor which we can use to develop an alternative scientific framework to economics for the sustainable mobilisation of money, people, and resources.

The above leads us to the sub-title for this book: *the scientific foundation and limits of economic theories of the firm*. It also provides the basic template for its tripartite structure. Part A focuses on the scientific foundation of economic theories of the firm and includes an outline of the scientific foundation of economics. Part B examines the limits of economics in terms of its methods and objectives. Part C looks at the consequences of these limits for economic theories of the firm.

Part A consists of three Chapters. It outlines a history of economic thought starting with Adam Smith and the classical political economists (Chapter 2), continuing through the marginalist revolution and the development of neoclassical economics (Chapter 3), and ending with the rise of modern economics which is currently dominant (Chapter 4). It does not try to describe 'everything' in economics, which is impossible, but focuses on the more modest task of describing the emergence of a standard economic way of looking at the world in terms of individuals, markets, and states. This paradigmatic worldview, i.e. the scientific foundation of economics, is subsequently linked to a description and analysis of dominant theories of the firm for each time period.

Chapter 2 focuses on classical political economy and theories of the firm. It illustrates that an economic worldview is evident in the work of Smith and shows how it was adopted and extended by intellectual successors such as Ricardo and Mill. It also examines what these leading classical political economists had to say about firms in terms of the division of labour and conflicts of interest. In general, the context provided by this Chapter will later help us identify (dis)continuities between the economic worldview, and views of firms, of this classical period and its later neoclassical and modern iterations.

Chapter 3 turns to neoclassical economics and contemporaneous theories of the firm. It shows how the economic worldview of the political economists was translated, via the marginalist revolution, into a more mathematical form which is still recognisable in modern economics. It also explains how this led to the development of key concepts and methods in economics: supply-demand and equilibrium models. The Chapter lastly outlines the main neoclassical theories of the firm, namely Marshall's representative firm and Pigou's equilibrium firm.

Chapter 4 concentrates on modern economics and contemporary theories of the firm. It explains how the adoption of new mathematical techniques resulted in a shift from neoclassical to modern economics, and explores the relationship between these two modes of economic thought. It also introduces several concepts and methods which are important for understanding contemporary economic theories of the firm: general equilibrium modelling, Coasean transaction costs, and Knightian uncertainty. The Chapter closes by examining the two leading schools of thought in relation to modern economic theories of the firm: principal-agent and incomplete contracts theories.

The sources in Part A are primarily economic but will also draw on histories and critical accounts within and outside of this discipline. This is necessary to account and correct for errors in the self-conception of economics, for example regarding its claims about being an objective science. In this regard our aim is to explain how economics works, and how it thinks about theories of the firm, without succumbing

to the common misconceptions of economists about their own discipline. The resulting account should help to illuminate and demystify the scientific practice of economists for both insiders and outsiders and, unlike much economic literature, does not require the reader to have any prior knowledge of this discipline.

Part B is divided into two Chapters which examine the limits of economic methods (Chapter 5) and of economic objectives (Chapter 6). In general, it builds on the scientific foundation of economics outlined in Part A and explains how the worldview of this discipline is connected to particular methods and objectives in combination with ideas on their proper use and significance. This will set the stage for our assessment of the antagonism between economics and sustainability, and allow us to introduce the first arguments about their incompatibility.

Chapter 5 examines the shortcomings of economic methods in light of a discussion on the nature of scientific practice. It identifies, for example, that economics is not an objective science because its worldview comes from 'somewhere' and is accompanied by an identifiable set of assumptions and biases.[88] It will also challenge the idea that there is an 'invisible hand' of supply and demand which acts as a law of gravity for market dynamics, and will counter the standard view that mathematical models are able to offer meaningful insights about the economy. In terms of sustainability, we will see in this Chapter that economic methods assign an objective status to economic concerns and an inferior, subjective status to non-economic concerns. The result is that sustainability issues and objectives are never granted a level position in the conceptual playing field of economics.

Chapter 6 explains that economic objectives are immanent to the way that this discipline thinks about the relationship between individuals, markets, and the state. It shows, moreover, that these objectives and ideas can be condensed into a single utopian vision, named *market fundamentalism*. Importantly, this Chapter will also discuss the relationship between this utopia and capitalism, and explain why it is economics and not capitalism that we should be concerned about. The rest of the Chapter examines the nature of these concerns in detail via a reflection on the limits of market fundamentalism, as may be inferred from its conceptualisation of individuals, markets, and economic efficiency. These concerns are relevant for sustainability and demonstrate, for example, that the pursuit of economic efficiency is incompatible with the long-term, sustainable use of resources.

The sources in Part B are again primarily economic, although we will draw to a greater extent on other disciplines such as philosophy, anthropology, law, sociology, physics, and psychology. This mix will help reveal the limits of economics and put the scientific practice of this discipline in a broader context. Insofar as the aim of Part A was to explain to economic insiders and outsiders how economics works, then the complementary aim of Part B is to explain when this discipline does *not* work and why.

Part C offers a definition of sustainability and includes four Chapters on the limits of economic theories of the firm. Its first Chapter focuses on the limits of economic methods for theories of the firm (Chapter 7). The others address the limits of economic objectives as reflected in market fundamentalism and its ideas on individualism (Chapter 8), markets (Chapter 9), and efficiency (Chapter 10). For context, it helps to note that the limits of economics identified in Part B are also evident in economic theories of the firm. However, it would provide a stale analysis if all we did was restate these same limits in a new context. Part C will therefore also examine what they entail, for example, for the ethics and regulation of firms. As we progress, we will use this broader analysis to develop *an alternative scientific*

[88] As Lukes writes, "it can plausibly be argued that, despite its traditional claims to 'value-freedom', economics… is inherently normative, tending to present the core institutions of capitalism – private property, the market, free competition, etc. – as meeting the requirements of efficiency and equity" (S. Lukes, *individualism* (ECPR Press, 2006), 81).

framework to replace the market fundamentalism of economics and address the sustainability shortcomings of this discipline.

Chapter 7 translates our earlier findings on the limits of economic methods to the context of firms, and examines the influence of these limits in a broader context. First, it examines how economic theories of the firm, and the idea that economics is an objective science, have impacted legal theories of the firm and affected the latter's regulatory position in relation to the public-private divide. Second, it considers how economic methods based on the invisible hand are unable to properly account for the effects of organisational structure on individual decision-making. This matters for sustainability because it shows that economics is not sufficiently able to incorporate the ethical context of decision-making in firms. Third, this Chapter explores how the prejudice of economics against non-economic concerns affects the reasoning of firm agents which, as we have seen, is likely to be based on economics.

Chapter 8 addresses the limits of economic ideas on individuals for economic theories of the firm. It looks first at how modern economics has been used to explain and model the corporation, the most powerful and common type of firm. Next, it considers how modern economics has been used to resolve a classic issue in corporate regulation, the problem of separation between ownership and control. It then examines how modern economics has influenced contemporary ideas on good governance, and reflects on the limits of these approaches for making corporations more ethical and sustainable.

Chapter 9 is concerned with the limits of economic ideas on markets for theories of the firm. Instead of simply repeating these limits, it attempts to introduce an alternative way to think about markets and, by extension, firms. This involves a rethinking of the role of the state regarding law, property, money, and markets, and ends with an analysis of the role and regulation of firms in this new scientific framework, named the *Generative State*.

Chapter 10 looks at the limits of economic ideas on efficiency for theories of the firm. It discusses, first, the relation between firms and economic efficiency, as conceptualised by modern economics. Second, it explores how economic efficiency underpins the idea of a value-maximising firm which creates both financial and non-financial value and is needed for the economic transition to stakeholder capitalism. Third, it examines the limits of value maximisation for the sustainability of firms, as may be inferred from valuations of nature which are currently being mainstreamed as part of the economic transition to sustainability. Lastly, this Chapter introduces a new theory of value to replace the idea of the value-maximising firm and its underlying pursuit of economic efficiency. Importantly, we will use this new theory to develop an alternative scientific approach to economics for the mobilisation of money, people, and resources, named *Marketecture*.

The sources of Part C include economics, law, philosophy, anthropology, corporate governance, history, and finance. This diverse mix of sciences is necessary to demonstrate the broader influence of economic theories of the firm, and to illustrate the consequences of issues in their scientific foundation. It is needed, moreover, for us to develop an alternative to economics which addresses the sustainability issues of this discipline. In general we can say that, if Parts A and B were focused on explaining how economics works and when and why it does not work, then Part C will examine what the consequences are and what else we could be doing if not economics. In the process, it will become self-evident *why economics will never make firms sustainable, and how we can develop an alternative which might*.

Part A: The scientific foundation of economic theories of the firm

In this Part we explore how the scientific foundation of economics, and its ideas regarding the firm, have developed since the publication of Adam Smith's *Wealth of Nations* in 1776. This is an extensive period, and we cannot cover all the dimensions of its intellectual developments. What follows is therefore a selection, inevitably subjective, of developments in economics which are necessary to understand its worldview and functioning as a scientific discipline, and how it conceptualises the firm.

The historical overview in this Part can be distinguished from other histories of economic thought. The latter are usually focused on a particular selection of ideas, time periods, or authors, and accept the conventional view of economics as an objective science.[1] We do not accept this latter view since, as we will see, it is untenable in light of how economics has developed as a scientific paradigm.[2]

The idea of scientific paradigms has proven influential since Kuhn's 1972 publication of *The Structure of Scientific Revolutions*,[3] but it is not without critique. A common objection, also relevant for us, is that there are always dissenting authors and ideas which are inconsistent with the mainstream view, and which therefore challenge the supposed existence of a given paradigm.[4] Another, related objection is that not every economist will recognise themselves in our selection of ideas and may offer reasonable arguments to deviate from whichever paradigmatic features we have identified.[5]

In response, we can emphasise that science is not a monolithic endeavour, and that the members of a scientific community should be expected to offer different views on the common core of their scientific practice.[6] Nonetheless, we can argue that such a common core does exist and that it can be described as a paradigm insofar as it includes shared assumptions, exemplars, and methods which make it possible for scientists to interact as a community.[7] Even when these commonalities are contested, they still make it possible for scientists to speak a common language, develop educational programmes, publish in the same outlets, and perform research in a way which is familiar to their colleagues.

It is these commonalities which, even if they cannot be permanently or objectively described, we will try to articulate as an economic worldview, paradigm, and object of analysis. This cannot provide a complete picture of how economics works but should suffice to create an image of the scientific practice of economists which is recognisable and grants insight into their activities.

The structure of this Part is grounded in three major periods of economic intellectual development which occurred over the past 250 years. The first, *classical political economy*, spanned from the 18th century to the end of the 19th. The second period is referred to as *neoclassical economics* and lasted until roughly the mid-20th century. It gave rise to the third period, *modern economics*, which is still dominant today.

We will explore each of these periods of intellectual development and their respective theories of the firm over the next three Chapters. While these periods diverge in their scientific practice in key ways, they also share specific continuities which, as we will see, make them identifiable as part of the same scientific paradigm. It is these continuities, moreover, which form the economic worldview and are the

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[1] Standard histories: H. Landreth and D.C. Colander, *History of Economic Thought*, 4 ed. (Houghton Mifflin, 2002).
Exceptional ones: Sedláček.
[2] Kuhn.
[3] [*Refer to discussion in PhD*]
[4] [*Refer to discussion in PhD*]
[5] [*Refer to discussion in PhD*]
[6] [*Refer to discussion in PhD*]
[7] [*Refer to discussion in PhD*]

primary lens through which we will later examine the limits of economics, its theories of the firm, and their relation to sustainability.

2. Classical political economy and theories of the firm

In terms of background, it is necessary to emphasise that the large-scale, organised production of goods is ancient and significantly pre-dates the 18th and 19th century work of the classical political economists. There are, for example, writings from the Ur-III period, four-thousand years ago, which refer to a mill in Girsu (Iraq) that employed over 750 people, and "a late-third-millennium text from Eshunna [which] lists 585 female and 105 male employees in a weaving house."[1] Moreover, an ancient brewery was recently discovered in Egypt, five-thousand years old and in its prime able to produce thousands of litres of beer each year.[2] In light of this history, it must be assumed that theories of the firm have a similarly long pedigree, and that a comprehensive analysis of firms cannot, and should not, be limited to Anglo-American and European economic ideas.[3]

We are not, however, trying to provide such a comprehensive analysis. Instead, our aim is to assess the sustainable potential of economics by examining its scientific foundation, limits, and theories of the firm. As we have seen, this narrow focus is justified since economic ideas have proven central to our societies' sustainability transition. We can note, and hope, however, that our analysis of economics may also pave the way for discussions on theories of the firm which are wider, in terms of the latter's role and regulation, than their current economic and Anglo-European centre of gravity.

Before we outline the scientific foundation of classical political economy and its theories of the firm, it helps to *define the firm as a nexus for the organised provision of goods and services*.[4] This nexus can take multiple forms, for example in terms of its geographical, legal, or digital dimensions. And it is organised in the sense that it is deliberately coordinated to provide these goods and services. In relation to sustainability, it helps to note that *the provision of goods and services by this nexus always produces side effects*, in the same way that movement creates ripples in a pond. Multiple side effects can occur at the same time, can be positive or negative (or both), and can affect various aspects of the firm and its context, i.e. they can be political, social, environmental, etc. The relationship between a firm and its side effects is more likely to be complex and interrelated than singular or discrete. This has technical implications that need not concern us here.[5]

2.1 The scientific foundation of classical political economy

Our overview of the scientific foundation of classical political economy focuses on the work of Adam Smith, David Ricardo, and John Stuart Mill since these authors wrote the successive, leading economic textbooks of their time (in 1776, 1818, and 1848 respectively). We will look not only at their economic theories, but also at the broader liberal philosophy in which their work is embedded. As we will see, this is necessary to show that it was a particular interpretation of liberalism that gave rise to an economic worldview that is recognisable, even today, in modern economics.

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[1] M. Silver, *Economic Structures of Antiquity* (Westport Connecticut: Greenwood Press, 1995), 143 as cited in P.S. Walker, *The Theory of the Firm: An Overview of the Economic Mainstream (Revised edition)* (Preprint online version, 2021), 14.

[2] BBC, 'Abydos beer factory: Ancient large-scale brewery discovered in Egypt', *BBC*, 15 Feb 2021, https://www.bbc.com/news/world-middle-east-56067717.

[3] For an overview of this history of firms, in combination with theories of production, see: P. Walker, *Foundations of organisational economics: Histories and theories of the firm and production* (Routledge, 2021), 10-25.

[4] This is our own definition. There is no consensus definition in economic science (O. Hart, 'Thinking about the firm: A review of Daniel Spulber's The Theory of the Firm', *Journal of Economic Literature* 49, no. 1 (2011), 102). See also: S. Deakin, D. Gindis, and G.M. Hodgson, 'What is a firm? A reply to Jean-Philippe Robé', *Journal of Institutional Economics* 17, no. 5 (2021).

[5] It affects, for example, whether we see firm activities as a series of discrete events, such as individual acts, or as embedded in, and emergent from, a broader continuum of social relations.

2.1.1 The economy as a system of natural liberty

We can start our discussion with Smith's opus and synthesis of 18th century economic thought, *An Inquiry into the Nature and Causes of the Wealth of Nations*.[6] It should be noted, however, that this was not the first economic textbook but is part of a rich, varied, and ancient intellectual tradition that is dedicated to typically economic topics such as how to maximise revenues and manage scarce resources.[7]

Also important for context is that Smith was a liberal moral philosopher and that his *Wealth of Nations* became the leading economic text alongside the United States Declaration of Independence (1776) and the French and Haitian Revolutions (1789 and 1791), which events instigated the adoption of liberal constitutions by many Anglo-European states.[8] This concurrence is significant since the liberal foundation of Smith's work dovetailed well with the political currents of his time. It contributed, moreover, towards a discourse that societies would prosper under conditions of economic liberalism, as compared to the more illiberal, mercantilist policies which were focused on the national hoarding of gold and silver and were dominant in his day.[9]

Turning to the *Wealth of Nations*, Smith argued that the removal of trade restrictions and preferences would result in a system of 'natural liberty', and that this system would maximise the wealth of a nation.[10] In more detail, his idea was that liberal economic conditions would allow citizens to freely pursue and maximise their natural "propensity to truck, barter and exchange".[11] In turn, all these free individuals would pursue their maximum self-interest and, in the aggregate, accrue the greatest amount of collective (national) wealth. The invisible hand,[12] *a dynamic between supply and demand*, would regulate these activities and ensure that they generally contribute towards the public good.

Smith's arguments are best understood as part of a broader system of liberal beliefs and philosophy. An important concept, in this regard, is the liberal idea that individuals are born free, into a *state of nature*, and that these free individuals signed a *social contract to create social and political structures*.[13] Also important is that the natural freedoms of these individuals, i.e. the freedoms which they had in the state

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[6] Adam Smith, *Wealth of Nations*.
[7] Sedláček (*The Economics of Good and Evil*, p. 96-102) points out that ancient Greek poets and philosophers, such as Hesiod, Aristotle and Xenophon, wrote comprehensively on economic topics. Xenophon, for example, wrote two books: *Oeconomicus* and *De vectigalibus*. The second was still being used in the 18th century as a text for economic and administrative guidance.
[8] [*Add historical source on adoption of liberal constitutions*]
[9] [*Add description of mercantilism and make sure statement is correct*]
[10] Hard copy p. 873-874. "All systems either of preference or of restraint, therefore, being thus completely taken away, the obvious and simple system of natural liberty establishes itself of its own accord. Every man, as long as he does not violate the laws of justice, is left perfectly free to pursue his own interest his own way, and to bring both his industry and capital into competition with those of any other man, or order of men. The sovereign is completely discharged from a duty, in the attempting to perform which he must always be exposed to innumerable delusions, and for the proper performance of which no human wisdom or knowledge could ever be sufficient; the duty of superintending the industry of private people, and of directing it towards the employments most suitable to the interest of the society. According to the system of natural liberty, the sovereign has only three duties to attend to; three duties of great importance, indeed, but plain and intelligible to common understandings: first, the duty of protecting the society from violence and invasion of other independent societies; secondly, the duty of protecting, as far as possible, every member of the society from the injustice or oppression of every other member of it, or the duty of establishing an exact administration of justice; and, thirdly, the duty of erecting and maintaining certain public works and certain public institutions which it can never be for the interest of any individual, or small number of individuals, to erect and maintain; because the profit could never repay the expense to any individual or small number of individuals, though it may frequently do much more than repay it to a great society."
[11] Adam Smith, *Wealth of Nations*, p. ? [*Is natural part of his quote? maybe provide in full since it's significant*]
[12] For a detailed review, see: Sedláček, p. 259.
[13] Generally, see: S. Lukes, *individualism* (ECPR Press, 2006), 71, 94.

of nature, can only be constrained, in a limited way, by the social contract.[14] Building on this view we can identify that, in liberal democracies, the constitutional rights of individuals are a codification of the *pre-social, natural rights* which they are supposed to have enjoyed in the state of nature. These rights can only be restricted, and never more than necessary, by lawfully developed state legislation and actions when this is necessary for the collective interest.[15]

It is within this constellation of liberal ideas that Smith argued for the removal of trade restrictions to ensure that "the obvious and simple system of natural liberty establishes itself of its own accord."[16] A corollary to this line of reasoning is that state measures which interfere with the (natural) economic freedoms of individuals are inherently 'unnatural' and subject to a high burden of proof for their justification.[17] As an aside we should note, however, that Smith was not opposed as a matter of principle to restrictions on economic freedom to prevent injustice, the oppression of one individual by another, or to facilitate the creation of public institutions which yield great public benefit but cannot be organised profitably on an individual basis.[18]

At this point we can highlight that, contrary to liberal ideas, people never existed as free individuals in a state of nature, nor did they ever sign a social contract for the creation of collective structures.[19] On the contrary, archaeologists and anthropologists have shown that our ancestor species, *Homo erectus* (estimated to have lived between 140'000 and 1.9 million years ago) and *Homo habilis* (between 1.4 and 2.4 million years ago), already used tools and lived in small groups.[20] It follows that we, as *Homo sapiens*, never lived as isolated individuals but have always been socially embedded. An important consequence is that we, as individuals, cannot be abstracted from society without a loss of meaning in terms of what defines us.[21] As Comte once wrote, a society is "no more decomposable into *individuals* than a geometric surface is into lines, or a line into points."[22] Our individuality is shaped by society even as we participate in, and shape, society.[23] In liberal terms, this means that we never existed without a social contract.

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[14] [*Add source on liberal ideas that freedoms in the state of nature are being constrained by social contract. Hobbes. Rousseau? Locke? Alain Supiot maybe?*]

[15] J.-P. Robé, *Property, Power and Politics: Why we need to rethink the world power system* (Policy Press, 2020).

[16] Hard copy p. 873-874.

[17] Indeed, Smith is not opposed to market regulation when it is necessary (add ref).

[18] Hard copy p. 873-874.

[19] Robé, *Property, Power and Politics: Why we need to rethink the world power system* [add page].

[20] [*Add reference on homo erectus and homo habilis living a long time ago and already using tools and living in small groups*]

[21] The dictionary provides an apt analogy; its content is self-referential and every word is defined in terms of another (add ref). There is no 'original' word which can be used to define all the others, and no way to remove one word from the rest and retain its full meaning. This mutual constitution is known as an *internal relation*, and will play an important role in our later discussion on the nature of scientific practice.

[22] As cited in Lukes, *individualism*, 94.

[23] Critically, Lukes writes that "Precisely what the [liberal] abstract view of the individual precludes is an appreciation of the ways in which 'human nature' is 'modified in each historical epoch'. More fundamentally, it is at odds with what Dumont calls the 'sociological apperception' – the 'apperception of the social nature of man', which 'opposes man as a social being' to 'the self-sufficient individual' and which 'considers each man no longer as a particular incarnation of abstract humanity, but as a more or less autonomous point of emergence of a particular collective humanity, of a *society*'. This was exactly Marx's thought when he wrote that '*man* is not an abstract being squatting outside the world. He is the *human world*, the state, society.'" (Lukes, *individualism*, 120-121). See also: D. Graeber and D. Wengrow, *The dawn of everything: A new history of humanity* (Penguin UK, 2021), 276-327; M.B. Crawford, *The world beyond your head: On becoming an individual in an age of distraction* (Farrar, Straus and Giroux, 2015).

In fairness to liberalism, it should be recognised that the social contract was seldom intended as anything other than a thought experiment. Rousseau states this in *The Social Contract*,[24] and, as Schlatter explains about discussions on the state of nature:

> "Stripped bare of the trappings which each particular theorist hung upon it, the bare theory was a simple pattern of *a priori* assumptions which, in the opinion of the men whose interests they served, were as obviously true as the axioms of Euclid. 'Think of men in a state of nature,' the theorists said. Their critics answered that this was absurd since men had never been in such a state; but the proponents parried this with the answer that they were uncovering the abstract principles of political justice, not the data of history."[25]

With this in mind, we can identify that it not a historical fact, only a conceptual fiction, to consider, as liberalism does, that individuals came firms and that collective structures came second. Importantly, this does not mean that concepts such as the state of nature, natural rights, or the social contract are irrelevant or useless due to being 'mere' fictions. They have a real impact, for better or for worse, on the design of our legal systems, and are foundational to the scientific practice of economists.[26]

Referring again to Smith, we can identify an important scientific consequence of these liberal ideas in his work. They suggest that it is plausible to view *economic dynamics as separate from the rest of society*.[27] The reasoning is as follows: if individuals have a natural propensity to trade and pursue their maximal self-interest, and if we remove trade restrictions in order to liberate their exercise of natural rights, then the economy can be modelled as a stand-alone realm of individual, self-interested exchange. The foundational influence of social and political structures can be excluded from this liberal-economic model since economic dynamics are a pre-social expression of natural rights and are not (or generally should not be) a reflection of state interaction with the economy.[28] This *realm of pre-social exchange*, which is revealed by limiting the role of the state and enabling the exercise of natural economic rights, is then only subject to the regulatory effects of supply and demand, and can be described entirely in these terms.

This lets us distinguish between an *economy* which is constituted by the exercise of natural economic rights by free individuals and is governed by supply and demand, and a *non-economy* which is governed, for example, by social and political structures which operate according to the rights and duties of the social contract.[29] As Foley explains about Smith's work, it cemented:

> "a way of looking at modern society as made up of two spheres: an economic sphere of individual initiative and interaction, governed by impersonal laws that assure a beneficent outcome of the

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[24] Graeber and Wengrow, *The dawn of everything*, 11.
[25] R. Schlatter, *Private Property: the History of an Idea* (New Brunswick, N.J.: Rutgers University Press, 1951).
[26] Maybe Robé, Supiot, Siedentop.
[27] See, generally: Graeber, 2014, *Debt: The First 5000 Years*, p. 22-28.
[28] Bowles identifies this same, pre-social assumption in the work of Hobbes and describes it critically: "Hobbes' fiction [that individuals are pre-social] neatly elides the influence of social arrangements on the process of human development and thus greatly simplifies the task of economic theory. But the scope of economic inquiry is thereby truncated in ways which restrict its explanatory power, policy relevance, and ethical coherence" (S. Bowles, 'Endogenous preferences: The cultural consequences of markets and other economic institutions', *Journal of economic literature* 36, no. 1 (1998), 75. See also: E.P. Lazear, 'Economic imperialism', *the Quarterly Journal of economics* 115, no. 1 (2000), 101.
[29] Sampford remarks that "the supposedly individual nature of private decision-making is contrasted with the collective nature of public decision-making. The private sphere is frequently portrayed as a spontaneous order built on cooperation, consent and contract compared with the coerced order of the state created by legal regulation. As such it is seen as more "natural" than the contrived and constructed order of the state… The rhetoric and imagery of the "private" refers to individuals and the things they can do by or among themselves without reference to anyone else. Because of this imagery it is possible to see the private as natural, voluntary and pre-social - and to appropriate to it values such as autonomy and individual rights." (C. Sampford, 'Law, Institutions and the Public/Private Divide', *Federal Law Review* 20, no. 2 (1991), 187, 190).

> pursuit of self-interest; and the rest of social life, including political, religious, and moral interactions which require the conscious balancing of self-interest with social considerations."[30]

This *socio-economic bifurcation*, which draws an essential distinction between the economic and non-economic aspects of society, is central to the way that scientific practice in economics has developed over the past 250 years.[31] As this book progresses, we will see that this fiction has remained a core part of economic theory and is an essential component of formal (mathematical) economic models. It is, importantly, also an inherent aspect of the 'system of natural liberty' that was advocated by Smith as a liberal blueprint for economic arrangements. In the next subsection, we will see how this blueprint and its underlying socio-economic bifurcation developed, through the work of David Ricardo and John Stuart Mill, into the idea of a liberal economy governed by natural economic laws.

2.1.2 The economy as a system governed by natural economic laws

The transition from Smith to Ricardo can be helpfully illustrated with reference to their different styles of argumentation. *The Wealth of Nations* was written using a narrative style and relied primarily on particular examples and historical arguments. It explained, for example, that liberalised exchange had been partially discovered and implemented by ancient Rome, contributed greatly towards its success and wealth, and was lost following barbarian invasions and the decline of the Roman Empire.[32] And it was only more recently, according to Smith, that Europeans had rediscovered the principle of free exchange, and that they were using it to displace and transcend the inefficient and unfree feudal relations of the Middle Ages.[33] These arguments have been discredited by historians over the past decades[34] but nonetheless remain influential in many areas of contemporary economic historical analysis.[35] In any case, we can contrast these historical arguments with the deductive style of Ricardo's 1817 *Principles of Economic Thought*.

The preface starts by positing that there are three social classes (those who own land, those who own capital or stock, and those who sell labour) and that in different stages of society the distribution of rent, profits, and wages depends mainly on soil fertility, capital accumulation, population size, and the intellectual and technological sophistication of agriculture."[36] Having outlined this basic model for

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[30] Foley, p. 1.

[31] As Graeber explains, "Adam Smith… was determined to overturn the conventional wisdom of his day. Above all, he objected to the notion that money was a creation of government. In this, Smith was the intellectual heir of the Liberal tradition of philosophers like John Locke, who had argued that government begins in the need to protect private property and operated best when it tried to limit itself to that function. Smith expanded on the argument, insisting that property, money, and markets not only existed before political institutions but were the very foundation of human society. It followed that insofar as government should play any role in monetary affairs, it should limit itself to guaranteeing the soundness of the currency. It was only by making such an argument that he could insist that economics is itself a field of human inquiry with its own principles and laws – that is, distinct from, say, ethics or politics" (Graeber, *Debt*, p. 24-25).

[32] [*Add reference to historical section on Rome in Smith's work*]

[33] E.M. Wood, *The Origin of Capitalism: A Longer View* (Verso, 2002), 11-17.

[34] An emerging consensus among historians, based on the iconoclastic work of Brown, is showing that there was a rich diversity of medieval commercial practices and property relations rather than a monolithic 'system' of feudalism during the Medieval period of European history (E.A. Brown, 'The Tyranny of a Construct: Feudalism and Historians of Medieval Europe', *The American Historical Review* (1974); S. Reynolds, *Fiefs and vassals: the medieval evidence reinterpreted* (Clarendon Press, 1994))

[35] "Another of the deeply rooted myths that surround capitalism is the belief that the essential features of the market economy arose out of historical developments that were endogenous to the core regions of Europe. Equally deeply embedded is the idea that capitalism represents a radical break with Europe's feudal past, being founded on free rather than coerced labor – hence its potential for progress and innovation" (A. Ghosh, *The Nutmeg's Curse: Parables for a planet in crisis* (University of Chicago Press, 2021), 117. [*Also add references to Marxist, economic history Hayek, Robé*]

[36] Ricardo, 1821, p. 5.

economic relations, Ricardo subsequently explains that the main purpose of political economy is "[t]o determine the laws which regulate this distribution [of rent, profit and wages]".[37] He presents his work as an attempt to articulate these laws, and is careful to note that his departure from Smith's ideas in certain ways does not stop him from "participat[ing] in the admiration which the profound work of this celebrated author so justly excites."[38]

Ricardo subsequently introduces a theory of value and suggests that the value of goods,[39] provided they are produced in a liberalised context where "competition operates without restraint,"[40] is determined by the amount of labour that their production requires, and not for example by the amount of wages paid. Given this, he explains that:

> "If among a nation of hunters, for example, it usually costs twice the labour to kill a beaver which it does to kill a deer, one beaver should naturally exchange for, or be worth, two deer. It is natural that what is usually the produce of two days', or two hours' labour, should be worth double of what is usually the produce of one day's, or one hour's labour."[41]

Building on this logic, Ricardo explores various potential influences on the value of a good, explaining for example that variations in labour quality or wage levels have no effect on its value, that technology can have an impact on value, and that it is not possible to have an objective measure of value.

The exploration of these kinds of relationships, not only regarding value but also for rent, wages, profits, foreign trade, taxes, the details of particular commodities, etc., made it possible for Ricardo to add more and more detail to his basic model. Eventually, they amounted to a list of conditions which enabled him to make basic calculations, under different circumstances, for how changes in land fertility or improvements in machinery would affect the distribution of rent, profits, and wages among the three classes. This deductive approach, and the calculations it enabled, is characteristic of Ricardo's work.[42]

Overall, we can note that Ricardo's book embraced the general framework for a liberal economy that was outlined by Smith, and that he used this framework to develop a basic model showing how, under liberal conditions and in combination with various stipulations regarding value, rent, profits, trade, etc., various economic outcomes could be calculated from underlying conditions and the wealth-maximising behaviour of self-interested individuals. Mathematical approaches to economics, which would gain prominence from the 1870s onwards, followed Ricardo's deductive, model-building style rather than Smith's narrative approach.[43]

The third textbook, *The Principles of Political Economy*, was produced by John Stuart Mill in 1848 and represents the final, leading synthesis of classical political economic thought before the rise of neoclassical economics. In terms of writing, it is more in the tradition of Smith's narrative style rather than Ricardo's deductive approach. The book is important for our discussion for two reasons: first, it demonstrates how socio-economic bifurcation had become embedded in classical economic thought by the mid-19th century; second, it provides a lucid account of how economics has come to rely on the idea of competition to generate law-like descriptions of liberalised exchange relations.

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[37] Ricardo, 1821, p. 5.
[38] Ricardo, 1821, p. 6.
[39] Not including rare items and luxuries.
[40] Ricardo, 1821, p. 9.
[41] Ricardo, 1821, p. 10.
[42] "Ricardo's deductive method, his model building, was to be of the greatest importance. *Ricardo essentially invented these techniques*. His procedure… contrasts strongly with Adam Smith's basically inductive approach" (O'Brien (2004) as cited in King, *David Ricardo*).
[43] H. Landreth and D.C. Colander, *History of Economic Thought*, 4 ed. (Houghton Mifflin, 2002).

Regarding socio-economic bifurcation, we can note that Mill's work is nuanced and recognises that society and the economy can have indirect impacts on one another. He nevertheless argues, despite this 'close contact', that questions regarding social and economic phenomena are entirely different:

> "… the questions how a nation is made wealthy, and how it is made free, or virtuous, or eminent in literature, in the fine arts, in arms, or in polity, are *totally distinct enquiries*. [These] things, indeed, are all indirectly connected, and react upon one another. A people has sometimes become free, because it had first grown wealthy; or wealthy, because it had first become free. The creed and laws of a people act powerfully upon their economical condition; and this again, by its influence on their mental development and social relations, reacts upon their creed and laws. But *though the subjects are in very close contact, they are essentially different, and have never been supposed to be otherwise*." [emphasis added][44]

As a justification, Mill explains that the production of wealth in the economic realm is governed by economic laws in the same way that physical bodies are subject to the law of gravity:

> "As stated by Mr. Cairnes, political economy is a science just as is any recognized physical science-astronomy, chemistry, physiology. The economic "facts we find existing are the results of causes, between which and them the connection is constant and invariable. It is, then, the constant relations exhibited in economic phenomena that we have in view when we speak of the laws of the phenomena of wealth; and in the exposition of these laws consists the science of political economy." It is to be remembered that economic laws are *tendencies*, not actual descriptions of any given conditions in this or that place."[45]

Subsequently, Mill suggests that there are natural economic *laws of production* which influence *how wealth is created*, and that the "particular customs and institutional structure of an economy"[46] (i.e. socio-political structures) are responsible for the *distribution of wealth*.[47]

These arguments are, of course, an extension and reinterpretation of Ricardo's view that the main task of political economy is to identify the laws which govern the distribution of wealth. Note, however, that Mill departs from Ricardo's position that economic laws determine the *distribution* of wealth, and argues instead that such laws only determine the *creation* of wealth. This difference of opinion shows that while both authors build on a logic of socio-economic bifurcation, i.e. they both believe that economic dynamics are essentially separate from the rest of society, they differ as to where the boundary between the economic and non-economic realms should be positioned. Such disagreements are apparent throughout economic history, and are important to our later discussion on the limits of economics. For now, it is enough to note that underlying both opinions is an *explicit* commitment to socio-economic bifurcation. This can be distinguished from the *implicit*, nascent commitment that was present in Adam Smith's blueprint for a system of natural liberty.

Turning next to the role of competition in economics, Mill's work shows how the political economists of his day used competition to express, in law-like form, the dynamics of the invisible hand:

> "Political economists generally, and English political economists above others, have been accustomed to lay almost exclusive stress upon [competition]; to exaggerate the effect of competition, and to take into little account the other and conflicting principle [of custom]. They are apt to express themselves as if they thought that competition actually does, in all cases, whatever it can be shown to be the tendency of competition to do. This is partly intelligible, if we consider that *only through the principle of competition has political economy any pretension to the character of a science*. So far as rents, profits, wages, prices, are determined by competition, laws may be

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[44] Mill (1848) p. 73.
[45] Mill (1848) p. 89.
[46] Landreth and Colander, *History of Economic Thought*, 160.
[47] We will later see that a mediated form of this contrast, borrowed from the work of Nassau Senior, is still retained by contemporary economists in the *distinction between positive and normative economics*.

> assigned for them. *Assume competition to be their exclusive regulator, and principles of broad generality and scientific precision may be laid down, according to which they will be regulated*. The political economist justly deems this his proper business: and, as an abstract or hypothetical science, political economy can not be required to do, and indeed can not do, anything more."[48] [emphasis added][49]

It is revealing that Mill (in yet another disagreement on the boundary of socio-economic bifurcation) criticises his fellow political economists for assuming a too-small role for custom and other social factors. He finds that his colleagues are too confident about the effects of competition, and that they assume that too many areas of social life are shaped by competition in the same way as the realm of economic production. He is nonetheless sympathetic to his fellow scholars' line of reasoning, and candid about the fact that he and the other political economists would not be able to identify general, scientific laws for the economy if they did not assume that certain human interactions are solely governed by competition. We find, in this regard, that economic science is *enabled* by a behavioural assumption that economic relations are solely governed by the principle of self-interested competition. This is a direct continuation of socio-economic bifurcation and Smith's assumption that individuals in a system of natural liberty will maximally pursue their natural propensity to truck, barter, and exchange.

For Mill, it is the scientific role of political economists to apply these assumptions in order to discover law-like regularities for the creation of wealth. The critical remarks regarding his colleagues relate solely to the way that political economists in general, and especially English ones, have been applying the tools of their scientific trade to parts of society which are governed by custom rather than competition. As he notes, "it would be a great misconception of the actual course of human affairs to suppose that competition exercises in fact this unlimited sway."[50]

In summary, the work of Smith, Ricardo, and Mill shows that classical political economists used assumptions concerning natural liberty, socio-economic bifurcation, individual maximisation, and the pursuit of self-interested exchange to formulate *natural laws* for the economy. They may have disagreed on the precise scope of economic dynamics, but in general their efforts may be viewed as an attempt to articulate *economic gravity*, the invisible hand's wealth-maximising regulation of supply and demand, *in a liberalised universe*.

It is important to stress, as we have seen, that these natural laws for economic gravity could not have been expressed, or later developed into mathematical form, without prior assumptions about people and society. In other words, *the theories and methods of economics are not impartial or neutral towards the social phenomena which they seek to investigate*.[51] This fact of subjectivity will be key to our later discussion on the limits of economics and economic theories of the firm. First, however, we need to examine what the classical political economists said about firms.

2.2 Classical political economic theories of the firm

Smith does not provide a comprehensive theory of the firm,[52] but he does reflect on organised production at various points in *The Wealth of Nations*. In fact, the book starts with a discussion of a pin factory and explains how this firm's *division of labour* into separate tasks resulted in a much greater

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[48] [*Add reference to Mill's work and find proper page*]
[49] Mill (1848) p. 232. See also: J.S. Mill, 'On the definition and method of political economy' in *The philosophy of economics: An anthology*, ed. D.M. Hausman (Cambridge University Press, 1994).
[50] Mill (1848), p. 90.
[51] Sedláček. F.H. Knight, *Risk, Uncertainty and Profit* (Boston and New York: Houghton Miffler Company, 1921), 5.
[52] Generally, see: Walker, *Foundations of organisational economics*, 20-22.

output than if each worker had sought to produce the whole result on their own.[53] Smith credits the prodigal output of this factory to three factors: improvements in the dexterity of the workers, time saved in transitioning between tasks, and the use and optimisation of machinery. He does not reflect on determinants for the size of firms, but does argue that the scope for division of labour in a given market is *limited by the extent of its demand*.[54] An oft-traded good will invite much more productive improvement and specialisation than an item which is only produced for a handful of buyers. He does not indicate whether or how the division of labour is, or can be, organised between individuals or small and large firms.

Following this introduction, the firm is absent from Smith's analysis until book 5 part III, where he comments on various institutional forms which can be used to facilitate commerce in a society. He compares the personal incentives of public and private ownership, and reviews the performance of national and foreign regulated companies, noting that "To be merely useless, indeed, is perhaps the highest eulogy which can ever be justly bestowed upon a regulated company."[55] While amusing, this statement does not translate well into today's context since Smith is referring to *trade associations* ('regulated companies') with a legally enforceable market monopoly for certain kinds of national or foreign trade,[56] rather than to companies in the modern sense which operate within an, at least formally, liberalised market framework. More relevant, also for our later discussion on corporate governance, are Smith's comments on joint stock companies:

> "This total exemption from trouble and from risk, beyond a limited sum, encourages many people to become adventurers in joint stock companies, who would, upon no account, hazard their fortunes in any private copartnery. Such companies, therefore, commonly draw to themselves much greater stocks than any private copartnery can boast of...
>
> The directors of such companies, however, being the managers rather of other people's money than of their own, it cannot well be expected that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own. Like the stewards of a rich man, they are apt to consider attention to small matters as not for their master's honour, and very easily give themselves a dispensation from having it. Negligence and profusion, therefore, must always prevail, more or less, in the management of the affairs of such a company."[57]

The second paragraph is well-known to contemporary scholars in corporate law and governance, and is commonly presented as an early identification of the principal-agent problems that is one of, perhaps the, key analytical issue in these disciplines today.[58] We should, however, be careful about projecting today's scientific issues backwards in time and onto Smith's work since there is no indication that he would have supported contemporary analysis and solutions (the use of agency theory to align director

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[53] Smith argues that the division of labour is not a conscious human invention, i.e. a factor of technological progress and social innovation: "[T]his division of labour, from which so many advantages are derived, is not originally the effect of any human wisdom, which foresees and intends that general opulence to which it gives occasion. It is the necessary, though very slow and gradual consequence of a certain propensity in human nature which has in view no such extensive utility; the propensity to truck, barter, and exchange one thing for another." (Smith, p. 29).

[54] "[As] it is the power of exchanging that gives occasion to the division of labour, so the extent of this division must always be limited by the extent of that power, or, in other words, by the extent of the market. When the market is very small, no person can have any encouragement to dedicate himself entirely to one employment, for want of the power to exchange all that surplus part of the produce of his own labour, which is over and above his own consumption, for such parts of the produce of other men's labour as he has occasion for." Smith p. 35.

[55] Smith, p. 981.

[56] C. Mayer, *Prosperity: Better business makes the greater good* (Oxford University Press, 2018), 74.

[57] Smith, p. 990.

[58] This claim is made, for example, by Tricker. [*Confirm that Tricker says this*]. Walker, *Foundations of organisational economics*, 21.

and shareholder interests[59]) for the problem of negligence and profusion which he identifies.[60] In fact, there is some evidence that Smith generally disapproves of the joint stock form:

> "That a joint stock company should be able to carry on successfully any branch of foreign trade, when private adventurers can come into any sort of open and fair competition with them, seems contrary to all experience."
>
> "The only trades which it seems possible for a joint stock company to carry on successfully *without an exclusive privilege* are those of which all the operations are capable of being reduced to what is called a Routine, or to such a uniformity of method as admits of little or no variation. Of this kind is, first, the banking trade; secondly, the trade of insurance from fire, and from sea risk and capture in time of war; thirdly, the trade of making and maintaining a navigable cut or canal; and, fourthly, the similar trade of bringing water for the supply of a great city." [emphasis added][61]
>
> "The government of an exclusive company of merchants is, perhaps, the worst of all governments for any country whatever."[62]

Consider also how Smith's following remarks are incompatible with the common position in corporate governance that the collective interest is best served by ensuring that directors are incentivised to serve investor interests:

> "Frequently a man of great, sometimes even a man of small fortune, is willing to purchase a thousand pounds' share in India stock merely for the influence which he expects to acquire by a vote in the court of proprietors. It gives him a share, though not in the plunder, yet in the appointment of the plunderers of India; the court of directors, though they make that appointment, being necessarily more or less under the influence of the proprietors, who not only elect those directors, but sometimes overrule the appointments of their servants in India. Provided he can enjoy this influence for a few years, and thereby provide for a certain number of his friends, he frequently cares little about the dividend, or even about the value of the stock upon which his vote is founded. About the prosperity of the great empire, in the government of which that vote gives him a share, he seldom cares at all. No other sovereigns ever were, or, from the nature of things, ever could be, so perfectly indifferent about the happiness or misery of their subjects, the improvement or waste of their dominions, the glory or disgrace of their administration, as, from irresistible moral causes, the greater part of the proprietors of such a mercantile company are, and necessarily must be."

While Smith can be rightly credited with describing a *difference in relative incentive structures between directors and partners*, I think it is false to read the contemporary problem of separation between ownership and control[63] or the use of agency theory into his work. The former relates to a loss of ability by shareholders to monitor the activities of management and the latter to conflicts of interest between shareholders and directors; neither is evident in *The Wealth of Nations*.[64] As noted, there is no evidence Smith would have endorsed the alignment of director and shareholder interests. On the contrary, his

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[59] [*Find sources. Perhaps Anatomy of Corporate Law*]
[60] Walker remarks that, "While highlighting the problem Smith does not offer anything in the way of a solution insofar as he doesn't develop a general theory of agency theory or corporate governance" (Walker, *The Theory of the Firm*, 22.
[61] Smith p. 1009.
[62] Smith p. 752.
[63] Generally, see: D. Ciepley, 'Beyond public and private: Toward a political theory of the corporation', *American Political Science Review* 107, no. 1 (2013), 147. Berle and Means, 1932, *The Modern Corporation and Private Property*.
[64] The error is unfortunately common. See, for example: M.C. Jensen and W.H. Meckling, 'Theory of the firm: Managerial behavior, agency costs and ownership structure', *Journal of Financial Economics* 3 (1976), 327; Mayer, *Prosperity*, 35.

writing suggests that he might have preferred other organisational forms rather than the pursuit of this alignment.

These above remarks on the division of labour and joint stock company represent the bulk of Smith's contributions to economic theories of the firm. From today's perspective, perhaps the most notable thing about his work is how little it resembles the scope of contemporary issues in this area. There is no discussion of agency problems, contracts, uncertainty, governance structures or the boundary of firms. This is, perhaps, unsurprising given that Smith's work was not, unlike today's scholarship, premised on the general presence of a liberalised market framework. These methodological differences impose strict limits on the extent to which his work may be viewed as continuous with modern economics, corporate governance, and theories of the firm.

Turning to the other leading classical political economists, we find that Ricardo made no significant contribution to theories of the firm or the division of labour.[65] Mill, by contrast, did reflect on these topics and we therefore turn to his work.

Mill believed, like Smith, that the division of labour in a given market is limited by the extent of demand in that market.[66] He adds some nuances to Smith's three factors for the division of labour, and suggests that productivity can also be affected by individual and geographical factors such as an individual's talent for management or proximity to natural resources.[67] Unlike Smith, Mill provides an account for the size of firms, explaining that their size is determined by a given market's needs and scope for labour efficiency. He proposes that economies of scale can operate in firms wherever they can save on administration and infrastructure costs, and adds that "As a general rule, the expenses of a business do not increase by any means proportionally to the quantity of business."[68]

An important difference between Smith and Mill's work is that the latter, writing almost 75 years later, is able to *assume the existence of a liberalised market*. This enables him to propose that the emergence of small or large firms is determined by their relative abilities to compete on cost; Smith would have been unable to make such a proposition given the non-liberalised conditions of his day.[69]

It is curious that Mill, who spent his working life at the British East India Company, has less to say on joint stock companies than Smith. His *Principles of Political Economy* do note, however, in general terms that such companies are able to promote production on a large scale because they can aggregate small capital contributions into a large pool.[70] He notes further that it is important for these companies to hire the best available managers whenever it can be afforded.

Interesting in terms of corporate governance is that Mill refers to "a common enough practice to connect [managers'] pecuniary interest with the interest of their employers, by giving them part of their remuneration in the form of a percentage on the profits."[71] He writes that this practice was adopted because it "more than compensates for their inferior interest in the result". [72] It seems likely that these practices were adopted to compensate for the incentive problem identified by Smith, i.e. to make sure that company officers are managing their own money and not just that of other people. This is, again,

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[65] N.J. Foss and P.G. Klein, 'The emergence of the modern theory of the firm', *Center for Strategic Management and Globalization* Working Paper No. 1/2006 (2006), 7.
[66] Mill, p. 56.
[67] Mill, p. 55-57.
[68] Mill, p. 57.
[69] "Wherever there are large and small establishments in the same business, that one of the two which in existing circumstances carries on the production at greatest advantage will be able to undersell the other" (Mill, p. 58).
[70] Mill, p. 57.
[71] Mill, p. 58.
[72] Mill, p. 58.

not the same as addressing the problem of separation between ownership and control or minimising conflicts of interest between shareholders and directors/managers.

To close this Section, we will briefly comment on classical ideas on *entrepreneurship*. These ideas did not feature in the work of Smith, and only had a marginal presence in that of Mill.[73] They are, however, relevant for our overarching analysis since they develop into a parallel, and eventually overlapping, line of reasoning with regards to modern economic theories of the firm. Important to understand is that classical discussions on entrepreneurship focused on their role in making decisions under uncertain circumstances in order to generate profits.[74] An early explanation may be found in Cantillon's 1755 *Essai sur la nature de commerce en general*:

> "Entrepreneurs work for uncertain wages, so to speak, and all others for certain wages until they have them, although their functions and their rank are very disproportionate. The General who has a salary, the Courtier who has a pension, and the Domestic who has wages, are in the latter class. All the others are Entrepreneurs, whether they establish themselves with a capital to carry on their enterprise, or are Entrepreneurs of their own work without any capital, and they may be considered as *living subject to uncertainty*; even Beggars and Robbers are Entrepreneurs of this class (Cantillon, 1755: 54) [emphasis added]"[75]

Mill would later identify the remuneration of *decision-making under risk* as an important purpose for the profit generated by an investment.[76] Importantly, these classical discussions on entrepreneurship were not yet linked to theories of the firm. In fact, these connections would only be forged in the 1920s following Knight's work on risk and uncertainty, which also helped to create the foundation for modern economics. The timing of these developments means that we will not discuss entrepreneurial theories in the next Chapter on neoclassical economics. With that in mind, we now turn to reflect on our findings thus far.

2.3 Reflection on classical political economy and firms

The scientific foundation of classical political economy is grounded in a liberal view of the economy as a system of natural liberty, driven by self-interest and the natural, law-like dynamics of competition and supply and demand. This budding economic worldview was evident in Smith's *Wealth of Nations* and became well-established in economics within 75 years, as we saw in the work of Ricardo and Mill. Since then, it has blossomed to underpin a diverse range of economic disciplines, including neoclassical, Marxist, Austrian, institutional, information, financial, and environmental economics. In general, these and other approaches to economics can be seen as varying interpretations of the idea that the economy is a system of natural liberty governed by natural economic laws.[77] We will not examine all of these different approaches in the next Chapter but will focus on neoclassical economics. This is justified because neoclassical economic theories and models are foundational to modern economics and have had a significant impact on modern economic theories of the firm.

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[73] Mill, p. 336 liberty fund document, search for undertaker rather than entrepreneur.
[74] See also: Jean-Baptiste Say, 1803, *A Treatise on Political Economy or the Production, Distribution and consumption of Wealth*, Book 1, Chapter V.
[75] R. Cantillon, *Essai sur la nature de commerce en géneral*, ed. H. Higgs (London: Macmillan, 1755 (1931)), 54 as cited in N.J. Foss and P.G. Klein, 'Entrepreneurship and the Economic Theory of the Firm: Any Gains from Trade?', *Contracting and Organizations Research Institute* Working Paper No. 2004-09 (2004), 8.
[76] Mill, p. 336 liberty fund document, search for undertaker rather than entrepreneur.
[77] Partial exceptions include the Degrowth and Post-Keynesian economists. [*Also check Feminist economics?*]

Overall, it is striking that the classical political economists had so little to say on firms. Some scholars[78] have suggested that this is because firms currently play a larger role in the economy than in the 18th and 19th centuries. Walker dissents from this view, but summarises it as follows:

> "[A] much smaller proportion of total production came from large firms in the past than comes from the modern integrated corporation in the contemporary economy. Thus there was, to a degree, an empirical justification for economic theory ignoring the firm in the past, but there is much less of one for doing so today."[79]

This explanation is plausible, but not very satisfactory[80] given that large firms have existed since at least 3000BC. Consider, moreover, the historical significance of firms such as the British and Dutch East India Companies, which had already been in existence for almost 200 years by the time of the classical political economists. These Companies had a dramatic impact on global politics, commerce, culture, and technology. They pioneered modern supply chains,[81] free trade zones,[82] fielded their own armies,[83] corrupted their political environment,[84] produced large-scale propaganda,[85] and played a central role in the development of plantations and large-scale international drugs and slave trade.[86] It seems hard to imagine that this kind of 'marginal' presence would justify the general exclusion of large firms from classical political economic discussions.

It could therefore be more plausible to argue, as Walker does,[87] that the theoretical focus of classical political economists on market-level (macroeconomic) rather than firm-level phenomena is the main cause of their limited attention to large firms. In support, we can recall that Smith and Mill both argued that the scope for division of labour (and thus firm presence and size) was determined by the scale of demand in a given market. Markets with greater demand invited a greater degree of specialisation, and therefore a greater number of firms. On this view, firm presence and size are little more than a (quasi-) deterministic function of market demand. In which case an examination of firms is subordinate to more fundamental questions about market demand and macroeconomic phenomena.

Another possible argument is that firms such as the East India Companies were beyond the conceptual scope of the system of natural liberty and natural laws that was being described by the classical political economists. They operated on the basis of a state-granted monopoly and were therefore not 'governed by competition'. This excluded them from Ricardo's competition-based models and Mill's competition-oriented definition of political economy. So rather than firms being excluded due to a focus on market-level phenomena, it could also be that they were excluded due to being a non-competitive phenomenon which operated beyond the scientific foundation of classical political economy. Whichever argument one might prefer, it seems in both cases that conceptions about the scope of economics were primarily responsible for the limited attention granted to firms in the work of the classical political economists.

This close coupling between the scientific foundation of economics and economic theories of the firm is a recurring theme in the following Chapters. It shows, in general and not too surprisingly, that theories of the firm are a phenomenon-specific offshoot of orthodox theories and methods that are dominant in

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[78] [*check the authors that Walker refers to in his book*]
[79] Walker, *Foundations of organisational economics*, 23.
[80] Walker, Foss, and Klein also consider this unlikely (Walker, *Foundations of organisational economics*; Foss and Klein, 'The emergence of the modern theory of the firm', 7).
[81] [*add reference from PhD, or from the book on EIC*]
[82] Ghosh, *The Nutmeg's Curse*, 43.
[83] Robins, *The Corporation That Changed The World*, p. 178.
[84] Robins, *The Corporation That Changed The World*, pp. 61-83.
[85] Ghosh, *The Nutmeg's Curse* [*check pages*].
[86] Ghosh, *The Nutmeg's Curse* [*check pages*].
[87] Walker, *The Theory of the Firm*, 23 Walker, *Foundations of organisational economics*, 19-22.

the economics profession at a given time. Importantly, this coupling will later make it possible for us to transpose the limits of the scientific foundation of economics to economic theories of the firm.

3. Neoclassical economics and theories of the firm

The term neoclassical economics was first used by Veblen more than a century ago, and its use today is highly contested.[1] It has no consensus definition, and some argue that the term should not be used at all since it undermines rather than clarifies discussions on the scientific foundation of economics.[2] It is often used critically, although there have also been serious attempts to use it as a description for a certain kind of economic theories and methods.[3] In light of these discussions, it is helpful to outline the specific approach that we will use to describe neoclassical economics.

In general, we focus on the continuity of neoclassical economics with the economic worldview that we identified in the previous Chapter. We also explore scientific developments such as the late 19th century marginalist revolution, show how it led to a series of discontinuities and adaptations to this worldview, eventually displaced it, and became the economic mainstream. This mainstream can be defined, as we will see, by a shift from a labour to a utility theory of value, a change in scientific standards to emulate the natural sciences, a rethinking of supply and demand as a differential equation, the introduction of differential calculus, and the ensuing development of supply-demand and equilibrium models. Overall, these adaptations lead to a relatively cohesive neoclassical economic worldview which is incompatible with significant elements of its classical predecessor, even as it retains important continuities.

3.1 The scientific foundation of neoclassical economics

Chapter 2 showed how the classical political economists used assumptions about natural liberty, socio-economic bifurcation, individual maximisation, and self-interested, competitive exchange to formulate *natural economic laws* for the market relationship between supply and demand. These ideas were usefully synthesised by Mill, who explained, in proto-mathematical form, how the invisible hand can cause supply and demand to *self-regulate* and tend to an *equilibrium* point:

> "*The proper mathematical analogy [between supply and demand] is that of an equation*. If unequal at any moment, competition equalizes them, and the manner in which this is done is by an adjustment of the value. If the demand increases, the value rises; if the demand diminishes, the value falls; again, if the supply falls off, the value rises; and falls, if the supply is increased. The rise or the fall continues until the demand and supply are again equal to one another: and the value which a commodity will bring in any market is no other than the value which, in that market, gives a demand just sufficient to carry off the existing or expected supply." [emphasis added][4]

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[1] T. Lawson, 'What is this 'school' called neoclassical economics?', *Cambridge Journal of Economics* 37, no. 5 (2013); D. Colander, 'The death of neoclassical economics', *Journal of the history of Economic Thought* 22, no. 2 (2000); J. Morgan, *What is neoclassical economics? Debating the origins, meaning and significance* (Routledge, 2015); D. Colander, R. Holt, and B. Rosser Jr, 'The changing face of mainstream economics', *Review of Political Economy* 16, no. 4 (2004).

[2] Lawson, 'What is this 'school' called neoclassical economics?'; Colander, 'The death of neoclassical economics'.

[3] Attempts have been made, for example, by Dobb, Schumpeter, Zafirovski, Aspromourgos, Fayamanesh, Arnsperger, and Varoufakis. In general, see: Lawson, 'What is this 'school' called neoclassical economics?'; Morgan, *What is neoclassical economics*; C. Arnsperger and Y. Varoufakis, 'What Is Neoclassical Economics? The three axioms responsible for its theoretical oeuvre, practical irrelevance and, thus, discursive power', *Panoeconomicus* 53, no. 1 (2006).

[4] [Mill Epub book; need to align the Mill citations to this version]

This metaphor for supply and demand, as a self-correcting equation, provided a conceptual foundation for mathematical economics and helped open the door for differential (or infinitesimal) calculus and equilibrium modelling to enter economics after the 1870s[5] marginalist revolution.

3.1.1 The marginalist revolution

Marginalist analysis is used to examine changes, for example in utility or cost, following variations in the number of units consumed or produced (it studies changes 'at the margin'). An example can help demonstrate:

> Consider a person who has €10 and wants to buy sandwiches and apples. The first sandwich costs €5 and provides 5 utility, but every sandwich after that is less satisfying and provides 2 less utility (i.e. it is subject to diminishing marginal returns). The first apple costs €2.50 and provides 3 utility, with every additional apple yielding 0.5 less utility. If we assume that this person is trying to maximise their utility and will spend all their money, then how many apples and sandwiches will they buy? If they buy two sandwiches, then their total utility is 8 (5+3). If they buy four apples, then their total utility is 9 (3+2.5+2+1.5). However, if they buy one sandwich and two apples, then their total utility is 10.5 (5+3+2.5). This last arrangement of goods will maximise total utility, thus representing the rational choice under these constraints.

From the example we can imagine that different goods have different prices and yield different levels of utility for different persons. The promise and power of marginal analysis is that it can integrate all these differences into one mathematical system and can help shed light on the kinds of constrained, economic decisions which are made by rational, self-interested individuals on a daily basis.

Marginal economic analysis was invented in the first half of the 19th century[6] but did not become central to economic theory and methods until its eponymous revolution in the second half of that same century. Key to its rise to prominence was the separate work of three economists, Jevons, Menger, and Walras, and the way that they addressed certain shortcomings in the work of the classical political economists.

The classical political economists could not adequately explain, for example, how prices were formed,[7] or why diamonds were extremely valuable whereas water was worth so little (a famous 'diamond-water' paradox discussed by Smith[8]). Their explanations were impaired by classical theories of value (such as Ricardo's discussed earlier) which suggested that prices are determined objectively by the amount of relative labour that goes into producing a good or service. The problem with these theories is that they cannot explain, for example, why a large treasure, casually found by a person going for a walk, would be worth more than a labour-intensive item such as a house.[9]

The classical political economists had made various attempts to address these problems, for example by positing that goods had 'natural prices', and that high prices were nothing more than a short-term

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[5] "The revolution is conventionally dated at 1870, but its roots go back into the 1860s and the new methods of economic analysis did not achieve general recognition until the 1880s and 1890s" (S. Clarke, *Marx, marginalism and modern sociology* (Springer, 1991), 142.

[6] It was used, for example, by Ricardo, Cournot and Gossen (H. Landreth and D.C. Colander, *History of Economic Thought*, 4 ed. (Houghton Mifflin, 2002), 232; Clarke, *Marx, marginalism and modern sociology*, 143.
For a detailed historical exposition see: Landreth and Colander, *History of Economic Thought*, 233-234; A. Roncaglia, *A brief history of economic thought* (Cambridge University Press, 2017), 146-148.

[7] Landreth and Colander, *History of Economic Thought*, 226, 236.

[8] "The things which have the greatest value in use have frequently little or no value in exchange; and, on the contrary, those which have the greatest value in exchange have frequently little or no value in use. Nothing is more useful than water: but it will purchase scarce anything; scarce anything can be had in exchange for it. A diamond, on the contrary, has scarce any value in use; but a very great quantity of other goods may frequently be had in exchange for it" (Smith, *Wealth of Nations*, p. 48).

[9] [*Add source. Probably the earlier work of Landreth and Colander*]

deviation from this natural, long-term benchmark.[10] It nonetheless remained difficult and conceptually unsatisfying to establish what was then the natural price for a particular good, especially given the intractability of determining objectively how much labour was required for its production. As an aside, we should note that the inability to determine prices was not something that disturbed the classical political economists. It did, however, become a significant scientific question alongside the growing influence of marginal analysis.[11]

The political context of the second half of the 19th century also helps to understand the attractiveness of marginal analysis.[12] We saw previously that Ricardo's economic model for the distribution of profit, rent and wages was based on the division of society into three classes (landowners, capitalists, and labourers). Marx, in the middle of the 19th century, used such divisions and the broader framework of classical political economy to demonstrate that the profits of capitalists were generated at the expense of the labouring classes.[13] Hence the formers' affluence and the latter's impoverishment. His arguments, together with those of anarchists, were formulated in a context of mounting social issues and injustice, and contributed towards increasing levels of communist and anarchist political mobilisation towards the late 19th century.[14] This unrest helped motivate the adoption of socialist laws in numerous Western states, and threatened to topple the system of economic liberalism that had been implemented broadly in line with the work of Smith and the other classical political economists.[15]

It is within this political context that economists were pressured on two counts. First, they needed a new theory of value which was not based on labour, and models which did not rely on social divisions, in order to counter the socialist critique that profits were created at the expense of labour. Second, they needed to establish a new way to think about the boundary between the economy and the non-economy in order to counter too many unwelcome socialist interventions in the system of natural liberty. As remarked by Jevons, one of the leading proponents of marginalism: "we need a new branch of political and statistical science which shall carefully investigate the limits of the *laissez-faire* principle, and show where we want greater freedom and where less."[16] Many of the marginalists were not unsympathetic to social reforms, but they had doubts about those which could undermine the liberal economic system (whose functioning was, of course, their professional specialisation).[17]

Marginalist analysis provided an economic solution to these scientific and political issues. First, it was able to resolve the diamond-water paradox because it incorporated a subjective approach (utility) rather than an objective approach (labour) to determining prices.[18] Water was plentiful, so the consumption of one additional unit would lead to limited additional utility, whereas diamonds were scarce, and a single unit could therefore lead to considerable gains in utility. On this view it is an expression of individual human desire, and not objective labour, which determines the price of a good. In turn, as we will discuss

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[10] [*Find source on the idea of natural prices. Probably the earlier work of Landreth and Colander*]
[11] Clarke, *Marx, marginalism and modern sociology*, 143.
[12] Colander and Landreth write that "In the period immediately following Ricardo, economic theory and the capitalist system itself were subjected to a number of criticisms by humanists and socialists. Although these criticisms had little effect on the technical content of economic theory, they did call into question the classical assumption that laissez faire was an ideal government policy, and they initiated changes that further prepared the profession for developments between 1870 and 1900" (Landreth and Colander, *History of Economic Thought*, 232-233). [*Add a reference somewhere in this section to economists and the powerful*]
[13] [*Add reference to Marx's argument about exploitation*]
[14] [*Add references to the historical and political implications of Marx's work at the end of the 19th century. May be in the earlier draft work*]
[15] [*Find source for the general implementation of this system. Can probably refer to the work of Allan, and look at the League of Nations work*] It is of course debated whether such a system was 'really' implemented, for example by the British or American Empires in the 19th century [*check book shelf home for reference*].
[16] As Cited in Clarke, 1991, p. 146.
[17] Clarke, *Marx, marginalism and modern sociology*, 146.
[18] Clarke, *Marx, marginalism and modern sociology*, 147-150.

further below, this made it possible to explain existing prices, including their variations, and to calculate expected prices based on interactions between supply and demand.

Second, marginalist analysis provides an economic argument to counter the Marxist critique about the exploitation of labour since it does not rely on the differentiation of society into social classes. Instead, it assumes that individuals exist in a state of nature, with a given distribution of wealth and goods, and subsequently sees how these scarce goods are exchanged in order to maximise all individual, and thus total, utility.[19] We have only discussed goods, but the idea of a 'good' can easily be expanded to cover 'factors of production' such as land, capital and labour which can all be exchanged by free individuals within this liberalised space.[20] All these resources are individual endowments, and there is no need (or scientific scope) within this framework to examine social class to explain economic dynamics.[21] Rather than value and profits being generated at the expense of labour, they are instead determined by individuals' willingness to pay. It is therefore not the capitalist or the landowner who is responsible for the labourer's low share of profits, but rather a combination of consumer preference and the scarcity of factors of production. Capital and land are typically scarce relative to labour hence they receive a greater share of the profits. On this view, inequality is not the product of social exploitation, but rather a natural consequence of resource scarcity and individual preferences.[22] Liberalised market exchange is not responsible because it leads, as Smith suggested and marginalists accepted, to the greatest level of *overall* total utility.

Marginalist analysis also provided a scientific tool to redefine the boundary between the economy and non-economy in a way to preserve economic liberalism. The basic idea, which we will expand on later, is that proposed social reforms can be evaluated in terms of whether they distort the free expression of individual preferences and the attainment of maximum total utility. Idealised dynamics of free exchange are, in other words, used as a benchmark to test proposed reforms in terms of their positive or negative effects on competition.[23] Reforms which disturb these dynamics can subsequently be challenged for being contrary to economic rationality, as defined by marginalist analysis.

Overall, marginalist analysis helped address several scientific and political problems that confronted economists in the second half of the 19th century. It helped them formulate a new and improved theory of prices and provided a scientific shield against socialist attacks which threatened the stability of the liberal economic system. These developments had two additional consequences which are important for our overarching discussion on the scientific foundation and limits of economics.

The first is that *marginal analysis contributed towards a paradigm shift in scientific standards for the right way to engage in economics*. The main proponents of marginalism were committed to the use of mathematical standards for the analysis of natural economic laws, and they believed that this could be achieved through their techniques. Jevons, for example, wanted to mathematise economic theory[24] and explained that "his equation of exchange does '… not differ in general character from those which are really treated in many branches of physical science.'"[25] Walras similarly proposed that "the pure theory

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[19] "The starting point of the marginalist economic analysis is the possession by individuals of goods in conditions of scarcity. The economic activity of these individuals consists in exchanging these goods for other goods in such a way as to maximise the total utility that they derive from them. Thus the analysis focuses on the elementary form of exchange and asks how prices emerge on the basis of such elementary exchanges" (Clarke, *Marx, marginalism and modern sociology*, 147). See also: Landreth and Colander, *History of Economic Thought*, 232.
[20] Clarke, *Marx, marginalism and modern sociology*, 155.
[21] M. Mazzucato, *The Value of Everything: Making and Taking in the Global Economy* (Hachette UK, 2018), 72.
[22] See, generally: Mazzucato, *The Value of Everything*, 69.
[23] Clarke, *Marx, marginalism and modern sociology*, 146.
[24] Roncaglia, *A brief history of economic thought*, 148, 150.
[25] W.S. Jevons, *The Theory of Political Economy*, ed. R. Black (Baltimore: Penguin, 1970), 144-147 as cited in P. Mirowski, 'Physics and the 'marginalist revolution'', *Cambridge Journal of Economics* 8, no. 4 (1984), 363.

of economics. . . resembles the physico-mathematical sciences in every respect.…"[26] and Menger "saw his task as being one of bringing some rigour into the German tradition of 'vulgar economy'".[27] Consequently, the marginalist revolution resulted in an "appreciable increase in the use of mathematics in economic analysis"[28] and the self-conception of economics as a rigorous, rational science based on the highest mathematical standards.

This shift in scientific standards is important because it helped transform the promotion of economic liberalism from something which was understood to be political, i.e. Smith's utopian blueprint for a system of natural liberty, into something that was objectively desirable because it was scientifically grounded in mathematics, i.e. liberalised exchange is the only rational way to efficiently allocate scarce resources in order to obtain maximum total utility. We have seen, however, that the scientific theories and methods of marginalist analysis are *premised* on liberal conceptions of self-interested exchange in a state of nature. They assume the superiority of a liberalised economy as a starting point, which means that their resulting calculations are co-created by political assumption. This political bias renders marginalist analysis unable to provide objective proof regarding the superiority of economic liberalism or the truth of liberal economic assumptions. The issue harks back to Mill's warning that economists "are apt to express themselves as if they thought that competition actually does, in all cases, whatever it can be shown to be the tendency of competition to do."[29]

Under marginalism, this practice morphed into a political belief, common throughout economics and regarded as a neutral scientific position, that a liberal economy will provide optimal results[30] provided that reforms (i.e. state and other activities) do not impede competitive exchange. This bias is evident, for example, in the standard way that economists translate social, environmental, economic, and other problems into *market failures*, i.e. into deviations from idealised dynamics of liberal exchange. These scientists are largely unaware that this approach is inherently political (since it promotes and is premised on economic liberalism) because they have been trained to conceptualise marginalist analysis, and later neoclassical and modern economic techniques, as progressive steps towards better, more rigorous standards of economic practice. As Clarke explains:

> "In economics textbooks the marginalist revolution is usually described in terms of the technical innovations that made possible a more rigorous economic analysis. Economics is presented as the marginalists themselves presented it, as a natural science of the economic dimension of society, analysing economic phenomena in abstraction from any particular social or institutional arrangements. As such, economics is not about any particular society, and its laws can be considered to be applicable in the consideration of any economic problem, which is defined as any problem concerned with the allocation of goods in conditions of scarcity."[31]

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[26] L. Walras, *Elements of Pure Economics* (London: George Allen and Unwin, 1954 [1874]), 71 as cited in S. Bowles and H. Gintis, 'Walrasian economics in retrospect', *The quarterly journal of economics* 115, no. 4 (2000), 1419.
[27] Clarke, *Marx, marginalism and modern sociology*, 142.
[28] Landreth and Colander, *History of Economic Thought*, 231-232.
[29] Mill (1848) p. 232. See also: J.S. Mill, 'On the definition and method of political economy' in *The philosophy of economics: An anthology*, ed. D.M. Hausman (Cambridge University Press, 1994).
[30] Clarke, *Marx, marginalism and modern sociology*, 150.
[31] Clarke, *Marx, marginalism and modern sociology*, 150-151.

Also notable about marginalism is its reductionist tendency[32] towards apolitical and ahistorical analysis, even alongside its implicit commitment to economic liberalism.[33] Resource distributions are taken as a given and there is no explicit reference to social, political, or environmental factors which could shape individual preferences or the allocation of resources. This process of abstraction makes it possible for marginalists to suggest that any society, without considering their history, social, or political structures, will maximise their allocative efficiency and utility if they liberalise their economy. These arguments can appear politically neutral and objective to marginalists because:

> "[Marginalist theory] purports to explain the rationality of the fundamental social relationships of capitalist society, by deriving those institutions from the rationality of the individual: property, exchange, money, the division of labour and the separation of the labourer from the means of production are all explained not as forms of historically specific social relations, but as technical instruments that facilitate the most perfect realisation of individual rationality. It is only on this basis that marginalist economics abstracts the economic institutions of capitalist society from their social and historical context, reducing them to the rationally developed instruments appropriate to the optimal allocation of scarce resources. It can only make economics a 'natural science' because it 'naturalises' the fundamental economic relationships of capitalist society."[34]

Concretely, the above shows that *the superiority of economic liberalism is written into the methods of marginalist analysis*. This makes it redundant to discuss or examine whether other types of political economic arrangements might lead to a superior or better organised society. If we accept, or do not examine closely, the premises of marginalist economics then economic liberalism is the best and only type of exchange arrangement that is worth pursuing. Any alternatives, insofar as they distort free exchange and reduce total utility, are no more than subjective, culturally biased, or irrational deviations from a perfect method for the allocation of scarce resources. We will later see that these political preconceptions, now part of the theories and methods of neoclassical and modern economics, are the source of powerful limiting beliefs about the extent to which we can reform our societies in order to address sustainability issues.

A second consequence of the marginalist revolution is that it paved the way for the common use of differential calculus in neoclassical and modern economics. This mathematical technique, pioneered by Newton and Leibniz at the end of the 17th century and used widely in physics and engineering, is specialised in the "mathematical analysis of motion and change".[35] It is perfectly suited to the complex analysis of marginal changes in utility and the modelling of markets through interactions between supply and demand. We will not review these techniques in depth even though they are commonly seen as one of the most important features of the marginalist revolution.[36] This omission is justified since we can review and understand the general design of economic models without them. Put differently, the sophistication of economic mathematics is no barrier to our discussion on the scientific foundation and limits of economics. Instead, it is enough for us to understand how the marginalist revolution underpins the basic building blocks of neoclassical and modern economic modelling: *supply-demand models* and

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[32] Roncaglia remarks how "Jevons's decision to formulate economics as a mathematical science compelled him to redefine as measurable magnitudes the motivations of human actions: we abandon the difficult path of a social science that endeavours to take into account the complex nature of human beings and human societies, forking off along the path of 'economics' built on the model of physical sciences – at the price of substituting the real world with a fictitious one-dimensional picture" (Roncaglia, *A brief history of economic thought*, 151).

[33] This ahistorical attitude is also evident in economics' treatment of its own intellectual development. As Walker remarks, "The history of thought is largely ignored in contemporary mainstream economics" (P. Walker, *Foundations of organisational economics: Histories and theories of the firm and production* (Routledge, 2021), 1-2).

[34] Clarke, *Marx, marginalism and modern sociology*, 151. In general see also: S. Lukes, *individualism* (ECPR Press, 2006), 81.

[35] Mishra, Fundamentals of Mathematics: Differential Calculus, preface.

[36] [*add source on the importance of differential calculus for the marginalist revolution*]

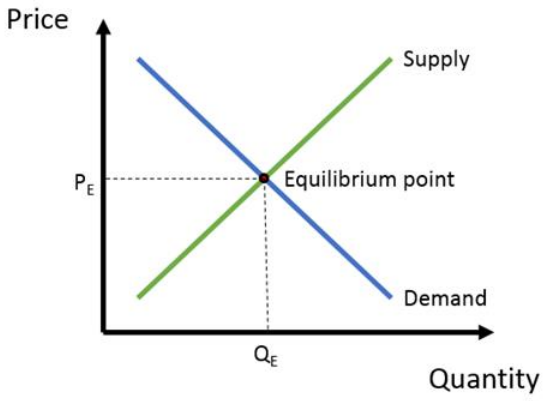
equilibrium analysis. These first emerged in consolidated form in the next leading economic textbook, the 1890 *Principles of Economics* written by Alfred Marshall.[37]

3.1.2 Supply-demand models and equilibrium modelling

Marshall did not invent supply-demand models or equilibrium analysis but was the first to popularise their use.[38] They were subsequently developed into their modern form by Samuelson in the next leading textbook, *Economics*, which was first released in 1948 and dominated economic education after the Second World War. This textbook series was continued by Nordhaus (the Nobel prize winner from the introduction), and a 19th edition was published in 2009. Notably, we are transitioning from historical economics towards that which is being taught today.

Supply-demand models and equilibrium analysis can be helpfully understood visually, using a graphical representation of Mill's metaphor of supply and demand tending, via liberalised competition, towards an equilibrium point. The basic model (Figure 2 belowFigure 2: The basic supply-demand model) shows how the market price and quantity for a given good or service may shift in accordance with changes in supply and demand.

Figure 2: The basic supply-demand model



The idea of this model is that economic laws, represented by the supply-demand lines, cause the price and quantity for a given good to tend towards a competitive equilibrium. The position of this equilibrium point is determined by the shape and intersection of the supply and demand lines, and changes whenever there is a change in supply or demand. Increases in demand result in higher prices, and lower demand in lower prices. Increases in supply result in lower prices, and lower supply in higher prices. Equilibrium prices (P_E) and quantities (Q_E) for different market conditions may be inferred from the equilibrium point on the graph. This is the 'invisible hand' in action.[39] Figure 3 below shows how increases in supply ($S_1 \rightarrow S_2$) and demand ($D_1 \rightarrow D_2$) may lead to new equilibrium points:

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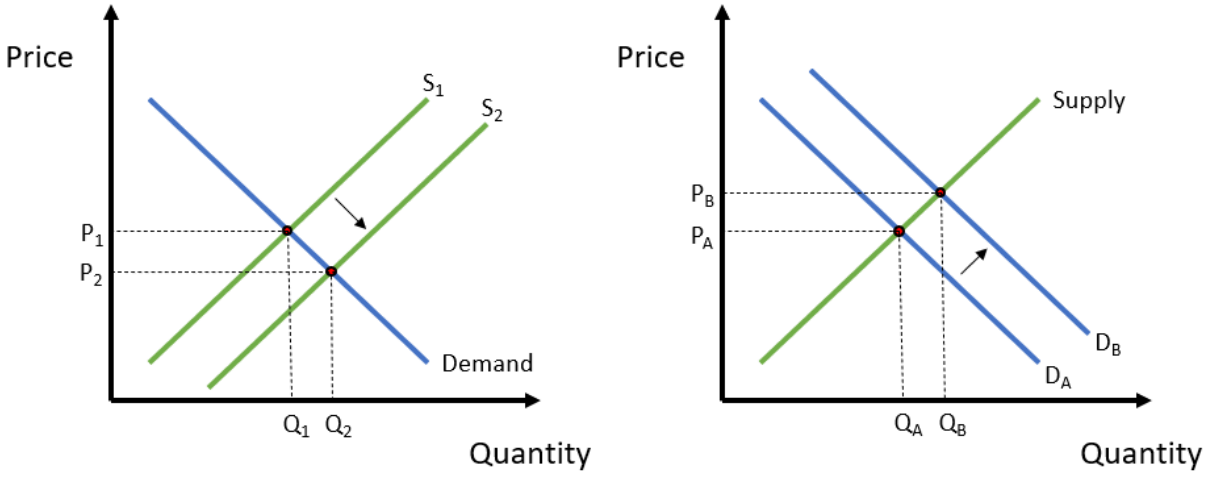
[37] Marshall, *Principles of Economics*.
[38] T.M. Humphrey, 'Marshallian cross diagrams and their uses before Alfred Marshall: the origins of supply and demand geometry' in *Alfred Marshall: Critical assessments*, ed. J.C. Wood (New York: Routledge, 1996).
[39] A. Kirman, 'The future of economic theory' in *Economics beyond the Millennium*, ed. A.P. Kirman and L.-A. Gérard-Varet (Clarendon Press, 1999), 11.

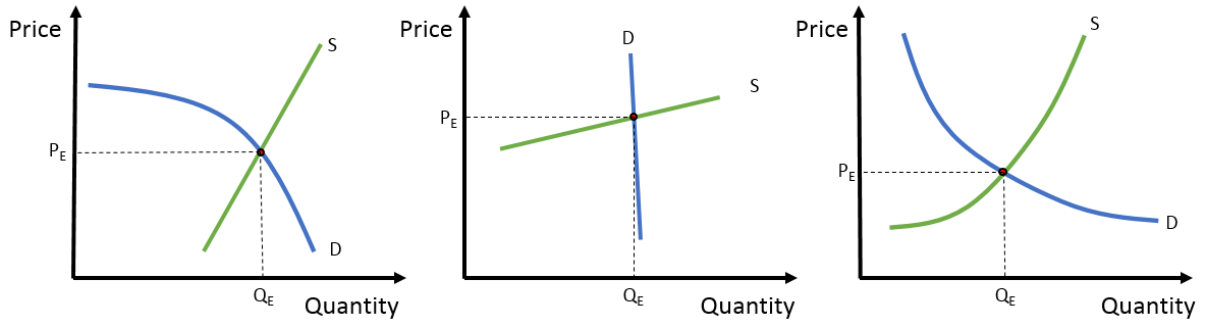
Figure 3: Increases in supply and demand



The left figure shows how an increase in supply will lead to a lower price and more goods being sold (P1 decreases to P2, and Q1 increases to Q2). The right figure shows how an increase in demand will result in a higher price and more goods being sold (P_A increases to P_B, and Q_A increases to Q_B). The lines can, of course, be shifted in the opposite direction to reflect a decrease in supply or demand.

The next step is to consider, as economists have done,[40] that the shape of the supply and demand lines (or curves) is likely to vary between different kinds of goods and services, i.e. that some items are more sensitive to changes in supply and demand than others. It is assumed, moreover, that such lines really exist[41] and that their shape can be inferred from the statistical analysis of data on prices and quantities.[42] Economists rely, in any case, on numerous various of the basic supply-demand model:

Figure 4: Some variations on the basic supply-demand model



[40] [Find textbook source on variations in the shape of supply-demand curves, e.g. related to elasticities]

[41] There is some controversy on this point. Fleetwood notes: "Circumstantial and empirical evidence for the existence of labour supply and demand curves is at best inconclusive and at worst casts doubt on their existence. Whilst we cannot rule out the possibility that evidence will be found in the future, the following conclusion seems (currently) warranted: *labour supply and demand curves do not exist*. Orthodox labour economists must either provide evidence for the existence of labour supply and demand curves or stop building models of labour markets on the foundation stones of supply and demand curves." [T]he "validity of the underlying theories and models has simply been accepted as a maintained hypothesis, i.e. a mere act of faith. The reason for this is not hard to see: to question the predictions of these theories and models is to question the fundamental principles of orthodox economics itself" (S. Fleetwood, 'Do labour supply and demand curves exist?', *Cambridge Journal of Economics* 38, no. 5 (2014), 22, 10).

[42] J.D. Hey, *Intermediate Microeconomics* (London, United States: McGraw-Hill Education, 2003), Chapter 16 P. Cohen et al., 'Using big data to estimate consumer surplus: The case of uber', *National Bureau of Economic Research Working Paper Series* Working Paper 22627 (2016).

The mathematics tends to become more difficult when the shape of the demand and supply lines becomes more complicated. This is when economists use *differential calculus* to model these different curves, analyse their rates of change, and calculate their equilibrium points.

The primary significance of supply-demand curves is that they allow changes in supply and demand, for example due to regulation, taxation, or other natural disasters, to be modelled as external or exogenous 'shocks' to an underlying, self-regulating economic system. These shocks are integrated by estimating a shift in price or quantity, and then calculating how the invisible hand of liberalised competition could lead to new equilibrium position. It is through an assessment of these shocks that economists can evaluate whether social reforms are consistent with natural economic laws, i.e. with liberal economic principles.

The power of this technique of *partial equilibrium analysis*, which varies one factor in a market for a given product while holding others constant, is that it enables economists to estimate how non-economic changes may affect economic dynamics. In general, it is assumed that the integrity and objective validity of supply-demand models can be divined from the accuracy of their predictions.

Supply-demand models are important because they give economists a mathematical technique for the analysis of prices and quantities in a single, liberalised market. They are, moreover, the basic building blocks which economists use to develop sophisticated models for the dynamics of entire economies. It is, after all, a comparatively small step to go from the analysis of single markets, using differential calculus, to *combining the equations of several different markets into a single mathematical model*.

Consider, for example, the way that the markets for bread and wheat are closely related, such that the price of bread depends on the price of wheat, and the price of wheat depends on demand from bakers. It is, in principle, possible to combine the partial equilibrium analysis of these two markets into a single model to represent their complicated dynamics and calculate the effects of shocks. This approach to modelling multiple markets is known as *general equilibrium (GE) modelling.* It is an approach which, with numerous adjustments, updates, and adaptations, has become the workhorse for neoclassical and modern economic modelling ever since the 1970s.

GE models were pioneered by Walras in the 1870s,[43] but only attained dominant status from the 1940s and 50s onwards, as the economic mainstream was converting to mathematical formalism (more on these developments later).[44] This delay in the ascendance of GE models is not coincidental. Economists were limited by existing mathematical techniques and could not find GE solutions for more than a handful of markets; the mathematics quickly became intractable. It was only after Von Neumann's invention of *game theory* and the development of the 1954 *Arrow-Debreu model* that large-scale GE models became mathematically feasible.

The Arrow-Debreu model (discussed in Chapter 4) provided a mathematical capstone for the Walrasian project to develop a series of GE equations for the entire economy. It can be seen as the mathematical pinnacle of neoclassical modelling and laid the mathematical foundation for modern economics. Its development enabled the use of various, large-scale GE models for the whole economy. The flexibility, scope, and analytical power of these GE models has led to their widespread use by governments, central banks, financial institutions, businesses, and academics seeking to estimate the effects of economic and non-economic policies and developments.[45] They have been used, for example, by climate economists

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[43] [*Add reference to Walras and original development of GE models*]

[44] M. Blaug, 'The formalist revolution of the 1950s', *Journal of the History of Economic Thought* 25, no. 2 (2003), 145-146.

[45] The OECD uses Dynamic Stochastic General Equilibrium modelling to develop its forecasts (S. Keen, *The new economics: a manifesto* (John Wiley & Sons, 2021), 82). See also: F. Vitek, *Policy, risk and spillover analysis in the world economy: A panel Dynamic Stochastic General Equilibrium Approach* (International Monetary Fund, 2017). [Need additional sources]

such as Nordhaus to model the economic impacts of different climate change scenarios.[46] In general, the development of GE models has had an "enormous impact on the economic profession",[47] so much so that according to Hausman, "Most… economists agree that economic theory should be grounded in a Walrasian general equilibrium approach founded on optimization by individual economic agents".[48]

GE models are impressive, but we must stress that they are, like the marginalist revolution and supply-demand curves, enabled by the economic worldview of the classical political economists. In this regard we can note that neoclassical economics also builds on socio-economic bifurcation, the idealisation of liberalised exchange, individual maximisation, and the pursuit of self-interest. It is *enabled* by these subjective assumptions and would not work without them.

One consequence, flowing from the marginalist revolution, is that the scientific prowess of neoclassical economics *depends on the assumed presence of an ideally functioning liberalised economy*. It has little, if anything, to say on political economic systems which are not designed around free markets and the principle of competition. A corollary to this point is that neoclassical economics cannot *prove* that such a political economic system is superior to a given alternative.[49]

A second consequence, inherent to socio-economic bifurcation, is that neoclassical models can only integrate the non-economic aspects of human behaviour and society in two ways:

1. By viewing them as an *essentially different*, external (exogenous) 'shock' to the economy;[50] or
2. By viewing them as *essentially economic* and converting (translating, simplifying, reducing) them into economic phenomena as a product of competitive exchange and the maximisation of individual self-interest.[51]

We will see in Chapters 5 and 6 that both consequences, stemming from the scientific foundation of neoclassical economics, have a big impact on the scientific limits of economics and economic theories of the firm. They hinder, for example, the search for alternative political economic systems, create intractable issues for balancing economic and non-economic concerns, and undermine the extent to which we can effectively regulate the activities of firms. For now, however, it is sufficient to emphasise the continuity between classical political economics and neoclassical economics with regards to core assumptions about the nature of society, the economy, and human behaviour.

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[46] L. Barrage and W.D. Nordhaus, *Policies, Projections, and the Social Cost of Carbon: Results from the DICE-2023 Model*, National Bureau of Economic Research (2023).
[47] Landreth and Colander, *History of Economic Thought*, 305.
[48] Hausman, p. 304. See also: University of Oxford, '21st century crises demand new economic understanding, say top economists', *University of Oxford News*, 20 Jan 2021, https://www.ox.ac.uk/news/2021-01-20-21st-century-crises-demand-new-economic-understanding-say-top-economists.
[49] The utopian premise of neoclassical economics is an inheritance of its liberal foundation. As Eulau explains, "Liberalism's failures were undoubtedly due to its utopianism, itself an expression of bondage to the deterministic view of the universe characteristic of Newtonian and Darwinian science. If cherished goals, whatever they were-a free market, the rights of man, regulation of competition, social security, or any other, depending on time and place-were not achieved as programmatically specified, the tendency was to blame the opposition (which one had to tolerate and live with) rather than the program. The program itself was beyond reproach. That it might be unrealistic, ill-timed, or unwise were considerations which, if they did arise, could not be admitted. Even though God may not have been a liberal when he created the world, liberals had to talk like gods when they announced their plans. For men of good will-and liberals could well pride themselves on being such-the liberal program was so obvious, so self- evident, so desirable, and, above all, so inevitable, that only fools or knaves would not see its virtues. Because liberalism was modern and permeated by the spirit of science, its dream would surely come true. Utopia was always just around the corner" (H. Eulau, 'From Utopia to Probability: Liberalism and Recent Science', *The Antioch Review* 26, no. 1 (1966), 7-8.
[50] This is reflected, for example, in the neoclassical treatment of individual preferences as exogenous, i.e. unrelated to, economic dynamics. For a discussion and critique see: Bowles and Gintis, 'Walrasian economics in retrospect'.
[51] [*Is this approach taken by endogenous preference theory?*]

There are, of course, also important departures such as marginalist analysis, new theories of value, and the use of differential calculus. There are, moreover, new assumptions which were required to enable neoclassical theories and methods. Some of these are probably already known to the reader: perfect competition,[52] perfect information, homogeneous goods, identical technologies, no power imbalances, and so on.[53] The limits and implausibility of these standard assumptions have been discussed for many decades, both within and without the economics profession; we will not discuss them.[54]

It is, however, worth discussing one less well-known assumption, namely that *equilibrium solutions for GE models were attained by assuming away the competitive process itself*.[55] This may seem unlikely for a discipline based on the principle of competition, but these models actually contain no negotiation or interaction between individuals; no-one trucks, barters, or exchanges. Instead, it is assumed that a 'market mechanism' will efficiently allocate all goods, and that individuals accept whatever price they are given by the market.[56]

A sub-stream of economic literature refers to this as the 'tâtonnement problem' and describes how the market in these models acts as a 'Walrasian auctioneer' to allocate goods among market participants.[57] The latter are seen as *price takers*, i.e. passive automatons who do not interact. The implications, already identified in the early 20th century, are summarised by Bowles and Gintis:

> "Lange pointed out that *markets and private property play a purely metaphorical role in general equilibrium theory*. There is no competition in the sense of strategic interaction, since agents never meet other agents and agents do not care who other agents are or what they are doing. The only factors determining individual and firm behavior are prices. Nor do markets have any function in the Walrasian model. In Walras' original description, *market clearing was not effected by markets at all*, but rather by an 'auctioneer' who *assumed all economic agents revealed truthfully their personal knowledge and preferences*. Thus prices need not be set by market interactions or any other particular mechanism." [emphasis added][58]

The absence of competition and markets is a far cry from Smith's view that liberalised trade frees an individual to truck, barter, and exchange in the pursuit of their self-interest. GE models are best viewed, in this regard, as one way to *crystallise the results, if not the underlying mechanism, of Smith's utopian vision for a liberal political economy*.

These models do so through an implicit assumption that liberalised markets will do, in reality, whatever they are expected to do, in theory. This amounts, in effect, to a claim that there is no need to model *individual competitive interactions* since liberalised markets will anyways lead to an overall *competitive outcome*. This is not an inherently unreasonable scientific approach, but it is nonetheless remarkable

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[52] "[T]he concept of perfect competition… was invented *de novo* by Cournot in 1838…The concept itself and the analytical habits of thought associated with it, particularly the concentration on an end-state conception of competitive equilibrium in which firms appear solely as passive price-takers, was alien not just to the great economists of the classical past but even to the early marginalists in the last quarter of the nineteenth century (with the sole exception of Edgeworth). The perfectly competitive model, which we now think of as standard neoclassical microeconomics, made its debut in the writings of Frank Knight in the 1920s and then hardened into dogma by the spread of imperfect and monopolistic competition theory in the 1930s" (Blaug, 'The formalist revolution of the 1950s', 153).

[53] See, for example: J. Robinson, 'What is perfect competition?', *The Quarterly Journal of Economics* 49, no. 1 (1934); F.A. Hayek, 'The meaning of competition', *Econ Journal Watch* 13 (1948) Hausman.

[54] [*add references to perfect competition assumption criticisms, for example from PhD*]

[55] [*add reference from further down in the text, or could delete this one since its explained below*]

[56] Models based on this mechanism are used, for example, "in the daily opening of the New York Stock Exchange and the call market for copper and gold in London" (M. Babaioff et al., 'On the efficiency of the walrasian mechanism', Fifteenth ACM conference on Economics and computation (2014).

[57] Dardi.

[58] Bowles and Gintis, 'Walrasian economics in retrospect', 1428.

that much of neoclassical economics, for all its exhortation of competition, is built on GE models which exclude individual interaction and assume it away.[59]

The unreality of neoclassical economic assumptions such as perfect information, price taking, etc. is important to note because modern economics developed largely to address their shortcomings. This lack of realism was especially problematic for economic theories of the firm since, as we will see, it left researchers unable to formulate an adequate theory until the 1970s.[60] As background, we now turn to examine neoclassical economic theories of the firm.

3.2 Neoclassical theories of the firm

Neoclassical theories of the firm were first developed at the end of the 19th century and remained dominant until the 1970s. They are still taught today and are, according to Walker (2021), for most economists "likely to be the only model of the firm they do know."[61] This continued popularity is curious given that economists have, for a long time, been dissatisfied with the neoclassical account of the firm.[62] Some key reasons for this discontent are that neoclassical models are unable to explain the existence or size of firms, or their internal dynamics such as managerial decision-making.[63] These shortcomings are so fundamental that some economists, such as Bitros and Kyriazis, have been led to ask: "why are firms absent from neoclassical analysis?"[64]

A first possible explanation, discarded earlier, is that firms played a relatively marginal role in the economy until the second half of the 19th century.[65] A second is that firms' internal workings are beyond the general scope of economic analysis, which should focus on market-level dynamics.[66] And a third is that the rise of formalism in economics, in addition to a classical preference for macroeconomic issues, has resulted in the absence of an adequate neoclassical theory of the firm.[67]

A fourth explanation, building on the second and third, argues that neoclassical economics has failed to provide an adequate theory of the firm because of the structure of its scientific foundation. The problem is that standard neoclassical assumptions, such as liberalised markets and perfect competition, make it very difficult, perhaps even impossible, to provide an adequate account for the emergence, existence, and dynamics of firms.[68] As Demsetz explains:

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[59] As Blaug notes, "what is missing in general equilibrium theory and hence in neo-Walrasian microeconomics is, quite simply, competitive rivalry between transactors in actual markets" (Blaug, 'The formalist revolution of the 1950s', 151).

[60] N.J. Foss and P.G. Klein, 'The emergence of the modern theory of the firm', *Center for Strategic Management and Globalization* Working Paper No. 1/2006 (2006).

[61] Hart writes that, "In most modern microeconomic textbooks, the firm is still represented in purely technological terms as a production function or production set" (O. Hart, 'Thinking about the firm: A review of Daniel Spulber's The Theory of the Firm', *Journal of Economic Literature* 49, no. 1 (2011), 102). See also: P.S. Walker, *The Theory of the Firm: An Overview of the Economic Mainstream (Revised edition)* (Preprint online version, 2021), 50.

[62] N.J. Foss, 'Capabilities and the Theory of the Firm', *Revue d'économie industrielle* 77, 3e trimestre (1996), 16.

[63] See, for example: Hart, 'Thinking about the firm', 103; Foss, 'Capabilities and the Theory of the Firm'; Walker, *The Theory of the Firm*.

[64] M.S. Zouboulakis, 'Elements of a theory of the firm in Adam Smith and John Stuart Mill' in *Essays in Contemporary Economics, A Festschrift in the Memory of A. D. Karayiannis*, ed. G.C. Bitros and N.C. Kyriazis (Heidelberg: Springer Cham, 2015), 1.

[65] Refer to section 2.3 for a discussion on the implausibility of this argument.

[66] Walker, *The Theory of the Firm*, 23.

[67] [*check literature which suggests that formalism led to the absence of an adequate neoclassical theory of the firm; probably Walker or Foss*]

[68] As Zingales explains, "In an Arrow–Debreu economy it is assumed that agents can costlessly write all state-contingent contracts. As a result, all decisions are made *ex ante* and all quasi-rents are allocated *ex ante*. Thus, there is no room for governance" (L. Zingales, 'Corporate governance' in *The economic nature of the firm: A*

> "[T]he study of the price system, characterized as it is by Marshall's representative firm and Walras's auctioneer, undermines serious consideration of the firm as a problem solving institution… What parades as perfect competition is a model that has much to say about the price system, but little to say about competition or the organization of firms."[69]

> "The worldly roles of management, being to explore uncertain possibilities and to control resources consciously, where owners of resources have a penchant for pursuing their own interests, are not easily analyzed in a model in which knowledge is full and free… The real tasks of management, to devise or discover markets, products, and production techniques, and actively to manage the actions of employees, have no place in the perfect decentralization model because it assumes that all products, markets, production techniques, and prices are fully known at zero cost."[70]

These implications were already recognised by Walras in the 1870s:

> "Assuming equilibrium, we may even go so far as to abstract from entrepreneurs and simply consider the productive services as being, in a certain sense, exchanged directly for one another"[71]

The central issue is that models based on perfect competition and the maximising behaviour of self-interested, rational individuals leave no conceptual space for the existence of firms. With these premises it makes no difference if people work inside or outside of organisations since either way the same perfect results are obtained.[72] This superfluity stands, of course, in stark contrast to the empirical fact that firms, large and small, are abundant.

In any case, the result is that neoclassical economists could *only* include firms in their modelling as an abstract, market-level phenomenon rather than as separate, individual organisations. This will become evident in the following section, which shows that the inside of individual firms was simplified into a 'black box'[73] so that their aggregate market effects could be modelled as a production function using the neoclassical techniques outlined previously. This will reveal, contrary to Bitros and Kyriazis' claim above, that it is only *particular* firms, and not the overall presence of firms, which is missing from neoclassical economics.

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reader, ed. R.S. Kroszner and L. Putterman (New York: Cambridge University Press, 2009), 71). See also: Foss, 'Capabilities and the Theory of the Firm', 16-17.

[69] H. Demsetz, 'The theory of the firm revisited', *The journal of law, economics, and organization* 4, no. 1 (1988), 141.

[70] Demsetz, 'The theory of the firm revisited', 143. He also writes that "The absence of substantive managed coordination is the sine qua non of the perfect decentralization model. This is its intellectual achievement and its source of strength in providing an understanding of the price system in a situation of extreme decentralization. It is its source of weakness in analyzing managed coordination" (144)

[71] Walras, *Elements of Pure Economics*, 225 as cited in Bowles and Gintis, 'Walrasian economics in retrospect', 1419.

[72] Curiously, if individuals are conceptualised as price takers then it also makes no difference if there are markets or not. The surprising result is that these theories can be, and in the past were, easily repurposed for communist economic analysis. As Bowles and Gintis remark, "The basic problem with the Walrasian model in this respect is that it is essentially about allocations and only tangentially about markets—as one of us (Bowles) learned when he noticed that the graduate microeconomics course that he taught at Harvard was easily repackaged as "The Theory of Economic Planning" at the University of Havana in 1969" (Bowles and Gintis, 'Walrasian economics in retrospect', 16).

[73] This means that their internal organisation, ownership structure, size, etc. is irrelevant as a matter of economic theory and modelling. "[I]n basic neoclassical theory, ownership and institutions neither affect the objective of the firm, nor its knowledge base, technology nor cost efficiency (as summarized by the set of production possibilities)" (Foss and Klein, 'The emergence of the modern theory of the firm', 12).

3.2.1 The representative and equilibrium firms

Marshall was the first marginal economist to examine firms in detail, and to discuss their presence in the market using the new techniques.[74] In his *Principles of Economics* he outlined that it makes little sense to study individual firms in a real market setting since their rise and fall is governed not only by natural economic laws, but also by the vicissitudes of life.[75] He nevertheless argued that it could be useful for economists to imagine the way that a *representative firm* might operate in a stable,[76] perfectly competitive market where prices are governed by the marginal cost of production:[77]

> "[T]he history of the individual firm cannot be made into the history of an industry any more than the history of an individual man can be made into the history of mankind. And yet the history of mankind is the outcome of the history of individuals; and the aggregate production for a general market is the outcome of the motives which induce individual producers to expand or contract their production. It is just here that our device of a representative firm comes to our aid. We imagine to ourselves at any time a firm that has its fair share of those internal and external economies, which appertain to the aggregate scale of production in the industry to which it belongs. We recognize that the size of such a firm, while partly dependent on changes in technique and in the costs of transport, is governed, other things being equal, by the general expansion of the industry. We regard the manager of it as reckoning up whether it would be worth his while to add a certain new line to his undertakings; whether he should introduce a certain new machine and so on. We regard him as treating the output which would result from that change more or less as a unit, and weighing in his mind the cost against the gain."[78]

Marshall suggested, in effect, that managerial and firm decisions can be fruitfully aggregated and represented as a function of the productive conditions in a given market. While this does not, as he notes, do justice to the situation of individual firms,[79] it does make it possible for economists to represent and integrate the (marginal) costs of production into their partial equilibrium models. And so it can help them estimate how an exogenous shock, such as an increase in raw material costs, may impact prices in a simplified market model. As Foss and Klein summarise:

> "Marshall [introduced] the representative firm, that is to say, the firm that has long-run costs equal to the industry, constant size, and earns a normal profit. This construction allowed him to bridge the firm and the industry level, to combine the dynamic and the static, to bring together change and equilibrium".[80]

The idea of the representative firm was not fully explored in Marshall's work, and it suffered from theoretical flaws and empirical refutation.[81] It was missing, for example, a connection between industry and firm size, and was unable to explain why firms do not always produce their maximum output. The latter was especially problematic in light of a theoretical implication in Marshall's work that firms with increasing returns to scale would increase production indefinitely.

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[74] Foss and Klein, 'The emergence of the modern theory of the firm', 8; Walker, *Foundations of organisational economics*, 22-24.
[75] Marshall 1890, p. 304-305. Marshall also examined the life-cycle of firms in his 1920 *Industry and Trade* although we will not include this in our current discussion.
[76] No exogenous shocks.
[77] It is assumed that there is a tendency towards zero profits under conditions of perfect competition, since perfectly informed market participants will, over time, simply turn to other buyers and sellers with lower, and eventually no, profit margins.
[78] Marshall, p. 380-381.
[79] See also: S. Moss, 'The History of the Theory of the Firm from Marshall to Robinson and Chamberlin: the Source of Positivism in Economics', *Economica* 51, no. 203 (1984), 309.
[80] Foss and Klein, 'The emergence of the modern theory of the firm', 11.
[81] See: L. Robbins, 'The Representative Firm', *The Economic Journal* 38, no. 151 (1928) Moss, 'The History of the Theory of the Firm from Marshall to Robinson and Chamberlin', 311-312.

Marshall did not argue this of course, but it was clear that the representative firm needed further refinement in order to become theoretically robust and workable. It was Pigou who took up this task and, in the process, developed the *equilibrium firm*. It is worth citing his work in detail:

> "[m]ost industries are made up of a number of firms, of which at any moment some are expanding, while others are declining. Marshall, it will be remembered, likens them to trees in a forest. Thus, even when the conditions of demand are constant and the output of an industry as a whole is correspondingly constant, the output of many individual firms will not be constant. *The industry as a whole will be in a state of equilibrium*; the tendencies to expand and contract on the part of the *individual firms will cancel out*; but it is certain that many individual firms will not themselves be in equilibrium and possibly that none will be. When conditions of demand have changed and the necessary adjustments have been made, the industry as a whole will, we may suppose, once more be in equilibrium, with a different output and, perhaps, a different normal supply price; but, again, many, perhaps all, the firms contained in it, though their tendencies to expand and contract must cancel one another, will, as individuals, be out of equilibrium. This is evidently a state of things the direct study of which would be highly complicated. Fortunately, however, *there is a way round*. Since, when the output of the industry as a whole is adjusted to any given state of demand, the tendencies to expansion and contraction on the part of individual firms cancel out, they may properly be regarded as irrelevant so far as the supply schedule of the industry as a whole is concerned. *When the conditions of demand change, the output and the supply price of the industry as a whole must change in exactly the same way as they would do if, both in the original and in the new state of demand, all the firms contained in it were individually in equilibrium.* This fact gives warrant for the conception of what I shall call the equilibrium firm. It implies that there can exist some one firm, which, whenever the industry as a whole is in equilibrium, in the sense that it is producing a regular output y in response to a normal supply price p, will itself also individually be in equilibrium with a regular output x_r. The conditions of the industry are compatible with the existence of such a firm; and the implications about these conditions, which, whether it in fact exists or not, would hold good if it did exist, must be valid. For the purpose of studying these conditions, therefore, it is legitimate to speak of it as actually existing. For any given output, then, of the industry as a whole, the supply price of the industry as a whole must be equal to the price, which, with the then output of the industry as a whole, leaves the equilibrium firm in equilibrium. The industry, therefore, conforms to the law of increasing, constant or decreasing supply prices according as the price which leaves the equilibrium firm in equilibrium increases, remains constant, or decreases with increases in the output of the industry as a whole" [emphasis added][82]

Pigou argued, in effect, that the market for a given industry would be in equilibrium, even if its individual firms are not.[83] It is not surprising, in this regard, that this was described by Moss as a "step towards a theory of the industry [i.e. a given market] in which the descriptive accuracy of its assumptions about firms is irrelevant."[84] The metaphorical equilibrium firm is subsequently modelled as a *production function*, where production (output) is determined by different combinations of capital and labour (inputs). This function may be expressed in terms of differential calculus and can be used to estimate what a marginal increase, e.g. in a unit of labour or capital, will yield in terms of output.

The power of Pigou's approach is that it allowed economists to enrich supply-demand models with the functional input of capital and labour for a given market. In this regard it provided a more detailed and interconnected picture of market and resource dynamics than the representative firm model. Subsequent scholars made two further changes to his model in order to 'complete' the neoclassical theory of the firm.[85]

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[82] A.C. Pigou, 'An Analysis of Supply', *The Economic Journal* 38, no. 151 (1928), 239-240.

[83] We are reminded again of Mill's critical remark that economists are inclined to assume that liberalised competition does in reality whatever it has been supposed to do in theory.

[84] Moss, 'The History of the Theory of the Firm from Marshall to Robinson and Chamberlin', 312.

[85] Moss, 'The History of the Theory of the Firm from Marshall to Robinson and Chamberlin', 313.

The first change responded to a methodological issue, namely that Pigou's equilibrium firm was deduced from market-level phenomena rather than from individual dynamics, i.e. it was top-down rather than bottom up. The nature of the problem becomes clear if we recast it in terms of Smith's *Wealth of Nations*: it is individual maximisation which promotes aggregate wealth, and not aggregate wealth which determines how individuals should maximise. The second change was to explore in greater detail the connection between supply and demand. Pigou's work had solely focused on the *supply side* of market-level firm behaviour (production through capital and labour) and was missing an account of market-level *demand*.

The two changes were provided by the separate works of Chamberlin and Robinson. Their contributions are summarised by Moss as follows:

> "By *assuming that every firm in the industry has an identical cost curve*, Robinson and Chamberlin stood Pigou's construction of the equilibrium firm on its head. Where Pigou argued that an equilibrium firm could be derived from the laws of returns obeyed by any particular industry, Robinson and Chamberlin defined the industry on the basis of a population of equilibrium Firms" [emphasis added][86]

> "[T]he analytical core of both Robinson's and Chamberlin's books completed the general axiomatic foundation of the theory of product market supply and factor market demand. Together with the completion of the axiomatic foundation of the theory of product market demand and factor market supply by Hicks and Allen, the core of Robinson's and Chamberlin's work provided the *axiomatic basis of the theory of value and distribution*."[87]

With these final puzzle pieces, the general significance of the neoclassical theory of the firm comes into focus. It is a central part of an interconnected constellation of theories and models which enables economists to model supply and demand relations throughout the economy at an unprecedented level of detail. While the classical political economists were limited to market-level phenomena, neoclassical techniques made it possible for their successors to zoom in and integrate household and firm activities. These developments, shrouded in mathematics and empirical data, granted economists an unparalleled scope for scientific analysis in comparison with other social sciences.[88] In this regard it is not surprising that the neoclassical theory of the firm became, and has remained, influential despite its shortcomings.[89]

3.3 Reflection on neoclassical economics and firms

Our historical overview has shown that the development of neoclassical economics was not a neutral or objective improvement relative to the economic worldview of the classical political economists. Nor was it simply cumulative or additive, in the way that one might stack a brick on top of another. Instead, we have seen that neoclassical developments were consistent with classical ideas in certain ways but discordant with them in others.

Some important continuities are evident, especially with regards to the foundational assumptions of classical political economy. The invisible hand is preserved in the equilibrating dynamics of supply and demand, liberalised markets are reflected in perfectly competitive conditions, individual maximisation (by firms and households) of self-interest is retained as a foundation for producing the greatest amount

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[86] Moss, 'The History of the Theory of the Firm from Marshall to Robinson and Chamberlin', 314.
[87] Moss, 'The History of the Theory of the Firm from Marshall to Robinson and Chamberlin', 314.
[88] E.P. Lazear, 'Economic imperialism', *the Quarterly Journal of economics* 115, no. 1 (2000), 99-100.
[89] "While [the production function] is a caricature of the modern firm, there is no doubt that it is a very useful one. The approach can be used to understand how firms' production choices respond to changes in prices and taxes and to predict the aggregate behavior of an industry. Moreover, once the assumption of perfect competition is dropped, the approach can be used to study the strategic interaction between firms. In fact, a large part of the modern industrial organization literature relies on the production function view of the firm" (Hart, 'Thinking about the firm', 102).

of aggregate wealth, and socio-economic bifurcation persists in the way that supply-demand dynamics are disassociated from the influence of non-economic factors.

In terms of discontinuities, we can highlight that the classical political economists did not couch their theoretical propositions about firm size or the division of labour in terms of supply-demand dynamics. It is unlikely, moreover, that they would have endorsed the view of market participants as price takers, mere passive recipients of a market mechanism's clockwork largesse. Such conceptual transformations, whereby similar words and phenomena are imbued with different, arguably subversive, interpretations, are strongly evident in the neoclassical shift from the representative firm to the 'final' equilibrium firm.

Marshall, for example, explicitly warned that his representative firm was a crude but helpful abstraction that did not really represent market developments. For him, it was clear that real firms and markets are subject to a host of real-life influences and not solely the equilibrating tendencies of supply and demand. Pigou subsequently neglected most of these caveats and found it reasonable to assume a market-level equilibrium, although he did warn that individual firms could not be expected to be in equilibrium. This was, in turn, ignored by his successors, who 'completed' his model by assuming that individual firms are subject to identical cost curves due to market competition, and therefore that all of these firms *are* in equilibrium (n.b. under perfect competition). It is striking, in this regard, to see how the neoclassical theory of the firm was developed by researchers *misinterpreting, naturalising, and then extending the tentative assumptions of their predecessors*.

This facilitated the monumental development of models and theories which could, in theory at least, be used to analyse the supply-demand dynamics for an entire economy. It also created, however, a black box theory of the firm which could not explain the size of firms, their internal dynamics, or even why they exist.[90] Both developments have, given their implausible assumptions and shortcomings, been criticised both in- and outside of the economics profession for many decades.[91] And it has been the response of economists to these criticisms, in combination with the rise of new mathematical techniques from game theory, that is key to understanding the ascent of modern economics.

[90] Foss and Klein, 'The emergence of the modern theory of the firm'; Walker, *The Theory of the Firm*, 34-36. [*add extra references*]
[91] [*Criticisms of black box approaches to the firm; draw on earlier criticisms*]

4. Modern economics and theories of the firm

The equilibrium theory of the firm was not the only black box that was created by the simplifying and universalising assumptions of neoclassical economics. In fact, problems were also evident in monetary theory, the economic analysis of environmental issues, consumer behaviour, and elsewhere.[1] In general, the response to these shortcomings has been for economists to search for better alternatives by deviating from the neoclassical baseline in different ways and to different degrees. One consequence of this search is that the taxonomy of modern economics has come to resemble a Cambrian explosion of different economic branches.

There is no general, no unambiguous, or complete taxonomy for all the branches of modern economics. In fact, the idea of 'modern' economics is little more than a catch-all phrase for a range of economic developments which have taken place at different points over the past century. Furthermore, it is often unclear, especially in light of variations between economists, whether and to extent a 'new' economic approach is a departure from, rather than an extension of, or a minor adjustment to, neoclassical theory or another approach. The situation is not helped, of course, by the contested definitions of neoclassical and modern economics.[2] To navigate this uncertainty, the history of ideas in this Chapter focuses on developments in the scientific foundation of economics that have been highly influential in modern GE modelling and are foundational to the development of currently leading economic theories of the firm.

4.1 The scientific foundation of modern economics

This Section will consecutively examine modern GE modelling, transaction cost theories, and theories on uncertainty. The first is necessary for us to understand contemporary mathematical techniques which are being used by economists, and to describe the relation between modern and neoclassical methods for GE modelling. The second and third topics are essential developments in economic theory which have had a profound influence on today's dominant economic theories of the firm.[3]

4.1.1 Modern general equilibrium modelling

Walrasian GE models demonstrated, in theory, how the supply-demand curves of different markets could be combined into a giant series of interconnected equations. Economists found, however, that the mathematics for all these combined equations quickly became intractable, and that they were unable to identify an equilibrium solution for more than a handful of markets (they could not identify a single, stable point to which supply and demand would tend).[4] In fact, it was not until the 1920s invention of *game theory* and the 1954 Nobel-prize winning Arrow-Debreu model that economists were able to develop a generalisable and scalable solution for GE models.[5]

Starting with game theory, we can note that it was developed by the gifted mathematician Von Neumann in the early 20th century and that its use for systems analysis[6] has made it, over time, "the standard

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[1] [*add reference to other problem areas in economics created by black box approach in neoclassical economics; problems were also evident in monetary theory, the economic analysis of environmental issues, consumer behaviour, and elsewhere*]

[2] See introduction to Chapter 3.

[3] H. Demsetz, 'The theory of the firm revisited', *The journal of law, economics, and organization* 4, no. 1 (1988), 41; P. Walker, *Foundations of organisational economics: Histories and theories of the firm and production* (Routledge, 2021), 52; N.J. Foss and P.G. Klein, 'The emergence of the modern theory of the firm', *Center for Strategic Management and Globalization* Working Paper No. 1/2006 (2006), 13-14.

[4] [*Classical mathematical techniques could not find a mathematical solution for GE theories. Probably the literature further down*]

[5] [*add from references further down*]

[6] B.B. Allan, *Scientific cosmology and international orders* (Cambridge University Press, 2018), 215-216.

organizing principle for examining interactions between people".[7] It is used not only by economists, but also by scholars in political science, anthropology, sociology, and a range of other social scientific disciplines.[8]

Research on game theory was, for many decades, a niche field between the time of its development and the 1970s. It is now, however, a "standard tool in economics"[9] and *eleven* Nobel prizes in economics have been to awarded game theorists. Its usefulness lies primarily in the way that it can model systemic interactions between individuals according to a wide range of different behavioural premises. This has, in economics, mostly been limited to competitive, rational, and self-interested behaviour – expressed in different ways – but it can and has been used for other kinds of behaviour as well.[10]

Game theory is best understood as a more *advanced technique for differential calculus*,[11] one which makes it possible to develop large-scale models and calculate outcomes for the behaviour of a large, if not infinite, number of individual interactions.[12] It is this feature which Arrow and Debreu used in 1954 to develop their eponymous model, and which enabled them to solve the mathematical intractability of Walrasian GE models.[13] Their work finally made it possible for economists to create equilibrium models for multiple, interconnected markets, and to model economic dynamics across a whole economy.

This opened the floodgates for the widespread use of GE modelling from the 1970s onwards, and has received widespread praise within the economics profession:[14]

> "The famous 1954 paper by Arrow and Debreu is regarded to this day as a truly rigorous proof of the existence of general equilibrium in a market economy, the fulfillment of Walras's dream eighty years earlier"[15]

> "Shortly after World War II, mathematicians and economists such as von Neumann, Arrow, Debreu, and McKenzie *proved something like what Smith conjectured*. They demonstrated that if agents are rational, self-interested, and well informed, and if they interact only through voluntary exchange in a perfectly competitive market, then a general equilibrium exists, which is Pareto efficient. In addition, they proved that every Pareto efficient outcome is a general equilibrium of voluntary exchanges among rational and self-interested agents, given the proper initial distribution of resources among the agents."[16] [emphasis added]

It should be said, however, that Arrow and Debreu did not develop their model as an accurate reflection of the economy:

> "Arrow and Debreu are *perfectly frank in disavowing any claims that general equilibrium theory provides a descriptively accurate picture of the economy*. In order to prove the existence of multi-

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[7] L. Samuelson, 'Game theory in economics and beyond', *Journal of Economic Perspectives* 30, no. 4 (2016), 108.
[8] [*add reference on use of game theory in range of other disciplines*]
[9] Samuelson, 'Game theory in economics and beyond', 107.
[10] [*add reference which describes flexibility of game theory to go beyond neoclassical assumptions*]
[11] "As soon as it appeared, [the Arrow-Debreu model] was hailed for its bold use of new mathematical techniques, replacing differential calculus by convex analysis, characterizing equilibria by separation theorems instead of tangencies, and employing the then relatively new tools of game theory and Nash equilibria" (E.R. Weintraub and P. Mirowski, 'The pure and the applied: Bourbakism comes to mathematical economics', *Science in Context* 7, no. 2 (1994), 104-107 as cited in M. Blaug, 'The formalist revolution of the 1950s', *Journal of the History of Economic Thought* 25, no. 2 (2003), 147).
[12] For a general background see: Allan, *Scientific cosmology and international orders*, 212-227.
[13] [*add reference to Arrow-Debreu's use of game theory being able to 'complete' GE models*]
[14] It is used, for example, as the foundation for contemporary, macroeconomic GE modelling (Raworth, 2017, p. 134-135. Blaug, 'The formalist revolution of the 1950s', 151-152).
[15] Blaug, 'The formalist revolution of the 1950s', 146.
[16] D.M. Hausman, *The Philosophy of Economics: An Anthology*, 3 ed. (Cambridge: Cambridge University Press, 2008), 24.

> market equilibrium, they are compelled to assume the existence of forward markets for all goods and services traded, a complete set of contingent commodity markets, the absence of idle money balances held by individual agents, the absence of market-makers holding inventories, the absence of bank credit, etc., and even so, they find that they can throw no light on the uniqueness or stability of general equilibrium." [emphasis added][17]

This apparent contradiction, between the descriptive accuracy of the Arrow-Debreu model and its reception as proof of general equilibrium, can be understood as the invention of an *idealised model* which describes the equilibrating dynamics of natural economic laws (i.e. the invisible hand) across many different markets. It captures the *pure principle of competition*, even if it does not and cannot account for all the shocks and disturbances which operate in the real economy. It functions, in this regard, like the frictionless surface in physics, which also does not mirror reality.

Several other features of game theory and the Arrow-Debreu model are relevant for our overarching discussion of the scientific foundation of economics and economic theories of the firm. The first feature is that game theory is able to deviate from neoclassical assumptions regarding material self-interest, rationality, and perfect information.[18] As noted, it is a more flexible form of modelling which can posit, for example, that individuals have bounded rationality, or have limited information in some areas and perfect information in others. These variations are made possible by the way that game theory incorporates the context of individual behaviour.

Traditional, Walrasian GE models posit a perfectly competitive market environment as a context for individual exchange. By contrast, game theory models integrate this context as an *axiomatic function of individual behaviour*. They do so by reframing the market environment as a series of internalised 'rules' or 'beliefs' that are shared by both parties.[19] This way, *context is replaced by characteristics which are imputed to separate individuals*.

Game theory models assume, in effect, that there is a "strict separation of action from structure", i.e. that the behaviour of individuals is not shaped by their environment but only their characteristics and internal beliefs.[20] This (artificial)[21] separation is necessary to make game theoretic models workable. It is, however, also an implicit assertion that the economic sphere is driven by interactions between pre-social individuals, and that their nature as individuals is not also socially constructed or patterned. From this we can identify that game theory also relies on socio-economic bifurcation in terms of a. separation between individual (economic) action and social structure.

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[17] Blaug, 'The formalist revolution of the 1950s', 147.

[18] P. Chen, 'Equilibrium illusion, economic complexity and evolutionary foundation in economic analysis', *Evolutionary and Institutional Economics Review* 5, no. 1 (2008), 87.

[19] For discussion see: S.H. Heap and Y. Varoufakis, *Game theory: a critical text* (Psychology Press, 2004).

[20] Heap and Varoufakis, *Game theory*, 32. The authors explain that separation between structure and action is only one of many metaphors which can be used to model rational action. "[For game theory, the] structure is provided by the rules of the game and action is analysed under the constraints provided by the structure. This may be a common way of conceiving the relation between the two, but it is not the only one. It is as if structures provide architectural constraints on action. They are like brick walls which you bump into every now and then as you walk about the social landscape. The alternative metaphor [i.e. which contradicts game theory] comes from language. For example, Giddens (1979) suggests that action involves some shared rules, just as speaking requires shared language rules. These rules constrain what can be done (or said), but it makes no sense to think of them as separate from action since they are also enabling. Action cannot be taken without background rules, just as sentences cannot be uttered without the rules of language. Equally, rules cannot be understood independently of the actions which exemplify them" (Heap and Varoufakis, *Game theory*, 32-33).

[21] For a discussion of separation between structure and meaning in Debreu's work, see: T. Düppe, 'Debreu's apologies for mathematical economics after 1983', *Erasmus Journal for Philosophy and Economics* 3, no. 1 (2010).

A second feature, which demonstrates the continuity between classical political economy and modern economics, is the *reinvention of the invisible hand as a Nash equilibrium*.[22] This is "game theory's main concept",[23] and it shows, in game theoretic terms, how self-interested competition among individuals can lead to equilibrium outcomes.[24] It was combined with traditional assumptions, such as perfect information and material self-interest, and new assumptions,[25] such as all goods being substitutable,[26] there being no money,[27] and that everyone would spend an additional dollar in the same way,[28] in order to develop the Arrow-Debreu model.[29]

A third feature relates to way that equilibrium solutions are identified using the Arrow-Debreu model. These are co-determined by economic definition and are not solely the result of a pure, mathematical outcome.[30] This is because the calculation and identification of solutions relies on a condition known as *Pareto optimality*, which holds that equilibrium occurs when it is not possible to increase utility and make an individual better off without making another worse off.[31] It is the conditions of this definition, and not only supply and demand dynamics, which lead to the identification of equilibrium solutions.

Pareto optimality is used as a criterion to identify solutions in most contemporary GE models,[32] and it is common practice to describe these solutions as an *efficient* market outcome. This means, in effect, that economic efficiency is conventionally defined as an outcome which attains the *maximum intensity of beneficial exchange without redistribution*. Stated differently, this condition means that all exchanges occur which provide any degree of individual benefit. This corresponds with Smith's utopian vision of individual maximisation leading to the largest amount of aggregate wealth. It does not, however, reflect other, more conventional ideas on efficiency, such as the minimal use of natural resources for maximum

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[22] J. Móczár, 'Arrow-Debreu Model versus kornai-critique' in *Arrow-debreu model versus Kornai-critique: Móczár, József* (2017), 153.
[23] Heap and Varoufakis, *Game theory*, 2.
[24] Blaug, 'The formalist revolution of the 1950s', 148-150.
[25] Chen identifies several other assumptions, and writes that: "We should point out that the Arrow-Debreu model has its main features in a primitive economy and commanding economy, which are irrelevant to an industrial market economy. There are four basic restraints in most general equilibrium models with unique stable equilibrium. First, increasing return to scale and scope is not permitted so that market-share competition is beyond the scope of "economic rationality." Second, information diffusion and reaction does not occur among economic agents, therefore no space exists for social interactions and strategic behavior. Third, the dimension of commodity space is fixed, where no product innovations are allowed. Fourth, resource limits and market extent are ignored, which is the root of methodological individualism" (Chen, 'Equilibrium illusion, economic complexity and evolutionary foundation in economic analysis', 87).
[26] Blaug, 'The formalist revolution of the 1950s', 151.
[27] "Money does not appear in the Arrow-Debreu model. Of course, all of the reasons for its real life existence: transactions demand, precautionary demand, store of value, unit of account, etc. are already taken care of in the Arrow-Debreu model" (J. Geanakoplos, 'The Arrow-Debreu model of general equilibrium', *Cowles Foundation for Research in Economics at Yale University* Cowles Foundation Paper No. 1090 (2004), 122). See also: Düppe, 'Debreu's apologies for mathematical economics after 1983', 9. Ingham, 2004, *The Nature of Money*, p. 18.
[28] As Keen remarks, "There is nothing 'intuitively reasonable' about that condition: it is saying that Elon Musk will spend an extra dollar buying the same thing that a homeless person would buy with that dollar. This is obviously untrue, and *intuitively unreasonable*: why does Gorman claim the opposite? It is because, if the distribution of income does affect consumption – and it obviously does – then… the whole theory of 'supply and demand' dies" (S. Keen, *The new economics: a manifesto* (John Wiley & Sons, 2021), 96).
[29] Bryant, 2009, p. 19. "Many economists today would argue that economics did not really possess a rigorous and scientifically satisfactory conceptualization of the price mechanism until the advent of the Arrow-Debreu model" (Foss and Klein, 'The emergence of the modern theory of the firm', 8).
[30] J.B. Wight, 'The ethics behind efficiency', *The Journal of Economic Education* 48, no. 1 (2017), 16.
[31] J.E. Stiglitz, 'The allocation role of the stock market', *Journal of Finance* 2 (1981), 235. Krugman and Wells, 2015, p. 16.
[32] There are alternatives such as Kaldor-Hicks optimality, but their use is rare, and often controversial, compared to Pareto optimality.

productivity. We will see in Chapter 6 that this divergence in definitions has important implications for sustainability.

In general, the development of the Arrow-Debreu model can be seen *both the pinnacle of neoclassical economics and the start of modern economics*. On the one hand, it provided a comprehensive template for the mathematics of a Walrasian GE model of supply-demand relations under perfectly competitive conditions. On the other hand, it was clear to economists that these conditions were unrealistic, and that game theory could be used to simulate much more than perfect competition.

It is this latter potential which has invited economists to challenge and improve upon the neoclassical model. And it is the search for alternatives, enabled by the flexibility of game theory, which is typical for modern economics[33] and helps us understand why it has split into so many branches. In my view, this branching is likely to remain the case so long as there is no modern consensus on the right way to mathematically transcend the neoclassical constellation of perfectly competitive supply and demand. This lack of consensus may explain, moreover, why most modern economics, whenever it departs from neoclassical conditions, is performed in the style of *partial* rather than general equilibrium analysis.[34]

There are various ways to relax neoclassical assumptions in the search for a better economic framework, and different areas of economic research have developed their own preferred approaches. These include, for example, bounded rationality, imperfect information, and stochastic modelling. In the next sections we will examine two such deviations from the perfectly competitive model, developed respectively by Coase and Knight. Both have been key to the development of modern economic theories of the firm.

4.1.2 Coase's theories on transaction costs

Coase, a lawyer with an interest in economics, wrote a famous article on the 'Nature of the firm' in the US in the 1930s. He will have just experienced the roaring 20s and the start of the Great Depression, and must have seen how the American railroad, steel, oil, banking, and other industries were marked not only by the oligarchic relations of the robber barons, but also by the gargantuan size of their company groups.[35] It is within this broader, social context that Coase asked a simple question: If market production is regulated by supply and demand, and mediated through prices, then why are there so many (large) firms rather than individual entrepreneurs?[36]

Coase examined this question within the marginalist framework of his time (i.e. using Marshall's 1890 *Principles of Economics*) and in line with 1920s-1930s developments on theories of the firm. He wrote in the wake of Robinson's inversion of the equilibrium firm, whereby production functions were derived bottom-up, from firms, rather than top-down, from market-level outcomes, and referred to this in his

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[33] Similar attempts to try and escape the neoclassical model can be found in other parts of economic theory. Consider, for example, the Modigliani-Miller theorem which is an Arrow-Debreu equivalent for option pricing in finance. It also relies on neoclassical perfect competition assumptions such as there being frictionless transactions. As Williamson notes, "To illustrate, whereas the vast transformation in corporate finance that was accomplished when Franco Modigliani and Merton Miller (1958) pushed the logic of zero transaction cost contracting to completion, many of the follow-on qualifications to the Modigliani-Miller theorem assumed, implicitly if not explicitly, that transaction costs are positive" (O.E. Williamson, 'Transaction cost economics: An introduction', *Kiel Institute for the World Economy* Economics Discussion Paper, No. 2007-3 (2007), 15).

[34] Foss, Lando and Thomes, as cited in Walker, 2021, p. 204. Düppe, 'Debreu's apologies for mathematical economics after 1983', 2-3. See also: Williamson, 'Transaction cost economics', 16.

[35] [*add reference on the 1920s robber barons and roaring 20s period. Check book shelf at home*]

[36] His original question: "As D. H. Robertson points out, we find "islands of conscious power in this ocean of unconscious co-operation like lumps of butter coagulating in a pail of buttermilk." But in view of the fact that it is usually argued that co-ordination will be done by the price mechanism, why is such organisation necessary? Why are there these "islands of conscious power"?" (R.H. Coase, 'The Nature of the Firm', *Economica* 4, no. 16 (1937), 388).

introduction as "a trend in economic theory towards starting analysis with the individual firm and not with the industry".[37] He subsequently expressed his intention to:

> "show in the following paper that a definition of a firm may be obtained which is not only realistic in that it corresponds to what is meant by a firm in the real world, but is tractable by two of the most powerful instruments of economic analysis developed by Marshall, the idea of the margin and that of substitution".[38]

'The Nature of the Firm' is, in other words, an explicit attempt to reconcile the apparent paradox of markets and the existence of firms, *within* the partial equilibrium analysis of Marshall. It was not an attempt to reconcile the existence of firms with the GE techniques that would become dominant in the decades after the development of the Arrow-Debreu model.

In his article, Coase draws a contrast between the planning that takes place in firms, which he refers to as "islands of conscious power", and the "automatic, elastic and responsive" adjustments of supply and demand that is provided by the "price mechanism" of the market.[39] He then presents markets and firms as two alternative options for coordinating production[40] and asks: "if production is regulated by price movements, [then] production could be carried on without any organisation at all, [so] why is there any organisation?"[41]

The starting point for Coase's answer is that real markets are not free, perfect, or frictionless, and that "there is a cost of using the price mechanism."[42] These costs, now labelled *transaction costs*,[43] comprise the costs of researching different prices, negotiating, signing contracts, and so on. Coase next identified that the marginal cost of production, either within firms or through the market, was likely to vary in line with transaction costs. In other words, it could be cheaper to hire someone on a permanent basis than to repeatedly negotiate the costs of their labour. It could therefore be economically rational to organise production within firms rather than rely on market exchange. Coase then suggested that, "At the margin, the costs of organising within the firm will be equal either to the costs of organising in another firm or to the costs involved in leaving the transaction to be "organised" by the price mechanism."[44] In other words, he proposed that a dynamic market equilibrium exists at the shifting boundary of these costs, and that the position of this boundary could explain the existence and size of firms.

It is difficult to overstate the influence of these arguments on modern economic theories of the firm. Demsetz remarked in 1988 that 'The Nature of the Firm' is "From the birth of modern economics in 1776 to 1970, a span of almost 200 years, [one of only two works] written about the theory of the firm that [has] altered the perspectives of the profession".[45] Foss and Klein emphasised in 2006 that "most of the modern theory of the firm deserves indeed to be called Coasian."[46] And in 2021 Walker noted that, "The majority of mainstream theories draw on Coase".[47] Given this influence, it is curious that Coase's work had little practical impact until the 1970s: "as late as 1972 Coase lamented that his 1937 paper had been 'much cited and little used.'"[48]

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[37] Coase, 'The Nature of the Firm', 386.
[38] Coase, 'The Nature of the Firm', 386.
[39] Coase, 'The Nature of the Firm', 387-388.
[40] This is an apparent prelude to the later development of Institutional Economics by Williamson.
[41] Coase, 'The Nature of the Firm', 388.
[42] Coase, 'The Nature of the Firm', 390.
[43] Different authors provide different definitions on the scope of this concept.
[44] Coase, 'The Nature of the Firm', 404.
[45] Demsetz, 'The theory of the firm revisited', 141.
[46] Foss and Klein, 'The emergence of the modern theory of the firm', 14.
[47] P.S. Walker, *The Theory of the Firm: An Overview of the Economic Mainstream (Revised edition)* (Preprint online version, 2021), 68.
[48] Foss and Klein, 'The emergence of the modern theory of the firm', 17.

There is no clear reason for this delay in the literature, but we can suggest two potential explanations. The first is social, relating to the generally poor reputation of big business at the time of the Great Depression. Many people, including economists, decried the unethical activities of the robber barons and their giant trusts.[49] Suspicion of large companies was branded into public memory, and remained prominent for many decades even after they were broken into smaller size (indeed the suspicion has never truly disappeared).[50] This may have made it difficult for people to accept an argument which is implicit in Coase's work. Namely, that the dubious power and size of these firms was due to variations in transaction costs, rather than a product of conscious and well-documented efforts by some elites to consolidate their power through corruption and the manipulation of laws and markets.[51] On this view, Coase's work explains away, rather than explains, many troubling phenomena which have long been associated with large firms.[52]

The second explanation is scientific and emerges because 'The Nature of the Firm' was written for *partial equilibrium analysis* and not for GE analysis. Coase's proposal for an equilibrium between marginal costs of production via firms or markets could not exist in the black box conditions of perfect competition. It was only by departing from these conditions that he could create a conceptual space for the existence of transaction costs. This act of creation was, however, incompatible with GE analysis since the latter only works on condition of perfect competition. Stated differently, the integration of Coase's work into GE analysis would have required the *simultaneous use of opposite assumptions, i.e. that markets are both perfectly competitive and not perfectly competitive*. So while Coase's arguments were coherent within their own space of partial equilibrium, they became schizophrenic and anomalous within the constellation of neoclassical GE theories that was ultimately dominant.

It was therefore not until the introduction of game theory, which reframed perfectly competitive market conditions in terms of individual characteristics, and turned again towards partial equilibrium analysis, that economic modelling became flexible enough to integrate Coase's ideas. This process started after the 1950s invention of the Arrow-Debreu model, and, after 15 years of intellectual development, burst onto stage with the 1970s game theoretic work of Alchian, Demsetz, Jensen, Meckling, and Williamson. Their ideas will be discussed after we examine Knight's work on uncertainty.

4.1.3 Knight's theories on uncertainty

One curiosity of neoclassical economics is that the existence of profit is incompatible with a perfectly competitive equilibrium.[53] The reason is that perfectly informed buyers, when confronted with a profit margin, will simply go to another seller, with identical goods and technology, and buy the product for a lower price. This second, perfectly informed seller will accept the lower price because they have no market power to set price, and because they would rationally benefit, i.e. make more than marginal cost, from the exchange. But if they, too, still have a profit margin, then the buyer can purchase the product elsewhere for a lower price, *ad infinitum*. This dynamic imposes a downward pressure on the existence of profit, which disappears entirely where supply and demand meet in a competitive equilibrium.[54]

This outcome is helpful for mathematical economists who are trying to identify an equilibrium solution between supply and demand. It simplifies the underlying situation and removes a variable which is difficult to account for within the marginalism of neoclassical economics. Aside from its convenience,

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[49] [*add reference on the 1920s robber barons and roaring 20s period. Check book shelf at home*]
[50] [*add reference on roaring 20s work or public relations history*]
[51] [*add reference, I think, to Economists and the powerful*]
[52] [*add reference, I think, to Economists and the powerful*]
[53] [*add reference on there being zero profits when there is a perfectly competitive equilibrium*]
[54] F.H. Knight, *Risk, Uncertainty and Profit* (Boston and New York: Houghton Miffler Company, 1921), 18.

however, it was well-recognised that this simplification had little resemblance to the real economy where profits are common. As Knight explained in his 1921 *Risk, Uncertainty and Profit*:

> "… in actual society, cost and value only "tend" to equality; it is only by an occasional accident that they are precisely equal in fact; they are usually separated by a margin of "profit," positive or negative. Hence the problem of profit is one way of looking at the problem of the *contrast between perfect competition and actual competition*." [emphasis added][55]

Knight viewed perfect competition as an unrealistic but useful 'first approximation' which economists could use to model and examine economic dynamics.[56] He noted that all science is based on simplifying, and therefore inaccurate, assumptions about a complex reality, and that some degree of inaccuracy is inevitable and acceptable. He also warned that "evil results" can occur when economists forget:

> "that unreal assumptions were made, and should take the principles over bodily, apply them to concrete cases, and draw sweeping and wholly unwarranted conclusions from them. The clearly untenable and often vicious character of such deductions naturally works to discredit theory itself."[57]

He subsequently argued that economists should understand the unreality and the limits of their modelling techniques, and that this is necessary for proper scientific practice. It is with this purpose in mind, to highlight the limits of perfect competition,[58] that Knight attempted to explain the existence of profit using an approach which departs from perfect information assumptions. As we will see, this work is important not only for its methodological implications, but also because it has influenced modern theories of the firm which commonly view shareholders as entrepreneurs and 'residual claimants'.[59]

Knight's starting point was to recognise that the generic idea of economic risk is commonly used to describe two things which are actually quite different, and which he separately named *risk* and *uncertainty*.[60] He explained that 'ordinary' risk is measurable and quantifiable through probability, while uncertainty is a 'true' risk that cannot be measured or quantified. It is this latter kind of risk which explains why profits are able to exist.

Ordinary risk does not generate profit because it is, in principle, possible for individuals to insure against it. It can be estimated, protected against, and accounted for within a framework of rational decision-making. Uncertainty, by contrast, cannot be insured against because its manifestation is not subject to statistical regularities. It is therefore only through the personal exercise of *special judgment* that an entrepreneur can, with varying degrees of success, account for uncertainty. This suggest that differences in economic outcomes are a result of differences in individual judgment and that this leads, in turn, to the variations in profits (and losses) throughout the economy.

Knight's arguments suggest that successful entrepreneurs are better than other individuals at exercising judgment (i.e. this is their specialisation). And shareholders, at the top of the corporate food chain, are the best entrepreneurs of all. As Watkins summarises:

> "Uncertainties can only be dealt with by the exercise of judgment, the processes of which are largely unanalyzable, such judgment being a gift or special faculty. It may be exercised for hire to a greater or less extent, in which case *the entrepreneur is he who chooses the one to exercise judgment*. In the case of a corporation – which is recognized as a crucial problem in the task identifying the entrepreneur – there is a graded series or system of exercises of judgment. The judgments become

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[55] Knight, *Risk, Uncertainty and Profit*, 19.
[56] Knight, *Risk, Uncertainty and Profit*, 9.
[57] Knight, *Risk, Uncertainty and Profit*, 11.
[58] "We shall endeavor to search out and placard the unrealities of the postulates of theoretical economics, not for the purpose of discrediting the doctrine, but with a view to making clear its theoretical limitations" (Knight, *Risk, Uncertainty and Profit*, 11).
[59] [*Easterbrook and Fischel, 1989, 'The corporate contract' (n.b. not economists, so find more sources)*]
[60] Knight, *Risk, Uncertainty and Profit*, 19-20.

> to an increasing extent a matter of selecting others to deal with the objective uncertainties until the general manager or president is reached, who is chosen by the directors, who in turn are *chosen by the stockholders. The latter are the real entrepreneurs, not only in the sense that they take the consequences of uncertainty but also because they assume the ultimate responsibility by their acts in choosing the managers*. They need know nothing of the business carried corporation, their task being merely to choose men that have the qualities required for its operation."[61]

On this view, the variability of dividend payments is a result of unmeasurable uncertainty. And the power of shareholders to nominate directors is a product of their willingness and capacity to bear uncertainty, and of their ability to exercise judgment and select the right managers. These ideas are key, as we will see, to a correct understanding of shareholder primacy and the modern economic view of shareholders as residual claimants. It is not surprising, in this regard, that Knight's book was identified by Demsetz as the only other work, aside from that of Coase, to have altered the perspective of the profession on economic theories of the firm over the past 200 years.[62]

4.2 Modern theories of the firm

All modern economic theories of the firm deviate from perfectly competitive assumptions which, as we have seen, turn firms into a production function and black box. Indeed, our very ability to say something new or different about firms relies on this deviation.[63] As Foss and Klein note:

> "all [modern] theories of the firm may be reconstructed as beginning from the premise that it is necessary to introduce *some spanners in the works of the perfectly competitive model* (of, say, Debreu 1959), whether these be imperfect foresight, small numbers bargaining, haggling costs, private information, cost of processing information or inspecting quality, increasing returns, etc., *in order to say something sensible about economic organization*. With perfect and costless contracting, it is hard to see room for anything resembling firms (even one-person firms), since consumers could contract directly with owners of factors services and wouldn't need the services of the intermediaries known as firms." [emphasis added][64]

Modern theories are not, however, a radical departure from neoclassical economics to the extent that they introduce *some* spanners in the works, and do not fully redesign, the economic mainstream. They seek to refine and improve, and not displace, the dominant neoclassical model:

> "the evolution of the theory of the firm has never taken place far away from the economic mainstream. On the contrary, it has in fact been much driven by advances in the mainstream, and the relatively limited borrowing from other disciplines that has taken place has usually been strongly adapted to conform to central mainstream tenets."[65]

So while modern theories of the firm replace the engine and brakes of the economic car, they do not create an entirely different vehicle. And it remains, to this day, a general benchmark for the quality of modern theories that they can be expressed in terms of a formal, mathematical model, using the same game theoretic techniques as the Arrow-Debreu model to identify a competitive equilibrium.[66]

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[61] G.P. Watkins, 'Knight's risk, uncertainty and profit', *The Quarterly Journal of Economics* 36, no. 4 (1922), 683-684.
[62] Demsetz, 'The theory of the firm revisited', 141.
[63] O.E. Williamson, 'The vertical integration of production: market failure considerations', *The American Economic Review* 61, no. 2 (1971), 115.
[64] Foss and Klein, 'The emergence of the modern theory of the firm', 17-18.
[65] Foss and Klein, 'The emergence of the modern theory of the firm', 3.
[66] R.R. Nelson and S.G. Winter, 'Neoclassical vs. evolutionary theories of economic growth: critique and prospectus', *The Economic Journal* 84, no. 336 (1974), 890; S. Bowles and H. Gintis, 'Walrasian economics in retrospect', *The quarterly journal of economics* 115, no. 4 (2000), 3; N.J. Foss and P.G. Klein, 'Entrepreneurship and the Economic Theory of the Firm: Any Gains from Trade?', *Contracting and Organizations Research Institute*

Ongoing loyalty to the neoclassical 'first approximation' does not, of course, change the fact that modern economic theories have much more to say about firms than their older counterpart.[67] Their expeditions away from perfect information, full rationality, costless exchange, static dynamics, and so on, have opened a vast conceptual territory. This has enabled the investigation of topics ranging from the origin and size of firms, to their internal decision-making, remuneration, conflicts of interest, governance structures, inter-organisational relations, and more.

There is no general agreement on the right way to examine these topics[68] but scholars have helpfully classified the leading approaches into *two groups of economic theories on the firm*:[69]

1. Principal-agent theories
2. Incomplete contract theories

The following subsections will discuss these groups of theories in turn. Our aim is not to provide a full review of the literature and various sub-models,[70] but to outline the scientific foundation of these leading approaches for our later discussion on limits. There are, in any case, several excellent reviews available in the literature.[71]

4.2.1 Principal-agent theories

Principal-agent theories were developed in the 1970s as an alternative to the neoclassical black box.[72] Their key feature is that they are, unlike their predecessor, able to examine internal firm dynamics in the form of *conflicts of interest*. They have become highly influential in corporate finance, corporate governance, and corporate regulation, and are widely used for designing contracts, payment packages, governance structures, and transparency requirements.[73]

Principal-agent theories focus on situations *where the welfare of one individual, the principal, is dependent on another individual, the agent*.[74] It is generally accepted that the agent should act in the best interests of the principal, and that conflicts of interest emerge in their relationship due to information asymmetries, transaction costs, or uncertainty.[75] These situations can only be analysed by deviating from neoclassical, perfectly competitive conditions.[76]

Working Paper No. 2004-09 (2004), 2, 21; Foss and Klein, 'The emergence of the modern theory of the firm', 4-5.

[67] Foss and Klein, 'The emergence of the modern theory of the firm', 3-4.

[68] O. Hart, 'Thinking about the firm: A review of Daniel Spulber's The Theory of the Firm', *Journal of Economic Literature* 49, no. 1 (2011), 107.

[69] Foss, Lando and Thomsen (2000) as cited in, and followed by, Walker, *Foundations of organisational economics*, 75.

[70] Interested readers may wish to examine evolutionary (Nelson and Winter 1974), entrepreneurial (Foss and Klein 2004, p. 10), team-theoretic and capabilities approaches (Foss and Klein 2006, p. 17).

[71] Walker, *Foundations of organisational economics*; Foss and Klein, 'The emergence of the modern theory of the firm'; Hart, 'Thinking about the firm'.

[72] [*optional reference: principal-agent theories developed to replace the black box*]

[73] S. Saggese, F. Sarto, and C. Cuccurullo, 'Evolution of the debate on control enhancing mechanisms: A systematic review and bibliometric analysis', *International Journal of Management Reviews* 18, no. 4 (2016), 433. [*Add more examples or remove footnote*]

[74] M.C. Jensen and W.H. Meckling, 'Theory of the firm: Managerial behavior, agency costs and ownership structure', *Journal of Financial Economics* 3 (1976), 308.

[75] [*Add reference to literature on agency problems. Maybe also include the term in the text*]

[76] If the parties would have perfect information and no transaction costs, then they could sign a perfect contract and their relationship would once again turn into a black box.

Alchian and Demsetz's team production model

One of the first modern theories to deviate in this manner was provided by Alchian and Demsetz in their 1972 'Production, Information Costs, and Economic Organization'.[77] This early, seminal work did not rely on the terms principal or agent, but it did help to pave the way for the general development of principal-agent theories.

In their article, Alchian and Demsetz offer a *team production model* to explain how firms emerge as a result of interactions between individuals. Their starting point is to frame the workplace as *a realm of equality and exchange*, where contractual relations between bosses and employees are no different from any other, ordinary exchange in the market. Their description is important to consider:

> "It is common to see the firm characterized by the power to settle issues by fiat, by authority, or by disciplinary action superior to that available in the conventional market. *This is delusion. The firm does not own all its inputs. It has no power of fiat, no authority, no disciplinary action any different in the slightest degree from ordinary market contracting between any two people.* I can "punish" you only by withholding future business or by seeking redress in the courts for any failure to honor our exchange agreement. That is exactly all that any employer can do. He can fire or sue, just as I can fire my grocer by stopping purchases from him or sue him for delivering faulty products… *To speak of managing, directing, or assigning workers to various tasks is a deceptive way of noting that the employer continually is involved in renegotiation of contracts on terms that must be acceptable to both parties.* Telling an employee to type this letter rather than to file that document is like my telling a grocer to sell me this brand of tuna rather than that brand of bread. I have no contract to continue to purchase from the grocer and neither the employer nor the employee is bound by any contractual obligations to continue their relationship. Long-term contracts between employer and employee are not the essence of the organization we call a firm." [emphasis added][78]

This strong, and heavily criticised,[79] perspective made it possible for Alchian and Demsetz to present all human interaction in *the workplace as no more than a form of free, individual exchange*. This was a radical departure from the organisational work of earlier scholars, such as Coase, and Berle and Means, who recognised imbalances of power and rejected an equivalence between markets and organisational life.[80] The difference in their perspectives is like night and day, as we can see from the work of Berle and Means:

> "The *idea that an army operates on the basis of "rugged individualism" would be ludicrous*. Equally so is the same idea with respect to the modern corporation. Group activity, the coördinating of the different steps in production, the *extreme division of labor in large scale enterprise necessarily imply not individualism but cooperation and the acceptance of authority almost to the point of autocracy*. Only to the extent that any worker seeks advancement within an organization is there room for individual initiative – an initiative which can be exercised only within the narrow range of function he is called on to perform. At the very pinnacle of the hierarchy of organization in a great corporation, there alone, can individual initiative have a measure of free play. Yet even there a limit is set by the willingness and ability of subordinates to carry out the will of their superiors. *In modern industry, individual liberty is necessarily curbed*." [emphasis added][81]

The main, methodological consequence of Alchian and Demsetz's position is that, *if firms are nothing more than a product of individual exchange, then they can be comprehensively analysed using only economic techniques*. It is, in other words, sufficient to examine organisations from a perspective of

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[77] A.A. Alchian and H. Demsetz, 'Production, information costs, and economic organization', *The American economic review* 62, no. 5 (1972).
[78] Alchian and Demsetz, 'Production, information costs, and economic organization', 777.
[79] [*Add criticisms to the view of Alchian and Demsetz*]
[80] These distinctions were also adopted by Smith and Marshall (G.M. Hodgson, 'The legal nature of the firm and the myth of the firm-market hybrid', *International Journal of the Economics of Business* 9, no. 1 (2002), 5).
[81] Adolf A. Berle and Gardiner C. Means, The Modern Corporation and Private Property 306-307 (1982) (1933)

equilibrium between supply and demand, liberalised markets, self-interested competition, game theory, etc. However, if it turns out that firm dynamics are *also* characterised by organisational structures, such as hierarchies and bureaucracy, or social phenomena, such as culture, then they are *at least partially* beyond the scope of mainstream economic analysis.

This recalls our earlier discussion on *socio-economic bifurcation*. Alchian and Demsetz provide a modern iteration of the classical view that the economy is separate from the rest of society, and extend this ontological view of the economy to firms. This perspective can appear unrealistic, but it is a *necessary precondition for the use of economic techniques*. In this regard we should emphasise that modern principal-agent models would not function without the underlying assumption that firms are a realm of equality and liberalised individual exchange.

Returning to the article, we can note that Alchian and Demsetz did not base their market-based view of firms on neoclassical assumptions about perfect competition. They proposed, instead, that individuals have different, and less than perfect, degrees of information.[82] Each individual knows their own level of skill, how hard they are willing to work, and their general preferences, but they do not know this same information about others. These *information asymmetries* arise because it is costly to collect information, in the sense that it is not free, efficient, or feasible for individuals to become fully informed.[83] These Coasean-style costs make it possible for self-interested individuals, who are looking to maximise their utility and minimise their workload, to 'shirk' on the job and do less than their very best.[84]

Alchian and Demsetz also identify an error in the neoclassical, production function model of the firm. They argue that production is not usually additive and separable, i.e. a sum of A + B, but a combined function of *team production*, i.e. $f(A, B)$. This, in combination with information asymmetries, makes it difficult in most situations to correctly identify and reward individual contributions to production. This leads, absent intervention, to overall underperformance since individuals will shirk and cannot be expected to maximise production.

The authors subsequently argue that firms exist as a response to the suboptimality of these conditions. In their view, it makes sense for teams of individuals, working together, to hire someone as a *specialised monitor* to minimise shirking and maximise overall productivity. The problem of 'who monitors the monitor' is solved by granting this specialised position a variable and residual income; they are paid whatever remains after the other team members have been paid their fixed income. This incentivises the monitor to work hard to minimise shirking and maximise income.

Alchian and Demsetz also explain that this monitor should function as a *central contractual agent*, with the power to revise and amend all individual contracts. A multilateral contract between all parties would create too much inflexibility and undermine the monitor's ability to intervene (e.g. fire or renegotiate contracts) and improve team performance. These centralised contracts are "the basis of the entity called the firm",[85] a view which remains central to principal-agent theories today.

These ideas, taken together, made it possible for Alchian and Demsetz to deduce a result which accounts for the existence of privately owned firms with owner-managers and employees.[86] These are presented as different production teams searching, with imperfect information, for an optimal combination of monitoring and teamwork.

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[82] Alchian and Demsetz, 'Production, information costs, and economic organization'.
[83] The authors explicitly note that they are not referring to Knightian uncertainty (Alchian and Demsetz, 'Production, information costs, and economic organization', 783-785).
[84] Alchian and Demsetz, 'Production, information costs, and economic organization', 780-781.
[85] Alchian and Demsetz, 'Production, information costs, and economic organization', 794.
[86] Alchian and Demsetz, 'Production, information costs, and economic organization', 782-783.

Before turning to the next seminal article in the development of principal-agent theories, we can note that there is something implausible about the way that Alchian and Demsetz frame power differences in the firm as an expression of egalitarian self-interest. On the face of it, it is hard to imagine that employees 'solved' the problem of their own laziness by hiring bosses to keep an eye on them. And it is equally hard to imagine that most firm owner-managers see themselves as hired by their employees, rather than as entrepreneurs.

Jensen and Meckling's nexus of contracts model

Jensen and Meckling's 1976 article, 'Theory of the Firm', popularised the *nexus of contracts* model, and established it as the leading approach for principal-agent theories of the firm. It synthesised the main theoretical and mathematical developments in the area and offers a comprehensive, game theoretic model to examine the pareto optimality of managerial incentives, capital structures, share ownership patterns and more. The article has been referenced almost one-hundred-thousand times and has had an unparalleled influence on contemporary corporate governance, finance, and regulation.[87] The nexus of contracts model relies, unlike its predecessor, on *principal-agent relationships*.[88] These are central to this model and to its authors' view of the relationship between firms and markets.

To start, Jensen and Meckling "define an agency relationship as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent."[89] They subsequently identify, following Alchian and Demsetz, that the costs of monitoring agent behaviour are non-zero, and that conflicts of interest emerge because agents will seek to maximise their own utility rather than that of the principal.[90] This means that it is impossible, in practice, for principal-agent interests to be fully aligned, and that there will be *agency costs* involved in every agency relationship. These costs are the result of three factors: (1) expenses to monitor agent behaviour, (2) costs involved in controlling agent behaviour, and (3) the loss of residual outcome which occurs due to inefficiency, i.e. the imperfect alignment of interests.[91]

Jensen and Meckling adopt, like Alchian and Demsetz, a contractual view of the firm although their interpretation is simultaneously less polemical and more radical. Their starting point is to suggest that the rights of individuals are determined by individual bargaining (rather than being socially constructed, for example, by culture or law).

> "Since the specification of rights is generally effected through contracting (implicit as well as explicit), individual behavior in organizations, including the behavior of managers, will depend upon the nature of these contracts."[92]

The authors subsequently extend this view to non-commercial settings and explain that *principal-agent relations may be found in any kind of situation where two people cooperate*. A formal, legal contract is not even necessary for identifying agency relationships:

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[87] J.N. Gordon and W.-G. Ringe, *The Oxford handbook of corporate law and governance* (Oxford University Press, 2018), 16; D. Gindis, 'From fictions and aggregates to real entities in the theory of the firm', *Journal of Institutional Economics* 5, no. 1 (2009), 4. For a history see: B.R. Cheffins, 'What Jensen and Meckling really said about the public company' in *Research Handbook on Corporate Purpose and Personhood*, ed. E. Pollman and R.B. Thompson (Cheltenham, UK: Edward Elgar, 2021), 2.

[88] This was imported from Ross' 1973 work on game theory and principal-agent relationships (S.A. Ross, 'The economic theory of agency: The principal's problem', *The American economic review* 63, no. 2 (1973)).

[89] Jensen and Meckling, 'Theory of the firm: Managerial behavior, agency costs and ownership structure', 308.

[90] Jensen and Meckling, 'Theory of the firm: Managerial behavior, agency costs and ownership structure', 308.

[91] Jensen and Meckling, 'Theory of the firm: Managerial behavior, agency costs and ownership structure', 308.

[92] Jensen and Meckling, 'Theory of the firm: Managerial behavior, agency costs and ownership structure', 308.

> "In most agency relationships the principal and the agent will incur positive monitoring and bonding costs (non-pecuniary as well as pecuniary), and in addition there will be some divergence between the agent's decisions and those decisions which would maximize the welfare of the principal… agency costs arise in any situation involving cooperative effort (such as the co-authoring of this paper) by two or more people even though there is no clear cut principal-agent relationship. [93]

This erodes the distinction between formal, legal contracts and other kinds of human interaction. They are all framed as a form of bargaining between principals and agents, leading to explicit or implicit, legal or non-legal, 'contracts'.[94] This conceptual framework leads, by definition, to an ontological view that all organisations are a function of individual 'contracting'. This is evident from the following:

> "The problem of inducing an "agent" to behave as if he were maximizing the "principal's" welfare is quite general. It exists in all organizations and in all cooperative efforts – at every level of management in firms, in universities, in mutual companies, in cooperatives, in governmental authorities and bureaus, in unions, and in relationships normally classified as agency relationships such as are common in the performing arts and the market for real estate. The development of theories to explain the form which agency costs take in each of these situations (where the contractual relations differ significantly), and how and why they are born will lead to a rich theory of organizations which is now lacking in economics and the social sciences generally.
>
> … most organizations are simply legal fictions which serve as a nexus for a set of contracting relationships among individuals. This includes firms, non-profit institutions such as universities, hospitals and foundations, mutual organizations such as mutual savings banks and insurance companies and co-operatives, some private clubs, and even governmental bodies such as cities, states and the Federal government, government enterprises such as TVA, the Post Office, transit systems, etc."[95]

It is troubling, perhaps, that Jensen and Meckling fold all organised, human relations into the realm of economic exchange.[96] We are assured, however, that this provides an objective and neutral approach to describing organisational dynamics:

> "We focus almost entirely on the positive [i.e. objective, descriptive][97] aspects of the theory. That is, we assume individuals solve these normative problems and given that only stocks and bonds can be issued as claims, we investigate the incentives faced by each of the parties and the elements entering into the determination of the equilibrium contractual form characterizing the relationship

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[93] Jensen and Meckling, 'Theory of the firm: Managerial behavior, agency costs and ownership structure', 308.

[94] It is important, in this regard, to identify for the nexus of contracts model that the notion of contracts in this theory of the firm must *not* be viewed in the same way as a legal contract. See: Gordon and Ringe, *The Oxford handbook of corporate law and governance*, 16; S.K. Ripken, 'Corporations are people too: A multi-dimensional approach to the corporate personhood puzzle', *Fordham J. Corp. & Fin. L.* 15 (2009), 158.

[95] Jensen and Meckling, 'Theory of the firm: Managerial behavior, agency costs and ownership structure', 309-310.

[96] Ciepley, for example, explains how important it is to distinguish between labour contracts and exchange contracts. The former contains a 'duty of obedience' which is absent from the latter. "Together with accompanying duties of loyalty, care, and confidentiality, the duty of obedience shows that today's labor contract, like the feudal contract between master and servant from which it descends, is a contract that is more than a contract. It ushers one into a status category, with non-negotiable asymmetrical obligations of deference that last for the duration of the relationship, although limited to the organizational setting. In an organizational age, status relations recrudesce" (D. Ciepley, 'Beyond public and private: Toward a political theory of the corporation', *American Political Science Review* 107, no. 1 (2013), 149).

[97] Friedman explains: "*Positive economics* is in principle independent of any particular ethical position or normative judgments. As Keynes says, *it deals with "what is," not with "what ought to be."* Its task is to provide a system of generalizations that can be used to make correct predictions about the consequences of any change in circumstances. Its performance is to be judged by the precision, scope, and conformity with experience of the predictions it yields. In short, positive economics is, or can be, an "objective" science, in precisely the same sense as any of the physical sciences." [emphasis added] Friedman in Hausman, p. 146.

> between the manager (i.e., agent) of the firm and the outside equity and debt holders (i.e., principals)."[98]

This claim to objectivity is an expression of socio-economic bifurcation insofar as it suggests that the dynamics of *every* organisation can be fully studied using economic techniques without reference to non-economic factors and ideas. The dismissal of alternative methods of analysis, and the apotheosis of economics, is explicit in Jensen and Meckling's now-classic statement on the *firm as a nexus of contracts*:

> "Viewing the firm as the nexus of a set of contracting relationships among individuals also serves to make it clear that the personalization of the firm implied by asking questions such as "what should be the objective function of the firm", or "does the firm have a social responsibility" is seriously misleading. *The firm is not an individual*. It is a legal fiction which serves as a focus for a complex process in which the conflicting objectives of individuals (some of whom may "represent" other organizations) are brought into equilibrium within a framework of contractual relations. In this sense the "behavior" of the firm is like the behavior of a market; i.e., the outcome of a complex equilibrium process. We seldom fall into the trap of characterizing the wheat or stock market as an individual, but we often make this error by thinking about organizations as if they were persons with motivations and intentions."[99]

A later section will reflect on the implications of this position for scientific practice. For now, it is enough to note that Jensen and Meckling could not have developed the nexus of contracts model without these background ideas. They are just as essential for their theory of the firm as a chess board is for playing chess. It was only once the authors arranged the right pieces on the right board, that they could present the overarching purpose of their paper, namely to show "why and how the agency costs generated by the corporate form… [lead] to a theory of the ownership (or capital) structure of the firm."[100]

They assume, for this aim, that the relationship between shareholders and managers is a "pure agency relationship".[101] This assumption is often criticised by lawyers and legal theorists as having no basis in law because directors are not legal agents for shareholders.[102] This critique, however, often misses its mark outside of the legal literature since it fails to correspond to the blurred categories of Jensen and Meckling's economic, and not legal, 'contractual' view of all human relations.[103]

It is unclear whether the nexus of contracts theory relies on information asymmetries or Knightian uncertainty as a source of agency costs. Alchian and Demsetz's work was based on a Coasean approach while Ross, the first to use principal-agent terminology in a game theoretic model, developed his work within a Knightian tradition.[104] The question is, arguably, circumvented because Jensen and Meckling rely on *rational expectations theory*.

Rational expectations theory does not examine the rationality of particular individuals but assumes that the expectations of individuals about economic outcomes are "essentially the same as the predictions

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[98] Jensen and Meckling, 'Theory of the firm: Managerial behavior, agency costs and ownership structure', 310.
[99] Jensen and Meckling, 'Theory of the firm: Managerial behavior, agency costs and ownership structure', 312.
[100] Jensen and Meckling, 'Theory of the firm: Managerial behavior, agency costs and ownership structure', 309.
[101] Jensen and Meckling, 'Theory of the firm: Managerial behavior, agency costs and ownership structure', 309. This assumption is commonly disputed by legal theorists, who explain that there is no general legal obligation for managers to pursue the interests of shareholders [add references to Robé, others].
[102] For an exception see: J.-P. Robé, *Property, Power and Politics: Why we need to rethink the world power system* (Policy Press, 2020), 47.
[103] For a discussion on the same issue regarding property see: Robé, *Property, Power and Politics: Why we need to rethink the world power system*, 40-41.
[104] Ross, 'The economic theory of agency: The principal's problem'.

of the relevant economic theory."[105] Put differently, it assumes that people's rational thinking is the same as economic reasoning. Rational expectations theory also assumes that individual expectations are *unbiased and independent* of each other (i.e. that individuals are isolated), and that they are *normally distributed* within the population. Operating in concert, these assumptions make it possible to suggest that individual expectations will yield an average result at the expected equilibrium of economic theory. This makes it possible to "generate a mass consensus… without any social interactions",[106] in line with the price-taking approach of GE models. The overall result is that the market outcome for a large sample will approximate the predicted outcome of economic models.[107] As Jensen and Meckling write:

> "If the equity market is characterized by rational expectations the buyers will be aware that the owner will increase his non-pecuniary consumption when his ownership share is reduced… uncertainty will not affect the final solution if the equity market is large as long as the estimates are rational (i.e., unbiased) and the errors are independent across firms."[108]

The consequence of rational expectations theory is that Jensen and Meckling do not need to consider individual differences in information, but can instead assume that the behaviour of investors in the stock market will produce an average result which is equivalent to a Pareto optimal market solution.[109] This builds, in turn, on a prior assumption that capital markets are efficient and 'fully reflect' all available information.[110] Fama argued that the latter assumption is warranted in capital markets because most investors are not able to generate an abnormal, i.e. much higher than average, market return.[111] If information was not fully reflected in capital markets, then abnormal returns would be commonplace due to some investors having privileged access to information.[112]

This blend of assumptions allowed Jensen and Meckling to develop a game theoretic model of firm ownership based on an equilibrium dynamic between managerial ownership (a manager who owns X% of all the shares) and outside share ownership by investors. The agency costs which govern this dynamic are determined by the manager-owner's relative preferences for money, status, and leisure. It is assumed that they will work less hard, demand more non-pecuniary benefits, appropriate more company assets, and require more monitoring when their ownership share, and therefore their share of the residual profits, declines.

The authors subsequently use this model to calculate the optimal scale of equity funding for a firm and examine how it is influenced by variations in monitoring and control costs, monopoly conditions, and

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[105] J.F. Muth, 'Rational expectations and the theory of price movements', *Econometrica: Journal of the Econometric Society* (1961), 315. For a discussion and critique of rational expectations, see: A. Kirman, 'Is it rational to have rational expectations?', *Mind & Society* 13 (2014).

[106] Chen, 'Equilibrium illusion, economic complexity and evolutionary foundation in economic analysis', 92 Chen, 2008, p. 92.

[107] This is clearly an assumption to facilitate the mathematics rather than one which is loyal to an examination of economic phenomena. As Muth notes, there is "little evidence to suggest that the presumed relations bear a resemblance to the way the economy works" (Muth, 'Rational expectations and the theory of price movements', 315). Kirman comments, with regret, that "The caution and reservations expressed forcefully by Simon and less vigorously by Muth [regarding the limits of applying rational expectations] were essentially ignored by those who pushed for what they saw as putting macroeconomics on a sounder ''scientific'' footing" (Kirman, 'Is it rational to have rational expectations?', 35). The theory is, and remains, a mainstay in contemporary macroeconomic modelling.

[108] Jensen and Meckling, 'Theory of the firm: Managerial behavior, agency costs and ownership structure', 318.

[109] For a critique of this theory and a discussion on its contribution to the 2008 Financial Crisis see: Kirman, 'Is it rational to have rational expectations?'.

[110] Kirman, 'Is it rational to have rational expectations?', 39.

[111] E.F. Fama, 'Efficient capital markets: A review of theory and empirical work', *The Journal of Finance* 25, no. 2 (1970).

[112] For a detailed discussion see: B.G. Malkiel, 'The efficient market hypothesis and its critics', *Journal of economic perspectives* 17, no. 1 (2003).

so on. They perform a similar analysis for debt funding, and ultimately combine the two equilibrium approaches to provide a Pareto optimal model for different ratios of debt and equity. These formal nexus of contracts models, and their descendants,[113] have proven highly influential in corporate finance and mathematical approaches to corporate governance. They have been used, for example, to determine managerial remuneration and evaluate the performance of different ownership structures.[114] The non-formal, theoretical aspects of the nexus of contracts model have proven more influential in the areas of non-mathematical corporate governance and corporate regulation.[115]

4.2.2 Incomplete contracts theories

Incomplete contracts theories were developed, like principal-agent models, as a 1970s response to the shortcomings of neoclassical economics and the Arrow-Debreu model. These theories build on Coase's ideas and their basic form of analysis is known is transaction cost economics (TCE). This approach is central to an influential branch of economics known as New Institutional Economics, but we will limit our focus to the incomplete contracts theory of the firm that was pioneered by Williamson.

Williamson's seminal article, 'The Vertical Integration of Production' was written in 1971 to explore why firms decide to vertically integrate part of their value chain. He was inspired by the idea that firms may integrate for sound economic reasons and contended, against conventional wisdom at the time, that vertical integration is not simply a question of monopoly power and market distortion. Instead, he argued in Coasean style that firms may sometimes "[possess] coordinating potential that… transcends that of the market."[116] This potential exists because transaction costs and bounded rationality[117] make it impossible for individuals to create perfect or 'complete' contracts to govern their exchange relations.[118] It is the analysis of these *incomplete contracts,* in and outside of firms, which gives this group of theories their name.

Williamson's starting point was to propose, as a rule of thumb, that it is preferable for activities to be organised in markets rather than firms whenever markets "work well" (no monopolies, acceptable risk premiums, and low transaction costs).[119] There are, however, moments that markets do not work well,

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[113] E.F. Fama, 'Agency problems and the theory of the firm', *Journal of Political Economy* 88, no. 2 (1980).
[114] See, for example: P.G. Berger, E. Ofek, and D.L. Yermack, 'Managerial entrenchment and capital structure decisions', *The Journal of Finance* 52, no. 4 (1997); R. La Porta, F. Lopez-de-Silanes, and A. Shleifer, 'Corporate ownership around the world', *The Journal of Finance* 54, no. 2 (1999).
[115] See, for example: Kraakman et al., *The Anatomy of Corporate Law*. H. Hansmann and R. Kraakman, 'The end of history for corporate law', *The Georgetown Law Journal* 89 (2001); E.F. Fama and M.C. Jensen, 'Separation of Ownership and Control', *Journal of Law and Economics* 26, no. 2 (1983). Gordon and Ringe comment that "The intellectual impact of the agency cost characterization is hard to overstate: for the last 40 years, the mission of American corporate law, and of corporate scholarship more broadly, has taken the form of a search for the organizational Holy Grail, a technique that bridges the separation of ownership and control by aligning the interests of shareholders and managers through a series of techniques, over time highlighting the role of independent directors, hostile takeovers, and activist shareholders in this effort" (Gordon and Ringe, *The Oxford handbook of corporate law and governance*, 4).
[116] Williamson, 'The vertical integration of production', 112.
[117] "The bounded rationality of humans does not allow us to grasp the complex situations that provide the environments for our actions in their entirety. The first step in rational action is to focus attention on specific (strategic) aspects of the total situation, and to form a model of the situation in terms of those aspects that lie in that focus of attention. Rational computation takes place in the context of this model, rather than in the response to the whole external reality" (H.A. Simon, 'Organizations and Markets', *Journal of Economic Perspectives* 5, no. 2 (1991), 37). See also: H.A. Simon, 'A Formal Theory of the Employment Relationship', *Econometrica* 19, no. 3 (1951).
[118] As Foss and Klein explain, "the problem is… essentially informational: it is defective information that is at the root of the inability of independent agents to establish efficient contracting" (Foss and Klein, 'The emergence of the modern theory of the firm', 33).
[119] Williamson, 'The vertical integration of production', 113.

which can make it more attractive to integrate economic activities within one firm. This attractiveness arises not only due to transaction costs and bounded rationality, but also because firms have "differential incentive and control properties"[120] when compared to market exchange. Firms can, for example, rearrange their internal affairs through changes in employment (promotion, remuneration, and so on) and changes in budget allocation.[121] This gives them a wider and more nuanced range of control options than ordinary market exchange.

In general, Williamson identifies three advantages of firms when markets do not work so well: (1) incentives, (2) controls, and (3) inherent structural advantages.[122] Regarding the first, he identifies that individual bargaining may be less opportunistic and aggressive in firms because it is "bounded by considerations of alienation" (i.e. people care what others think of them).[123] Integration into one firm may therefore be more attractive and efficient than market exchange when it can be anticipated that negotiations may require "protracted bargaining".[124] For the second, it is not only that firms have a bigger variety of ways to reward and punish behaviour but also that they have better internal data and methods to monitor performance. And for the third, he suggests that hierarchies may grant an efficient way to resolve conflicts and determine the distribution of surpluses, for example because they are not subject to protracted bargaining.

Williamson uses this framework to examine how different contractual approaches, such as a single long-term contract or a series of short-term contracts, provide different incentive structures. Each will yield different transaction costs and opportunities for self-interested opportunism, and might make it more or less efficient to integrate into one firm than coordinate activities in the market.

Williamson extended this line of reasoning in a 1973 article on 'Markets and hierarchies', which studied how bounded rationality and TCE may explain hierarchical relations within firms. In it, he argues that organisational structures are primarily a consequence of *market failures due to three human and three transactional factors*.[125] The human factors are: (1) bounded rationality, (2) opportunism (i.e. shirking), and (3) atmosphere. The first two are familiar to us, the latter explains that inefficiencies arise, in the form of deviations from the neoclassical model, because individuals have different preferences and also want things other than money.

The transactional factors are: (1) uncertainty, (2) small numbers, and (3) information impactedness.[126] The first emerges due to the limits of bounded rationality.[127] The second occurs if there are not enough competitors in the market, and is especially problematic when contracts are being renewed and an incumbent contractual party has greater market power due to their previous expertise. The third relates to differences in information (*information asymmetries*) and the costs involved for the less informed party, if possible, to achieve information parity.

Williamson uses his market failure framework to combine these six factors and explain why it may be productively efficient for organisations to first develop into 'peer group associations' (non-hierarchical cooperatives) and then into 'simple hierarchies'.[128] He argues that the former suffers from opportunism and inefficient decision-making, and that the latter' managerial control can be used to limit opportunism and expedite decisions. He also posits that simple hierarchies are ultimately displaced by the relatively

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[120] Williamson, 'The vertical integration of production', 113.
[121] Williamson, 'The vertical integration of production', 118.
[122] Williamson, 'The vertical integration of production', 113-114.
[123] Williamson, 'The vertical integration of production', 113.
[124] Williamson, 'The vertical integration of production', 113.
[125] O.E. Williamson, 'Markets and hierarchies: some elementary considerations', *The American Economic Review* 63, no. 2 (1973), 316-317.
[126] Williamson, 'Markets and hierarchies', 317-318.
[127] See also: Simon, 'Organizations and Markets', 30-31.
[128] Williamson, 'Markets and hierarchies', 320-324.

greater efficiency of complex, adaptive organisations with multistage hierarchies. An example of the latter is a large firm whose operations are divided into different functional departments.

Over time, Williamson further refined these ideas in his 1985 *Economic Institutions of Capitalism* and 1991 article on 'Comparative Economic Organization'.[129] We do not need to explore these in detail, but can summarise that incomplete contract theories are designed to address the following:

> "problem of economic organization: [how to] devise contract and governance structures that have the purpose and effect of economizing on bounded rationality while simultaneously safeguarding transactions against the hazards of opportunism."[130]

Within this approach, it is suggested that organisational diversity is a situation-dependent response to market failures, transaction costs, and the availability of different contract structures. In general, this can lead to the emergence of three forms of economic organisation: (1) markets, (2) hierarchies, and (3) hybrids.[131] "Markets and hierarchies are polar modes",[132] while hybrids share features of both markets and hierarchies.

Many authors have built on the incomplete contracts theories that Williamson developed out of Coase's 1937 work on transaction costs and Simon's 1951 article on bounded rationality. A full review is beyond our scope,[133] but it is helpful to note that these theories of the firm have also been translated into various formal models, including for example as the Grossman-Hart-Moore model for the costs and benefits of integration.[134] These models build on modern, game theoretic techniques for partial equilibrium analysis as outlined previously.

We will close this section with a joint reflection on the incomplete contracts and principal-agent theories of the firm. Perhaps the most apparent difference is that the former provides a role for hierarchy and power relations whereas the latter assumes that market participants are free to bargain.[135] This difference appears stark but consider the following statement by Williamson: "hierarchy is not merely a contractual act but is also a contractual instrument, a continuation of market relations by other means."[136] And consider further his argument that:

> "[S]ubstantially the same factors that are ultimately responsible for market failures also explain failures of internal organisations. If this contention is correct, the study of alternative modes of economic organization can proceed in a symmetrical fashion. Rather than having to devise a separate apparatus for each organizing mode, a common language and conceptual apparatus can be brought systematically to bear across modes."[137]

Notwithstanding Williamson's view of markets and hierarchies as polar alternatives, he finds that both can be understood as a product of market dynamics and potential market failure. Each is governed, in

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[129] O.E. Williamson, 'Comparative Economic Organization: The Analysis of Discrete Structural Alternatives', *Administrative Science Quarterly* 36 (1991).
[130] O.E. Williamson, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting* (The Free Press (Macmillan), 1985), xiii.
[131] Williamson, 'Comparative Economic Organization', 269.
[132] Williamson, 'Comparative Economic Organization', 280.
[133] For excellent reviews, see: Foss and Klein, 'The emergence of the modern theory of the firm'; Walker, *The Theory of the Firm*.
[134] Hart, 'Thinking about the firm', 106; S.J. Grossman and O.D. Hart, 'The costs and benefits of ownership: A theory of vertical and lateral integration', *Journal of Political Economy* 94, no. 4 (1986); O. Hart and J. Moore, 'Property Rights and the Nature of the Firm', *Journal of Political Economy* 98, no. 6 (1990).
[135] Williamson, 'Transaction cost economics', 14.
[136] Williamson, 'Comparative Economic Organization', 271.
[137] Williamson, 'Markets and hierarchies', 316.

other words, by deviations from idealised, neoclassical laws of supply and demand. We have seen that the same is true for principal-agent theories.

It is important, in this regard, not to overstate the differences between the two approaches. Both groups of theories of the firm assume that individuals express economic or market-like behaviour in and outside of firms.[138] And both assume that firm and individual activities should be made as efficient as possible and aligned as closely as possible with the idealised neoclassical model. This is explicit in Williamson's work:

> "TCE takes exception with [neoclassical economics] for its failure to make provision for positive transaction costs, if and as these are believed to be consequential… – as, for example, in examining the make-or-buy decision in the context of vertical integration. But this does not dispute the merits of the neoclassical approach and apparatus as a place to start – and, for many purposes, a place to finish."[139]

It is therefore only incentives, information, and the extent of rationality, and not the presumed economic nature of human behaviour that changes between firm and market settings. Both groups of theories are, moreover, committed to a contractual view of firms which positions them solely within the economic realm.

This latter, ontological view of firms as a series of free, individual contracts is, as we noted, an essential pre-condition for the use of game theoretic techniques. It also leads, however, to an interesting parallel with the way that neoclassical economics, by using methods based on perfect competition, turned firms into a black box. At the time, this was necessary to ensure consistency with the methods of neoclassical economics (Walrasian GE analysis). And now, likewise, the game theory methods of modern economics have required us to create a black box, this time by sealing away the non-contractual and non-individual aspects of individual firms.[140]

To build on this point, we can recall also the 1930s warning of Coase, Berle, and Means against drawing an equivalence between firms and markets. They identified that there is something *essentially* different about these areas of human activity. They were concerned with ontological difference, i.e. with human existence being different in organisational and market settings, and were not troubled by the absence of one economic theory to explain both settings. It is a significant departure from their work that the two major groups of modern economic theories of the firm are both grounded in an assertion, inconsistent with human experience, that there is no essential difference between firms and markets. Critically, this invites us to question whether the development of modern economic theories of the firm has been led primarily by the methods of economics, or by the evident characteristics of firms as a complex social phenomenon.[141]

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[138] Williamson, 'Markets and hierarchies', 320.

[139] Williamson, 'Transaction cost economics', 5. Bowles and Gintis, for their part, write that "The result of these two consequences of incomplete contracts is that economic analysis must become more social and psychological in its treatment of the human actor, more institutional in its description of the exchange process, yet no less analytical in its model-building and no less dedicated to the construction of general equilibrium models" (Bowles and Gintis, 'Walrasian economics in retrospect', 3).

[140] Lukes suggests that this is a consequence of economic reliance on individualist methods, which we will later discuss (Section 6.2.1). S. Lukes, *individualism* (ECPR Press, 2006), 99.

[141] "While some economists maintain that there is no difference in kind between firms and markets (Alchian and Demsetz 1972; Cheung 1983), and most economists would agree that the same analytical tools are applicable to firms as well as to markets, it is a strong underlying theme among the critics that firms are essentially different from markets and many of the critics (particularly sociologists) argue that they need to be approached using different tools" (Foss and Klein, 'The emergence of the modern theory of the firm', 37). Boylan and Gorman, citing Kaldor, write that "Such was the fascination of [Post-World War 2] economic theorists with the neo-Walrasian [GE] framework that their 'views of reality became increasingly distorted, so as to come closer to the

4.3 Reflection on modern economics and firms

Modern economic theories of the firm are a giant leap forward relative to the neoclassical production function view of the firm. There is no doubt that modern economists have succeeded in opening the neoclassical black box, and that they have created a versatile framework for analysing firm-related governance, contract, incentive, monitoring, and information structures. Principal-agent and incomplete contracts theories have responded, in this regard, to the evident need for economics to provide a less unrealistic and more informative theory of the firm.

The search for better theories of the firm has not, however, caused modern economists to lose faith in the ideal, neoclassical economic benchmark. It continues to play a prominent role, even as economists experiment with partial equilibrium models and integrate more realistic deviations such as imperfect information, bounded rationality, and true uncertainty. This has yet to result in a new and improved general equilibrium model which integrates, to a sufficiently workable degree, all the various departures from perfect competition. The Cambrian explosion of economic disciplines, which is characteristic for modern economics, reflects this search.

Beyond this diversity we also an found an underlying continuity with the classical political economic worldview based on liberalised competition, socio-economic bifurcation, supply-demand equilibration, and self-interested maximisation. This worldview has, over time, become so naturalised that economists have come to rely on it both descriptively, as *the* way that the economy works, and prescriptively, as the way that the economy *should* work. It is rarely clear where description ends, and prescription begins.

The same issue is identifiable in modern theories of the firm, which appear to simultaneously explain reasons for the existence of firms, even as they state how firms should be organised in order to minimise agency or transaction costs. This uneasy coexistence, of description and prescription, results from the concurrent way that economists use their theories and methods both as a *means to explain a situation* and as a *means to evaluate whether a situation is efficient*.[142] The tension between these two approaches hints at deeper issues in the scientific foundation of economics, as we will now explore.

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theoretical image rather than the other way round'" (T.A. Boylan and P.F. O'Gorman, 'Kaldor on Debreu: The Critique of General Equilibrium Reconsidered', *Review of Political Economy* 21, no. 3 (2009), 5).

[142] This is implicit in Lazear's description of how economics works: "When economists model a situation and the resulting equilibrium is inefficient, usually there are trades that could have occurred that are implicitly or explicitly ruled out. The analyst or his critics are induced to ask what the reasons are and what market or other institutions could arise to remedy the situation. Thus, the focus on efficiency when combined with equilibrium prevents the economist from being content with partial answers and half-truths. The notion that efficiency is a natural outcome motivates a larger series of questions and initiates deeper analysis" (E.P. Lazear, 'Economic imperialism', *the Quarterly Journal of economics* 115, no. 1 (2000), 102).

Part B: The limits of economics

The basic worldview of the scientific foundation of economics was established by the classical political economists, as reflected in their assumptions about the separation of economic and social dynamics, the desirability of liberalised competition, the innate human drive to maximise self-interest, and the natural law equilibration of supply and demand. It was subsequently refined by neoclassical economists through the adoption of a utility theory of value, the use of marginalist analysis, the integration of differential calculus, the emulation of scientific standards from natural sciences, and the development of economic models based on assumptions about perfect competition. And it has reached a current apotheosis in the work of the modern economists, who posit that neoclassical perfect competition is an ideal benchmark for market dynamics, that deviations from perfect competition are pervasive, that individual beliefs and characteristics are the cause of market outcomes, and that economic relations are not limited to a market context.

In general, it is *remarkable how the scope of economic analysis has expanded over time* as a result of successive, expansive reinterpretations of the economic worldview. We saw that the classical political economists were mainly concerned with market-level phenomena, that the neoclassical economists expanded their methods so that they could also examine firms, and that the modern economists have, via game theory, sought to explain all human behaviour in terms of economics.[1] It seems, in this regard, that economics has a clear *impulse towards universal analysis*, and that it is driven to fold as much as possible of reality into the rational sphere of economic relations. It has to be asked, however, where does this impulse come from? And what is its endpoint, if there is one? Moreover, is there anything in economics which is self-limiting and might stop it from transgressing beyond the economic sphere, or beyond the point of sustainability?

Part B answers these and other questions in two Chapters while it explores the inherent limits of the economic worldview previously outlined. The first focuses on *the limits of economic methods* in terms of their reliance on the ideal of economic objectivity, the metaphor of the invisible hand, and the predictions of economic modelling. The second examines *the limits of economic objectives* in terms of the pursuit of liberalised markets and economic efficiency. This structure, based on methods and objectives, echoes our earlier finding that the economic worldview is simultaneously used for both description and prescription.

[1] The work of Gary Becker is especially representative of this modern economic tendency to try and use economics to explain all human interaction. His work is broad and covers, for example, discrimination, family relationships, social relations, religion, and more [*add reference to Gary Becker's work*].

5. The limits of economic methods

This Chapter examines the limits of economic methods as reflected in the economic paradigm described in Part A. It first reflects on the general nature of scientific practice, from the perspective of philosophy of science, and sees what this implies for the scientific practice of economists. It subsequently assesses whether economics can be an objective science, the extent to which it is reasonable for economists to rely on the invisible hand, and the degree to which economic models can provide meaningful insight into the economy. The sustainability implications of these assessments will be identified as we progress.

5.1 Economics and the nature of scientific practice

When we look at reality around us, we can see that it is mysterious, vast, seamless, and uncategorised. We cannot describe and examine it all at once. All we can do is divide it into separate parts and try to make these intelligible. The isolation of these parts, their separation from the 'rest', requires us to create an imaginary boundary between the 'relevant' and 'irrelevant' aspects of reality.[1] This delineation is fundamental to, and reverberates throughout, all scientific practice. It introduces an unavoidable degree of subjectivity because it occurs *before* we can even start to investigate reality. One consequence is that human knowledge cannot exist independently from, or remain unaffected by, subjectivity.[2] In this regard there is no completely objective, neutral, or mind-independent frame of reference which we can use to study natural or social scientific phenomena.[3] A second consequence is that subjectivity is both the *wellspring of creativity and insight in scientific practice*, as well as its *fundamental limit* since it prevents us from discovering any permanent, objective truths about reality as a whole.

The above has important implications for the role of unrealistic models and assumptions in the scientific practice of economists. First, it means that *assumptions and theory are prior to empirical data*; the latter cannot exist, and would have no meaning, without the former. Second, it demonstrates that there is nothing wrong, in principle, with the use of imperfect assumptions in economic theories and models because *all science relies on unprovable, imperfect leaps of faith about the phenomena under investigation*.[4] In fact, history shows that all theories are, from the moment of their conception, wrong in fundamental ways. As Lakatos writes in a refutation of Popperian falsification:

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[1] As Lukes eloquently expresses, "every way of seeing is also a way of not seeing" (S. Lukes, *individualism* (ECPR Press, 2006), 120.

[2] As Allan explains, "Even within the modern, Western tradition there is no single, hegemonic "scientific method" or "scientific discourse." Rather, there are multiple scientific enterprises, norms, values, and methods promoted by disparate, sometimes competing, communities of practice… Science should be conceptualized as plural and historical because scientific practices and ideas are always embedded in temporal and cultural contexts" (B.B. Allan, *Scientific cosmology and international orders* (Cambridge University Press, 2018), 15). Graeber remarks that any "project of constructing meanings necessarily involves imagining totalities (since this is the stuff of meaning), even if no such project can ever be completely translated into reality—reality being, by definition, that which is always more complicated than any construction we can put on it" (D. Graeber, *Toward an anthropological theory of value: The false coin of our own dreams* (Springer, 2001), 81). [Other sources to review: P. Feyerabend, *Against Method*, 4th edn., London, Verso, 2010, pp. 223-239. A. Gurwitsch, *Phenomenology and the Theory of Science*, Evanston, Northwestern University Press, 1974]

[3] T. Sedláček, *Economics of Good and Evil: The Quest for Economic Meaning from Gilgamesh to Wall Street* (Oxford University Press, 2013), 58-61. [*Inability to do objective science. Can probably refer to book on objectivity*]

[4] Weber writes that "without the investigator's evaluative ideas, there would be no principle of selection of subject-matter and no meaningful knowledge of the concrete reality. Just as without the investigator's conviction regarding the significance of particular cultural facts, every attempt to analyze concrete reality is absolutely meaningless, so the direction of his personal belief, the refraction of values in the prism of his mind, gives direction to his work" (Weber in Hausman, p. 64). [*Check other sources*] "…faith stands at the foundation of all science and all knowledge, for example, the elementary faith that the world is knowable. Myth, a faith in something

> "All theories, in this sense, are born refuted and die refuted… When Newton published his *Principia,* it was common knowledge that it could not properly explain even the motion of the moon; in fact, lunar motion refuted Newton. Kaufmann, a distinguished physicist, refuted Einstein's relativity theory in the very year it was published."[5]

A corollary to this point is that scientific practice cannot be expressed as a perfect, complete set of rules, meaning that there is no such as thing as 'the' scientific method.[6] Importantly, these limitations do not undermine the importance of scientific practice or allow it to be dismissed as 'mere' subjectivity. Nor do they mean that assumptions be chosen willy-nilly. It is certain that their content matters, and that the right selection of ideas can yield profound insights and useful applications.[7]

The above discussion on the nature of scientific practice is relevant for us because it shows that *it is not a sufficient criticism of economic methods to argue that economic assumptions are unrealistic*.[8] The same can be said for any other discipline and, indeed, for the entire scientific endeavour. As Raworth reminds us:

> "First, always remember that 'the map is not the territory', as the philosopher Alfred Korzybski put it: every model can only ever be a model, a necessary simplification of the world, and one that should never be mistaken for the real thing. Second, there is no correct pre-analytic vision, true paradigm or perfect frame out there to be discovered. In the deft words of statistician George Box, 'All models are wrong, but some are useful.'"[9]

We must therefore look elsewhere to identify the limits of economic and scientific methods. The role of subjectivity in scientific practice may be illuminating for this purpose; it invites us to ask whether good judgment is being applied in the way that economists are trying to make part of reality intelligible. In other words, *does it make sense to apply economic assumptions to understand, describe, and analyse a given phenomenon*?[10]

This question cannot be answered with sole reference to the results obtained after the assumptions are applied, the reason being that these results are patterned and co-created by the assumptions used. It is therefore only subjective judgment, perhaps including but never limited to economics, which is able to determine whether it makes sense for economic assumptions to be applied. This determination depends, moreover, on the situation at hand and cannot be established nomothetically, as an objective set of *a priori* rules or criteria. Consider, for example, how the reasonableness of an assumption can change

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unproven which we even sometimes know is not real (assumptions in economics, for example, starts to play a role as superstructure)" (Sedláček, *Economics of Good and Evil*, 108). See also: D. Graeber and D. Wengrow, *The dawn of everything: A new history of humanity* (Penguin UK, 2021), 21; Allan, *Scientific cosmology and international orders*, 281.

[5] Lakatos, The Methodology of Scientific Research Programmes Philosophical Papers p. 5

[6] [*Add reference that there is no single scientific method, e.g. Feyerabend*]

[7] [*Add reference to Kuhn's Chapter on science vs. art*]

[8] T. Lawson, 'What is this 'school' called neoclassical economics?', *Cambridge Journal of Economics* 37, no. 5 (2013), 955-956.

[9] K. Raworth, *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist* (London: Random House, 2017), 22.

[10] "Even among people who have the same underlying view of, say, the essence of what makes a human life valuable (as evidenced by, for example, their all recognizing the same intuitive counterexamples to any theory other than their own) there will be disagreement about which of their theories best describes that essence. It says something about the point of theorizing. Theorizing does not aim at consensus so much as at understanding. Neither does theorizing result in consensus, but consensus is overrated. Nor can even the best of maps render it unnecessary for drivers to exercise good judgment, and the same is true of even the best moral theory. Good judgment is a core virtue. There is no such thing as a map, a theory, or a consensus that makes judgment unnecessary" (D. Schmidtz, 'Value in nature' in *The Oxford Handbook of Value Theory*, ed. I. Hirose and J. Olsen (New York: Oxford University Press, 2015), 382.

depending on the context in which it is used. It is perfectly reasonable to assume the earth is flat when building my house, but it is unreasonable when calculating flight paths for air traffic.

It follows from these insights that *an assumption must never be allowed to justify itself*. If an assumption is used to justify its own application, then this causes our understanding of a part of reality to become insular. It results in circular reasoning and *severs the connection between an analysis and reality*. This occurs because the investigation of any part of reality requires the creation of an imaginary conceptual space, an artificial 'reality' which substitutes for the real one. It is necessarily the case that this fictional realm, created by subjective assumptions, is fully explainable on the basis of these same assumptions.

It is easy to lose sight of this because we, as scientists, are seldom largely aware and never fully aware of the plethora of assumptions needed to enable our scientific practice. It is likely, moreover, that our ignorance is compounded by the way that our assumptions are inherited and naturalised over time, in the unfolding and passing on of our scientific traditions. The process of compounding may explain why neoclassical and modern economics often progressed, as we have seen, by misinterpreting, naturalising, and extending the tentative assumptions of their predecessors.

In this regard it is possible that economists are unwittingly 'discovering' the underlying assumptions of their discipline in their own analysis, and are subsequently seeing the simplicity and symmetry which arises in the imaginary economic realm as 'proof' that reality can be made fully intelligible using only economic analysis. They then gather further 'evidence' by successively applying economic analysis to an ever-expanding imaginary economic realm. If this sounds unlikely, then consider how this process has been identified and welcomed, for example, by Lazear in a famed defense of economic imperialism:

> "At least during the last four decades, economics has expanded its scope of inquiry as well as its sphere of influence. Neither luck nor the inherent charm of economists is responsible for the change. Rather, the ascension of economics results from the fact that our discipline has a rigorous language that allows complicated concepts to be written in relatively simple, abstract terms. The language permits economists to strip away complexity. Complexity may add to the richness of description, but it also prevents the analyst from seeing what is essential."[11]

> "Because economics focuses so intently on maximization, equilibrium, and efficiency, the field has derived many implications that are testable, refutable, and frequently supported by the data. The goal of economic theory is to unify thought and to provide a language that can be used to understand a variety of social phenomena. The most successful economic imperialists have used the theory to shed light on questions that lie far outside those considered traditional. The fact that there have been so many successful efforts in so many different directions attests to the power of economics.[12]

He fails to recognise, however, that the imaginary realm of economics was *created* through economic assumptions and that this meant, from the beginning, that economists were predetermined to find 'proof' for their economic theories.[13] It is therefore not correct to view the successful application of economics as *a priori* evidence of its justified application. In any case, it seems that many economists, armed with generations of evidence and tradition, have stopped asking whether reality *should* be examined solely using this approach, and have come to accept that the results of its application are justification enough.

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[11] E.P. Lazear, 'Economic imperialism', *the Quarterly Journal of economics* 115, no. 1 (2000), 99-100.
[12] Lazear, 'Economic imperialism', 142.
[13] Sedláček writes that "…in economics, where on the basis of carefully selection assumptions we come to conclusions that are (understandably and, actually, inevitably) already contained in the assumptions. So, conclusions are really irrelevant (they are merely derived from assumptions); it is the *assumptions that are key*" (Sedláček, *Economics of Good and Evil* p. 178. [read Mitchell, Timothy (2005). Economists and the Economy in the Twentieth Century. In George Steinmetz (ed.), The Politics of Method in the Human Sciences: Positivism and its Epistemological Others. Duke University Press. pp. 126-141].

In support of this argument, consider first how economists have throughout history attempted to draw the boundary of socio-economic bifurcation in different places. Adam Smith did no more than imply, with his metaphor of the invisible hand, that economic dynamics could be viewed and examined as separate from the rest of society. Mill later translated this idea into a distinction between economic laws of production and a socially determined distribution of wealth. The former could be expressed as an equation between supply and demand, the latter could not. He made this distinction as a matter of personal judgment, and *not* as an extension of the logic of supply and demand. He made a subjective decision that economic methods were appropriate for one area, and not for another, and *did not use economic arguments to justify this decision*.

Second, we can examine how Pigou rejected some of Marshall's ideas on firms and market equilibrium, only to have his own ideas neglected by Chamberlin and Robinson. First, recall that Marshall suggested that it could be useful for *partial* equilibrium analysis to imagine how a representative firm might operate under perfectly competitive conditions. He indicated that this is no more than a useful fiction because, in reality, there would be both economic and non-economic factors to prevent the existence of a general equilibrium. This was set aside by Pigou, who found it reasonable to assume that there could exist a *general* equilibrium at the level of a given industry or market, even if individual firms were not in equilibrium. Both constraints were subsequently ignored by Chamberlin and Robinson, who argued that *all firms exist in an equilibrium state* under the assumption that they have identical cost curves. This theory of the individual firm, as a production function, was key to 'completing' the neoclassical GE model of supply and demand.

The above, somewhat paradoxical sequence of theoretical development shows clearly that economists have misinterpreted, naturalised, and extended the speculative assumptions of their predecessors. In this case, it can be seen as the 'discovery' by Pigou, Chamberlin, and Robinson of economic assumptions in an area where Marshall explicitly said that these theories *did not apply*. Note that it was the subjective judgment of Marshall and Pigou, and not any kind of inherent limit on economic analysis, that restrained them from applying the full set of neoclassical theories to firms and markets.

Counter-evidence from reality, such as the fact that firms do not have identical cost curves, was set aside to ensure the integrity of the imaginary economic realm. The symmetry which emerged, due to the coherence with economic assumptions, was viewed as evidence enough for the correctness of these theories, and accounts for their integration into the neoclassical constellation. Nelson and Winter describe this process as a matter of standard economic practice:

> "In economics (as in physics) what we refer to as a theory is more a set of basic premises—a point of view that delineates the phenomena to be explained and *modes of acceptable explanation*—than a set of testable propositions. The *theory points to certain phenomena and key explanatory variables and mechanisms*, but generally is quite flexible about the expected conclusions of empirical research, and a wide class of models is consistent with it. Inadequate or incomplete explanations or even contradictions with the data, generally are interpreted as *puzzles and problems to be worked on within the broad framework proposed by the theory*, rather than grounds for its rejection."[14] [emphasis added]

The idea is to figure out how 'reality' (i.e. the fictional economic and non-economic realms) can be made coherent with economic theory, rather than to identify when economic theories can or cannot be reasonably applied to reality. This is one reason why modern economists have continued to rely on neoclassical economics as a benchmark, despite it being debunked for being unrealistic. It embodies the range of assumptions which many economists believe will eventually provide an objective and complete

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[14] [*This is quite similar to the way that 'normal' science is practiced according to Kuhn (add ref)*] R.R. Nelson and S.G. Winter, 'Neoclassical vs. evolutionary theories of economic growth: critique and prospectus', *The Economic Journal* 84, no. 336 (1974), 886.

view of reality, even if this perfection has not yet been attained. On this view, it is only a matter of time and further progress in economics until the model is perfected (or developed into a new and improved version). Neoclassical economics is a beacon and source of inspiration for this effort, and not simply an outdated canard.

Many economists are optimistic about the promise of game theory for providing such a new and improved version. It analytical potential is often seen as a "unifying force able to bring together politics, economics, sociology, anthropology… under one roof and turn them into sub-disciplines of some broader 'science of society'."[15] As Gintis explains: "The reigning culture in game theory asserts the sufficiency of game theory, allowing game theorists to do social theory without regard for either the facts or the theoretical contributions of the other social sciences."[16] He is critical, however, of this view and laments that: "Only the feudal structure of the behavioral disciplines could possibly permit the persistence of such a manifestly absurd notion in a group of intelligent and open-minded scientists. Game theorists act like the proverbial "man with a hammer" for whom "all problems look like nails."[17] If our analysis is correct, then these researchers may be enamoured with their own scientific approach and are failing to see its limits while succumbing to circular reasoning.

As a final example of the importance of subjective judgment to prevent circularity, contrast the way that Coase, Berle, and Means viewed hierarchies and organisations as essentially different from markets (the latter authors remarked that "The idea that an army operates on the basis of "rugged individualism" would be ludicrous. Equally so is the same idea with respect to the modern corporation").[18] For them, it was a clear matter of judgment that the internal dynamics of firms could not be equated with market exchange since they are not (a pure) part of the economic realm.[19] This was not, however, obvious to Alchian, Demsetz, Jensen, and Meckling who referred to their predecessors' work, set aside the ideas they did not like, and posited that there is no fundamental difference between organisations and markets; both emerge from the exchange relations of individuals.

Again, we can identify that the scope of the economic realm was, for the earlier scholars, not an issue of whether supply-demand dynamics *could* be applied but whether they *should* be applied. They based their judgment on their subjective impression of firms, the phenomena under investigation, rather than relying solely on economic arguments. The fact that the modern economic theorists of the firm produced results, like Chamberlin and Robinson before them, does not matter as far as the justified application of economic theory is concerned: *an assumption must not be allowed to justify itself*.

This has unfortunately been deeply misunderstood by many eminent economists, even those who have been sensitive to the need for care with assumptions. Debreu, for example, argued that the *methods and theories* of economics are able to ensure that economics is not applied beyond its appropriate domain:

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[15] S.H. Heap and Y. Varoufakis, *Game theory: a critical text* (Psychology Press, 2004), 1.
[16] H. Gintis, *The Bounds of Reason: Game Theory and the Unification of the Behavioral Sciences* (Princeton University Press, 2009), xiii.
[17] Gintis, *The Bounds of Reason*, xiv.
[18] A.A. Berle and G.C. Means, *The Modern Corporation & Private Property* (New Jersey: Transaction Publishers, 2010 [1932]), 306-307.
[19] Arrow reaches a similar conclusion, and notes that "A firm, especially a large corporation, provides another major area within which price relations are held in partial abeyance. The internal organization is… hierarchical and bureaucratic… internally, and especially at lower levels, the relations among the employees of the firm are very different from the arm's length bargaining of our textbooks. As Herbert Simon has observed, an employment contract is different in many ways from an ordinary commodity contract; an employee is selling willingness to obey authority" (Arrow as cited in J.-P. Robé, *Property, Power and Politics: Why we need to rethink the world power system* (Policy Press, 2020), 12).

> "The exact formulation of assumptions and of conclusions turned out, moreover, to be an effective guide against the ever-present temptation to apply an economic theory beyond its domain of validity (Debreu 1986, 1266)."[20]

He misunderstands, however, that it is precisely this approach, using economic assumptions rather than other phenomena as a reference point, which leads to the use of economics beyond its reasonable scope. As another example, we can consider Williamson who warns against the careless use of assumptions in his 2007 article on 'Transaction Cost Economics':

> "Theoretical physics is widely regarded as the exemplar of the imperial tradition, but parts of economics also have these aspirations – as witness Solow's observation that "there is a lot to be said in favor of staring at the piece of reality you are studying and asking, just what is going on here? Economists who are enamored of the physics style seem to bypass that stage"…
>
> To be sure, few economists have no curiosity whatsoever with the phenomena. The readiness, however, to impose preconceptions – rather than to get close to the phenomena by asking and attempting to answer the question, "What is going on here?" – is nevertheless widespread."[21]

This understanding did not, however, lead Williamson into a significantly different direction from principal-agency theory insofar as he, too, positions firms in the economic realm and posits market supply and demand as the reality which underpins organisational dynamics.

Perhaps the most influential example of this misunderstanding about scientific practice can be found in Friedman's essay on 'The Methodology of Positive Economics', notable as the most influential 20th century article on economic methodology. We can cite it at length:[22]

> "Positive economics is in principle independent of any particular ethical position or normative judgments. As Keynes says, it deals with "what is," not with "what ought to be." Its task is to provide a system of generalizations that can be used to make correct predictions about the consequences of any change in circumstances. Its performance is to be judged by the precision, scope, and conformity with experience of the predictions it yields. In short, positive economics is, or can be, an "objective" science, in precisely the same sense as any of the physical sciences."[23]
>
> "… the relevant question to ask about the "assumptions" of a theory is not whether they are descriptively "realistic," for they never are, but whether they are sufficiently good approximations for the purpose in hand. And this question can be answered only by seeing whether the theory works, which means whether it yields sufficiently accurate predictions."[24]
>
> "In seeking to make a science as "objective" as possible, our aim should be to formulate the rules explicitly in so far as possible and continually to widen the range of phenomena for which it is possible to do so."[25]
>
> "[A] theory cannot be tested by comparing its "assumptions" directly with "reality." Indeed, there is no meaningful way in which this can be done. Complete "realism" is clearly unattainable, and the *question whether a theory is realistic "enough" can be settled only by seeing whether it yields predictions that are good enough for the purpose in hand or that are better than predictions from alternative theories*. Yet the belief that a theory can be tested by the realism of its assumptions independently of the accuracy of its predictions is widespread and the source of much of the

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[20] T. Düppe, 'Debreu's apologies for mathematical economics after 1983', *Erasmus Journal for Philosophy and Economics* 3, no. 1 (2010), 22.
[21] O.E. Williamson, 'Transaction cost economics: An introduction', *Kiel Institute for the World Economy* Economics Discussion Paper, No. 2007-3 (2007), 14.
[22] D.M. Hausman, *The Philosophy of Economics: An Anthology*, 3 ed. (Cambridge: Cambridge University Press, 2008), 145.
[23] Friedman as cited in Hausman, *The Philosophy of Economics*, 146.
[24] Friedman as cited in Hausman, *The Philosophy of Economics*, 153.
[25] Friedman as cited in Hausman, *The Philosophy of Economics*, 160.

> perennial criticism of economic theory as unrealistic. Such criticism is largely irrelevant, and, in consequence, most attempts to reform economic theory that it has stimulated have been unsuccessful."[26] [emphasis added]

There is clearly much in common between Friedman's arguments and the earlier analysis which noted that unrealistic assumptions are not, by themselves, enough to discredit economics. Note, however, the italicised section in the final paragraph which suggests that only the results of a prediction, compared to alternative predictions, can be used to decide whether a given set of assumptions has been rightfully applied. Missing from this account is that economic empirical results and predictions are, no less than theories, *the result of an imaginary delineation between the economic and non-economic realm*. They are created by the assumptions of economics, in the same way that a magnified perspective on reality is created by the lens of a microscope. We can no more rely solely on the empirical results of economic predictions than we can on the magnified view through a microscope to tell us when it should be applied.

This does not mean that predictions are unimportant, but that they are, *by themselves*, not sufficient to guarantee that economics has been correctly applied.[27] This is because part of the economic realm has been *specially designed to isolate (i.e. co-create) statistical regularities and generate economic predictions.*[28] There is, moreover, nothing inherent to the non-economic realm, which is also a figment of our imagination, which will resist and push back against an unjustified application of economics.[29] Düppe's remarks on *economic imperialism* are telling in this regard:

> "…economics imperialism [is] the infusion of economic ideas into other social sciences and economic talk in general. Economics imperialism is problematic and different from a fruitful interdisciplinary effort because economists lose their sense of an economic domain and enter other domains without caring about their characteristics, that is, *without sensing resistance when passing borders*"[30] [emphasis added]

Consider, for example, the way that principal-agent and incomplete contracts theories of the firm can use game theory and equilibrium modelling to generate models, predictions, and empirical results. Anyone using these techniques would see these outcomes, but at no point would they be confronted with the dilemma about whether or not there is an equivalence between firms and markets. This question is *circumvented* by the assumptions of these theories, and not addressed by their results, so it remains an open and subjective question whether their application is justified.

It is, in this regard, fair enough that Alchian, Demsetz, Jensen, Meckling, and Williamson thought it appropriate to explain firms in terms of market dynamics. Researchers are, and should be, free to make these choices. But how many people now working with their theories have asked themselves, and really investigated, whether it makes sense to see firms in this way? And if they did not ask this question, then do they really understand the results of their research? Do they 'know' which view on social relations is being promoted alongside their scientific findings?

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[26] Friedman as cited in Hausman, *The Philosophy of Economics*, 160.
[27] L.H. Summers, 'The scientific illusion in empirical macroeconomics', *The Scandinavian Journal of Economics* (1991), 144-145.
[28] For an in-depth discussion of economics' relationship to deductive methods and the idea of event regularities, see: T. Lawson, *economics & reality* (Psychology Press, 1997), 16-26; Lawson, 'What is this 'school' called neoclassical economics?', 953-954.
[29] Summers explains that "There is however a still greater danger however in research directed at achieving internal consistency starting from first principles without explicit regard for empirical observation. It is all too easy to confuse what is tractable with what is right. There is a tendency to reason that since the world must be consistent, and since all known full-blown models derived from optimizing behavior share a common prediction, that prediction must have some validity. This form of illogic is a modern development" (Summers, 'The scientific illusion in empirical macroeconomics', 145).
[30] Düppe, 'Debreu's apologies for mathematical economics after 1983'.

Chances are that they were never taught about these and other subjectivities in their scientific practice during their education.[31] And there is no reason to suspect that economic analysis alone would lead them to discover such insights; the non-economic yields to the economic as soon as it coheres with economic assumptions. There is, as Düppe's put it, *no sense of 'passing borders' because the economic and non-economic realms are two sides of the same imaginary coin, and neither has independent substance*. There is, in actuality, no such thing as 'the economy',[32] just as there is no such thing as 'the non-economy'. This is why economic science alone cannot tell us when we should apply our economic imagination; only wisdom and subjective judgment can do this.

5.2 The limits of economic methods

The insights above do not undermine the role of fictions in economics or scientific practice or indicate that they are anything less than potentially useful and insightful. They therefore do not automatically challenge the less than perfect assumptions of economics or the general themes which economists are trying to analyse. They do, however, invite us to challenge *three misconceptions that are common in modern economics*: (1) the view that economics is objective; (2) the existence of the invisible hand; (3) the extent to which mathematics is useful for economic analysis. The following subsection will discuss each of these in terms and reflect on their implications for the limits of economics.

5.2.1 Economics is not an objective science

Economists are taught that the economic sphere can be *objectively* characterised by self-regulatory dynamics that are separate from the rest of society. We saw that this idea is implicit in Smith's metaphor of the invisible hand, and that it developed by Mill's time into the idea that part of the economy is governed by 'objective' natural laws (i.e. like economic gravity) and another part that is governed, or at least influenced by, 'subjective' social structures.[33] These ideas have been retained by modern economics in the *distinction between positive and normative economics*.[34]

Positive economics "concerns the forces that govern economic activity"[35] while normative economics asks "what the goals of society should be".[36] Both concepts embody the premise that there is a separate economic sphere governed by the self-regulating dynamics of the invisible hand. Positive economics

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[31] This is covered in detail in section 5.2.1.

[32] Mitchell has traced the invention of 'the economy' to the mid-twentieth century. As he explains, "the idea of ''the economy'' is a surprisingly recent product of socio-technical practice, emerging only in the mid-twentieth century.... Before then, economists did not use the word ''economy'' in its modern sense. From around the 1930s, new forms of consumption, marketing, business management, government planning, financial flows, colonial administration, and statistical work brought into being a world that for the first time could be measured and calculated as though it were a free-standing object, the economy. Economics claimed only to describe this object, but in fact it participated in producing it" (T. Mitchell, 'The work of economics: how a discipline makes its world', *European Journal of Sociology/Archives Européennes de Sociologie* 46, no. 2 (2005), 298). See also: Allan, *Scientific cosmology and international orders*, 169, 217. T. Mitchell, 'Economentality: How the future entered government', *Critical inquiry* 40, no. 4 (2014).

[33] See section 2.1.2. Mill derived this view from the work of Nassau Senior, who considered that "the economist, as a scientist, can point out the consequences of various economic actions or the possible means to achieve any given end, but that he or she should not leave the field of positive scientific analysis and make value judgments concerning the desirability of a given line of action. Simply stated, the economist should concern himself or herself with what is, rather than what ought to be" (H. Landreth and D.C. Colander, *History of Economic Thought*, 4 ed. (Houghton Mifflin, 2002), 160).

[34] Wight identifies this as a basic distinction in all economic textbooks (J.B. Wight, 'The ethics behind efficiency', *The Journal of Economic Education* 48, no. 1 (2017), 16). Several examples are provided further below, and the distinction can also be found in: M. Parkin, M. Powell, and K. Matthews, *Economics: European Edition* (Pearson Higher Ed, 2017), 11. Case et al., *Principles of Economics*, 2017, p. 41.

[35] Landreth and Colander, *History of Economic Thought*, 10.

[36] Landreth and Colander, *History of Economic Thought*, 275.

tries to understand how these dynamics 'work', and normative economics applies this understanding in order to improve society, for example by maximising utility or promoting economic efficiency.

We already came across the positive-normative distinction in Friedman's 'The Methodology of Positive Economics':

> "Positive economics is in principle independent of any particular ethical position or normative judgments. As Keynes says, it deals with "what is," not with "what ought to be." Its task is to provide a system of generalizations that can be used to make correct predictions about the consequences of any change in circumstances. Its performance is to be judged by the precision, scope, and conformity with experience of the predictions it yields. In short, positive economics is, or can be, an "objective" science, in precisely the same sense as any of the physical sciences."[37]

The distinction is also present in *Economics* by Samuelson and Nordhaus, which has been the leading post-World War II textbook for many decades. Its 2009 edition notes:

> "When considering economic issues, we must carefully distinguish questions of fact from questions of fairness. Positive economics describes the *facts of an economy*, while normative economics involves value judgments." [emphasis added][38]

Another standard text for economics students, Mankiw's 2017 *Principles of Economics*, also explains that we need to distinguish between positive and normative analysis:

> "**Positive statements** are descriptive. They make a claim about how the world *is*. A second type of statement… is normative. **Normative statements** are prescriptive. They make a claim about how the world *ought to be*.
>
> A key difference between positive and normative statements is how we judge their validity. We can, in principle, confirm or refute positive statements by examining evidence. An economist might evaluate Portia's statement by analysing data on changes in minimum wages and changes in unemployment over time. By contrast, evaluating normative statements involves values as well as facts."[39]

To provide a final example, the distinction can also be found in a 2015 textbook co-written by influential economist Paul Krugman:

> "Analysis that tries to answer questions about the way the world works, which have *definite right and wrong answers*, is known as **positive economics.** In contrast, analysis that involves saying how the world *should* work is known as **normative economics.** To put it another way, *positive economics is about description*; normative economics is about prescription. Positive economics occupies most of the time and effort of the economics profession. And models play a crucial role in almost all positive economics. As we mentioned earlier, the U.S. government uses a computer model to assess proposed changes in national tax policy, and many state governments have similar models to assess the effects of their own tax policy." [emphasis added][40]

It is clear, in this regard, that the distinction between positive and normative economics is taught as the state of the art in economics today. We can reflect on what students are learning:

> Positive economics describes the *facts of the economy*.
>
> Positive economics *does not involve value judgments*.
>
> Positive economics makes claims about how the world *is*.
>
> Positive economics has *definite right and wrong* answers.

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[37] Friedman as cited in Hausman, *The Philosophy of Economics*, 146.
[38] Samuelson and Nordhaus, p. 6.
[39] N.G. Mankiw, *Principles of Economics*, p. 28.
[40] P. Krugman and R. Wells, *Economics*, p. 40.

Positive economics is *no more than description*.

These statements imply that positive economics provides a neutral, universal, objective, and value-free way to describe how the economy works. Its findings are subsequently used in normative economics to develop policy, for example in terms of how firms should be governed, markets should be regulated, individuals should be incentivised, and so on.

These ideas are conventionally accepted, but it has to be noted that they provide a misleading view of economics, and of scientific practice more generally. They mistakenly assume that economics *provides a true description of reality*, rather than it being no more than an imperfect abstraction and figment of human imagination. Moreover, they fail to recognise that *economics is not and cannot be objective*, and that *every description of what the economy 'is', is simultaneously an implicit assertion of what it 'should be'*. This is evident, as we have seen, in the concurrent use of the economic worldview to describe how the economy works and prescribe how it should work.[41]

In general, it can be highlighted that there is no objective-subjective distinction between positive and normative economics. Both depend on socio-economic bifurcation and the creation of a subjective boundary between the economic and non-economic parts of reality. And both proceed by dividing the non-economy into a part which operates according to economic principles and another which does not. Importantly, we have seen that neither distinction exists in reality, and that *there is nothing in economic analysis which can tell us where to put the boundary between the economic and non-economic, let alone between positive and normative economics*. We also saw that the scope of both kinds of economics can be expanded whenever something that is ostensibly non-economic can be made to cohere with economic assumptions.

To complement the above discussion, it can help to distinguish between objectivity and impartiality. In general, it is true that economics is impartial in the sense that results from the application of economic science are independent from the psychology of particular persons. In this regard the correct application of, for example, principal-agent theory should be expected to lead to the same results. This does not, however, mean that economics is objective since it remains affected by human subjectivity at a deeper, more fundamental level, as reflected for example in the initial selection of relevant subject matter.

Also helpful to identify is that there is nothing inherently wrong with the distinction between descriptive and prescriptive approaches. However, it must be recognised that *both are intertwined and that neither is objective*. Consider, for example, a range of metaphors which we can use to describe the presence of corporations in society. They can be described:

1. Mechanically, as a series of inputs and outputs
2. Biologically, in terms of Darwinian survival, evolution, and pursuit of resources
3. Legally, as a product of statutes and our legal systems
4. Contractually, e.g. as a nexus of contracts between private individuals
5. As a system, with feedback loops
6. As a public entity, with public obligations

Each of these (and other) metaphors offers a *partial view on the complex reality of firms' existence in society*. None of them has a monopoly of right and wrong on 'the facts of how firms exist' or what the firm 'is'. They all involve value judgments and make implications about corporate ontology that go beyond mere description. Public and private metaphors, for example, have widely different implications

[41] Section 4.3.

for corporate rights and obligations; neither metaphor is neutral. These are perhaps the most obviously political metaphors, but *all of them* have implications beyond their descriptive content.[42]

Notwithstanding the above, it may nonetheless be useful to distinguish between the descriptive use of a particular metaphor of the firm and its prescriptive application to a particular situation. This can be reasonably done so long as we do not make overstated claims about the scientific objectivity of one or another metaphor or scientific discipline.

In summary, the main point is that the scientific practice of economists is not objective and does not have unique and exclusive scientific access to economic facts. It is no more able to provide a complete picture of market dynamics than the colour red is able to draw every colour in the rainbow.[43] Economics is not, moreover, neutral with regards to the phenomena which it seeks to investigate.[44] Its enabling assumptions are imperfect and subjective, and cannot help but lead to distortions in the translation from reality to the imaginary economic and non-economic realms.

A fundamental problem with economic objectivity is that it sustains an illusory confidence about the potential of this discipline and obscures the limits of its scientific practice. It leads, as noted, to circular analysis and provides false justification for a common belief that it is somehow 'enough' for economists to study economics without due regard for the content of other disciplines or the nature of reality. We will later discuss the consequences of these limits for the sustainability of firms. For now, we turn to shake the invisible hand.

5.2.2 Economics should not be grounded in the invisible hand

Smith used his invisible hand metaphor to describe the equilibrating tendency of supply and demand, and to prescribe that the public good might be served by the liberalised pursuit of individual self-interest. In general, there is no scientific issue with the use of this metaphor to examine exchange and supply-demand dynamics, and to see if they might lead to beneficial results. It may, moreover, be interesting to express these relationships in terms of mathematics, for example as an equilibrium equation, as a useful fiction for scientific practice. It is, however, *not reasonable to believe that the invisible hand or mathematical equations provide an objective or sufficient explanation of market exchange practices.*

This is unreasonable not only because economics is subjective or because the invisible hand metaphor is constructed on a fiction of socio-economic bifurcation. Rather, it is also unreasonable due to the *specific set of assumptions* that was used to translate the invisible hand metaphor into something more concrete a workable, such as a formal model. As noted, GE models were created by assuming away competition, imbuing agents with perfect information, and a range of other implausible assumptions. These took economists further way, rather than closer to, the reality of market exchange. Hausman is wrong, in this regard, when he writes that:

> "Shortly after World War II, mathematicians and economists such as von Neumann, Arrow, Debreu, and McKenzie *proved something like what Smith conjectured*. They demonstrated that if agents are rational, self-interested, and well informed, and if they interact only through voluntary exchange in a perfectly competitive market, then a general equilibrium exists, which is Pareto efficient."[45] [emphasis added]

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[42] As Saïd remarks, "no critic or interpreter can be entirely believed if he or she claims to have achieved an Archimedean perspective that is subject neither to history nor to a social setting" (E.W. Saïd, *Culture and imperialism* (Vintage, 2012), 39.

[43] [*add reference to colours metaphor for differences between scientific disciplines. Lawson?*]

[44] See, for example, the work of Mitchell (Mitchell, 'The work of economics'; Mitchell, 'Economentality'). [*Add other references, Lawson*]?

[45] Hausman, *The Philosophy of Economics*, 24.

These economists did not 'prove' what Smith conjectured. Instead, they used a particular selection of assumptions to reiterate his utopian ideas in a more narrow, mathematical form. As Blaug explains:

> "a "non-constructive" proof jumps directly from the axioms [i.e. assumptions] of the model to its final outcome: instead of constructing an example of whatever it is that is being justified, in this case the existence of equilibrium, it argues instead that equilibrium is logically implied by one or more of the axioms. Modern existence proofs *á la* Arrow and Debreu are invariably non-constructive in that they make no effort to show how equilibrium comes about but merely that the existence of equilibrium is logically implied by certain plausible institution-free assumptions about economic behavior. One might say that they are possibility-of-existence proofs, not actual existence proofs."[46]

If markets are free, if people are perfectly informed, if people are rational and self-interested, if people are price takers, if… then the result *might be*, but is not necessarily, Pareto optimal as outlined in neoclassical GE and modern partial equilibrium models.

These models do not prove Smith's ideas because they are no more than one of many possible ways to refine the assumptions that were already contained in his writing. They are a product of, a selective reinterpretation of, and therefore not a proof of his work. We noted previously that an assumption cannot justify its own application. It is equally the case that *an assumption, however (re)interpreted, cannot prove its own existence*.

Also problematic is that, *in order to conceptualise the invisible hand, we need to isolate supply-demand dynamics from the rest of reality by creating an artificial division between exchange relations and other kinds of human interaction*. This application of socio-economic bifurcation requires us to assume, in effect, that other forms of human behaviour are non-economic, and therefore irrelevant or inefficient, or are really just economic, and can be explained in terms of self-interested market exchange. The idea of the invisible hand is therefore *enabled by the denial of a level playing field between economic and non-economic phenomena*.

This prejudice against non-economic phenomena entails that we cannot use liberalised markets and the invisible hand as a framework to achieve collective interest goals, such as those related to sustainability. This framework is methodologically predetermined to subordinate anything which is non-economic to the economy. It is, moreover, unable to discern where to position the boundary between the economic and non-economic. This is because, as we saw, economics has no sense of passing borders between the economic and non-economic realms, and because economists are apt to assume, as Mill remarked, that competition does, in reality, whatever it can be shown to do, in theory.

In general, the idea that liberalised markets and the invisible hand are sufficient to protect the collective interest is like believing that a red pen is able to draw all the colours of the rainbow. This error in logic is compounded by the belief that economics is an objective science since it frames any opposition to the expansion of economic rationality as mere subjectivity: *your opinion* is no match for *my science*.[47] Such a stance can only result, as we have seen, in economic imperialism and circular reasoning.

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[46] M. Blaug, 'The formalist revolution of the 1950s', *Journal of the History of Economic Thought* 25, no. 2 (2003), 147.

[47] As an example of this reasoning in the area of corporate governance, consider the remarks of Hart and Zingales: "According to the traditional [economic] view, shareholders have a single objective: shareholder value maximization (SVM). There is no scope for any other goals, including social ones. But in each of the above examples, shareholders seem to be pushing companies to do things that might reduce value (most of which are opposed by management). Many scholars have criticized the SVM paradigm, arguing that managers should act in the interest of other stakeholders—workers, consumers, the community—or that companies should have a social purpose over and above making money. *These criticisms are normative*. But a further powerful criticism is a positive one: the paradigm cannot explain what shareholders are actually pressuring companies to do" [emphasis

The methodological prejudice of economics against non-economic phenomena is one reason why it has been so difficult to address sustainability issues using this science. In general terms, the problem is that the economic realm has been elevated to an objective status by the globally dominant view, derived from economic science, that free and open markets are the best and only way to scientifically organise our exchange arrangements. An unavoidable side effect of this view is that non-economic phenomena, such as social and environmental concerns, are at worst seen as irrelevant or inefficient, or at best as really just economic, whenever they have an impact on economic concerns. Such impacts are, moreover, inevitable due to the universalist impulse of economic analysis. To the extent that we allow this impulse to operate, i.e. to the extent that we try to combine economics and sustainability, it follows that the latter can only ever have a subordinate status and will never be considered on its own terms.

The above demonstrates that the ongoing, global commitment to the economic worldview is determined to subordinate human rights, ecosystem integrity, climate action, in fact, all life on earth and everything else, to the use of economic methods and pursuit of economic objectives. This is an inevitable corollary to the contemporary scientific foundation of economics and its pervasive influence in our societies. This problem is invisible from an economic perspective since this science assumes, in its very foundation, that there is only one way to organise our exchange relations, namely through the liberalised pursuit of self-interest as governed by the invisible hand of supply and demand.

There is, however, *no scientific basis for the utopian promise of economists that we can use the invisible hand to achieve sustainability objectives within the ambit of an open, free market economy*. Instead, it is a false utopia that is premised on mistaken ideas about the nature of economics and scientific practice, and which cannot provide more than suboptimal results for sustainability concerns since it gives them an inherently subordinate status. It follows, as we will explore in more detail later, that we cannot make firms sustainable by trying to make their activities consistent with the economic worldview. Next, we turn to examine economic reliance on mathematical models.

5.2.3 Economic models bear little resemblance to market exchange

Development into a formal model is often seen as a test for the quality of an economic theory.[48] It is, however, questionable in light of the above discussion whether such a general standard is desirable or meaningful. Economic subjectivity, socio-economic bifurcation, and implausible assumptions render void any possibility of these models to offer an objective account of economic dynamics. Any policy guidance which they can offer is, moreover, limited by the inherent tendency of the invisible hand to subordinate non-economic concerns to economic goals.

These issues are not generally recognised because economics is built on a Platonist[49] belief that there exists a hidden, but objective, mathematical realm of numbers and statistical regularities underneath the

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added] (O.D. Hart and L. Zingales, *The new corporate governance*, National Bureau of Economic Research (2022), 2-3).

[48] Nelson and Winter, 'Neoclassical vs. evolutionary theories of economic growth', 890; S. Bowles and H. Gintis, 'Walrasian economics in retrospect', *The quarterly journal of economics* 115, no. 4 (2000), 3; N.J. Foss and P.G. Klein, 'Entrepreneurship and the Economic Theory of the Firm: Any Gains from Trade?', *Contracting and Organizations Research Institute* Working Paper No. 2004-09 (2004), 2, 21; N.J. Foss and P.G. Klein, 'The emergence of the modern theory of the firm', *Center for Strategic Management and Globalization* Working Paper No. 1/2006 (2006), 4-5; M. Fourcade, E. Ollion, and Y. Algan, 'The superiority of economists', *Revista de Economía Institucional* 17, no. 33 (2015), 4.

[49] "Platonism about mathematics (or *mathematical platonism*) is the metaphysical view that there are abstract mathematical objects whose existence is independent of us and our language, thought, and practices. Just as electrons and planets exist independently of us, so do numbers and sets. And just as statements about electrons and planets are made true or false by the objects with which they are concerned and these objects' perfectly objective properties, so are statements about numbers and sets. Mathematical truths are therefore discovered, not

subjective world of our senses.[50] The latter world is misleading whereas the former provides a true picture of how the world works. Economics is, of course, the privileged discipline with unique access to these hidden realities for the economy.[51] Düppe explains how:

> "Walras associated his system of [GE] equations with 'the economy' on the basis of a metaphysical belief that the economy is capable and worthy of possessing mathematical truth. That is, economic reality can be expressed, rather than merely represented, with the beauty, consistency, and simplicity of mathematics. At the heart of Walras's mathematical economics was not the belief that the analogy of Newtonian mechanics and market forces actually holds in reality, as he officially framed his theory. Rather, the mathematical expression of the economy shows that the economy is worth its reality! Walras was moved by a Platonistic belief that the meaning of the structure of mathematics was the same as the meaning of the structure of "the economy.""[52]

Such beliefs are also evident in the following, separate statements of Nobel prize-winning economists, Debreu and Lucas:

> "The theory that we are discussing tries to be ideologically neutral. It deals with problems that are basic and common to all economic systems, for instance the efficient allocation of resources through decentralized procedures […] Mathematical models of the economy help to analyse the optimal extent of this decentralization. The risk of misinterpretation […] is lessened by the uncompromising exactness of the modelization (Debreu, in Feiwel 1987, 246)."[53]

> "I came to the position that mathematical analysis is not one of many ways of doing economic theory. It is the only way. Economic theory *is* mathematical analysis. Everything else is just pictures and talk."[54]

Such perspectives sustain not only the mistaken idea of economic objectivity, but also the view that economics and science can be purely empirical and mathematical. They also make it seem as though science can only progress through mathematical development, and dismiss the constitutive role of theory in science. Sedláček captures this view well when he writes that:

> "What cannot be calculated or at least proxied with numbers is treated as if it were not real, illusionary. A mathematical equation becomes the ideal of truth: cold, distant, the same for all individuals, historically and spatially constant. Man and reality are reduced to mechanical-mathematical calculus. If this reduction cannot be carried out, it is as if it only testified to a shortage of knowledge and of ignorance – such a preserve remains unchartered territory, mythic and scorned."[55]

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invented" (Ø. Linnebo, 'Platonism in the Philosophy of Mathematics' in *The Stanford Encyclopedia of Philosophy*, ed. E.N. Zalta and U. Nodelman (2023)).

[50] "Platonistic world consists of real objects, which, unlike objects in the empirical world, neither initiate nor undergo change. Thus for Platonists, mathematical existence transcends empirical existence in general and socio-historical existence in particular. Existence in this Platonistic world is independent of spatiotemporal existence" (T.A. Boylan and P.F. O'Gorman, 'Kaldor on Debreu: The Critique of General Equilibrium Reconsidered', *Review of Political Economy* 21, no. 3 (2009), 22).

[51] See, for example: F.H. Knight, *Risk, Uncertainty and Profit* (Boston and New York: Houghton Miffler Company, 1921), 3, 6.

[52] Düppe, 'Debreu's apologies for mathematical economics after 1983', 8.

[53] Düppe, 'Debreu's apologies for mathematical economics after 1983', 26. Boylan and O'Gorman remark that "Debreu's mathematical proof establishes existence in an idealized world, either Platonic or Hilbertian, which in principle is not accessible to any mathematician operating with a finite number of steps, however large, when each step is taken one at a time" (Boylan and O'Gorman, 'Kaldor on Debreu', 29).

[54] Robert Lucas, cited by D. Warsh, *Knowledge and the Wealth of Nations* (New York: Norton, 2006), 168, as cited in P. Mirowski, 'The Unreasonable Efficacy of Mathematics in Modern Economics' in *Philosophy of Economics*, ed. U. Mäki (Amsterdam: Elsevier, 2012), 159.

[55] Sedláček, *Economics of Good and Evil*, 180.

The persistence, even intensification, of these ideas since the 1950s is one of the main scientific issues with economics.[56] We find again that these developments took place following the misinterpretation, naturalisation, and extension of another scholar's research. This time it was the work of the highly gifted mathematician, Von Neumann.

Von Neumann's Frankenstein monster

Von Neumann is credited with the invention of game theory in a 1928 paper[57] and 1944 co-publication with Morgenstern, the *Theory of Games and Economic Behaviour*.[58] Mathematics was, in those decades, engaged in a project of *formalism*, which is an "attempt to provide a finitistic proof of the consistency of arithmetic",[59] i.e. to provide a complete account of mathematics through the comprehensive and progressive development of a universal, axiomatic foundation. Von Neumann initially contributed to this project with several papers (including the one on game theory), but experienced a dramatic change of heart in the 1930s while attending a conference in Konigsberg.[60] Here, Kurt Gödel presented his (in)famous *incompleteness theorem* which demonstrated, conclusively, the futility of a formalist project.[61] Rucker explains the implications:

> "Gödel's Theorem shows that human thought is more complex and less mechanical than anyone had ever believed…" The Incompleteness Theorem has many profound implications, not just for mathematics but for philosophy as well for it implies that there exists *no level of analytical sophistication which prevents certain ideas from straying outside the bounds of the resulting axiomatic system*." [emphasis added][62]

It is, in other words, impossible to provide a complete account of mathematics within the logic of a single, deductive, axiomatic system. Gödel's ideas had a powerful influence on Von Neumann, who "left that auditorium a changed man":[63]

> "Losing faith in the Hilbert formalist program almost immediately on the heels of Gödel's theorems, [Von Neumann] turned away from axiomatization as a source of inspiration for mathematical research, and instead became an advocate of the position that fruitful new directions in mathematics would come from immersion in the technical problems thrown up by the special sciences".[64]

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[56] For a discussion see: Düppe, 'Debreu's apologies for mathematical economics after 1983'; Mirowski, 'The Unreasonable Efficacy of Mathematics in Modern Economics'; Lukes, *individualism*, 80-83.
[57] J. von Neumann, 'Zur theorie der gesellschaftsspiele', *Mathematische annalen* 100, no. 1 (1928).
[58] J. von Neumann, 1944, *Theory of Games and Economic Behaviour*.
[59] L. Corry, 'The Origins of Eternal Truth in Modern Mathematics: Hilbert to Bourbaki and Beyond', *Science in Context* 10, no. 2 (1997), 255.
[60] Y. Varoufakis, 'Pristine equations, tainted economics and the postwar order', Heymann Centre for the Humanities, Columbia University (2009), 12.
[61] For a friendly introduction to this theorem I can highly recommend the Youtube video by Veritasium, 'Math has a Fatal Flaw' (https://www.youtube.com/watch?v=HeQX2HjkcNo&ab_channel=Veritasium).
[62] Rucker as cited in Varoufakis, 'Short Pristine equations, tainted economics and the postwar order', 13. For a discussion on some of the controversies raised by Gödel's work, see: S. Feferman, 'Gödel, Nagel, minds, and machines', *Feferman on Foundations: Logic, Mathematics, Philosophy* (2017). As he writes: "even if we had a language in which all mathematical notions could be defined, that would not serve to account for the applications of mathematics to non-mathematical subjects, such as physics. Finally, this accords with practice, in that mathematicians never think – if they appeal explicitly to basic principles like induction at al – that they are working in some fixed language. All of this is by way of arguing that we must regard the subject matter of mathematics as an open-ended domain not generated by rules fixed in advance, and so in that respect it is non-mechanistic. At the same time I would claim that where the schematic principles employed, such as those for logic and arithmetic, are complete in a suitable sense, the mathematical mind is constrained to act in accordance with them, and thus to fall under a form of mechanism" (Feferman, 'Gödel, Nagel, minds, and machines', 18).
[63] Varoufakis, 'Short Pristine equations, tainted economics and the postwar order', 13.
[64] Mirowski, 'The Unreasonable Efficacy of Mathematics in Modern Economics', 178.

So it happened that the founder of game theory rejected the potential capacity of game theory (and other mathematics) to provide a 'complete' picture of reality. He would henceforth focus on the practical application of mathematics to solve problems at the boundary of science and reality, rather than those which exist only within the imaginary boundaries of scientific discourse.[65] In the process, he "explicitly rejected the twin pillars of postwar neoclassical mathematical economics, viz., Walrasian general equilibrium and the Nash solution in game theory".[66] He went so far as to dismiss the Nash equilibrium solution as "trivial".[67]

Even after Von Neumann and Morgenstern published their book on game theory, it "was intended solely as a source of good advice to decision makers operating in strategic contexts (from chess players to businessmen, generals, government etc.). It was *not* meant as an all-encompassing theory of strategic behaviour."[68] These caveats were set aside, and Von Neumann's assumptions were naturalised and extended in the later work of Nash, Koopmans, Becker, Arrow, Debreu, Lucas, and numerous other economists whose work would contribute to the common, audacious view that modern economics can provide a complete mathematical, i.e. formalist, objective account of human interaction and economic dynamics. It seems, in this regard, that economists may have inherited a mathematical agenda which they scarcely seem to understand. As Blaug laments:

> "…the Arrow-Debreu article is formalism run riot in the sense that what was once an economic problem – is simultaneous multi-market equilibrium actually possible in a real economy? – has been *transformed into a mathematical problem about a virtual economy*, which is solved not by the standards of the economics profession, but by those of the mathematics profession".[69]

> "…general equilibrium theory gradually began to undergo axiomatization, setting aside all concerns with verisimilitude, let alone empirical verification, leading directly to the Arrow-Debreu paper and Debreu's *Theory of Value* in which general equilibrium theory is boldly defended as a self-sufficient mathematical structure, having no necessary contact with reality, or at most, as in Arrow and Hahn's *General Competitive Analysis* (1971), providing a purely formal picture of the determination of economic equilibrium in an idealized decentralized competitive economy."[70]

Düppe adds that the mathematical labels of economic concepts in formal models are often not a product of economic theory, which means that they are nicknames rather than scientific representations:

> "Is there anything by virtue of which a mathematical object can represent a primitive concept? No. The very question of the conditions of representing cannot be posed in Debreu's scheme. Instead of representation, Debreu speaks more accurately of the *substitution* of primitive concepts by mathematical objects. These *substituted concepts are not representations, but function as the identifiers of the mathematical objects—their nicknames*. Representing primitive concepts as mathematical objects is thus an *act of tagging the mathematical objects*. This is to say it *is not an act of abstraction, idealization, comparison, simplification, inference, deduction, induction, nor an act of abduction into another context*" [emphasis added][71]

Even Debreu recognises this as a general aspect of economic formalism:

> "An axiomatized theory first selects its primitive concepts and represents each one of them by a mathematical object. […] Next assumptions on the objects representing the primitive concepts are specified, and consequences are mathematically derived from them. The *economic interpretation of*

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[65] Summers argues a similar point for empirical macroeconomics (Summers, 'The scientific illusion in empirical macroeconomics').
[66] Mirowski, 'The Unreasonable Efficacy of Mathematics in Modern Economics', 178.
[67] J. Cassidy, 'The Triumph (and Failure) of John Nash's Game Theory', *The New Yorker*, May 17 2015.
[68] Varoufakis, 'Short Pristine equations, tainted economics and the postwar order', 15.
[69] Blaug, 'The formalist revolution of the 1950s', 147-148.
[70] Blaug, 'The formalist revolution of the 1950s', 150.
[71] Düppe, 'Debreu's apologies for mathematical economics after 1983', 10.

> *the theorems obtained is the last step of the analysis*. According to this schema *an axiomatized theory has a mathematical form that is completely separated from its economic content* (Debreu 1986, 1265)." [emphasis added][72]

Even if we tentatively accept the idea that there might exist a Platonist reality which can be objectively discovered for mathematics or physics, then we should *still* deny that such a realm could exist for economics. As Mirowski explains:

> "… for the purposes of economics, by contrast with Newtonian physics, there can be no legitimately independent Euclidean space…
>
> Whatever else one may think about this history, it is clear that there is no firm evidence that prices, commodity units and money were ever constituted as numbers in some pristine ontological sense: they were (and still are) contingent upon a whole range of other social practices, might be reorganized in a myriad of ways, and exhibit no 'natural' or stable mathematical character. Hence *a defense of mathematical economics which points to the natural occurrence of numbers in the economy puts the cart before the horse*" [emphasis added][73]
>
> [On borrowing from physics] "…different mathematical traditions cannot be doffed and discarded indifferently and carelessly like some second-hand gladrags, while "the Economy" endures naked and pristine underneath. Mathematics bears implicit content, oftentimes freighted in below the waterline of consciousness"[74]

Notwithstanding such critiques,[75] the rise of economic formalism has led many economists to believe, consciously or not, in a Platonist view that there exists an objective, mathematical reality underpinning the economy, and that the economy does or should look like the idealised neoclassical form of this underlying mathematical structure. This has led them to use mathematic and economic assumptions as a reference point and standard of proof for economic models, rather than the real-world phenomena of market exchange. Mirowski notes, in this regard, that much of economics has stopped studying markets in favour of an analysis of fictions about rational agents.[76]

> "…a judicious and unbiased overview of the history of the first century of neoclassical economics would confirm that it had been much more fascinated with the status and nature of *agents* than with the structure and composition of markets. Most of the time, the concept of the market was treated as a general synonym for the phenomenon of exchange itself, and hence rendered effectively redundant – what jumps out at the economic historian is the extent to which [economic analysis has] had little or no relationship to the operation of any actual contemporary market."[77]

The conceptual disconnect between economics and market phenomena, already apparent in neoclassical economics, has been exacerbated by the modern economic turn to game theory. This disconnect is hidden and compounded by the way that, as we have seen, game theory folds the context of human behaviour into the internalised rules and beliefs of rational agents. This obscures the market context and

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[72] G. Debreu, 'Theoretic models: mathematical form and economic content', *Econometrica* 54 no. 6 (1986), 1265 as cited in Düppe, 'Debreu's apologies for mathematical economics after 1983', 7. Debreu also writes in his *Theory of Value* that "Allegiance to rigor dictates the axiomatic form of the analysis where the theory, in the strict sense, is logically entirely disconnected from its interpretations" (G. Debreu, *Theory of value: An axiomatic analysis of economic equilibrium*, vol. 17 (Yale University Press, 1959), x).

[73] Mirowski, 'The Unreasonable Efficacy of Mathematics in Modern Economics', 164.

[74] Mirowski, 'The Unreasonable Efficacy of Mathematics in Modern Economics', 191-192.

[75] Summers, 'The scientific illusion in empirical macroeconomics'; P. Chen, 'Equilibrium illusion, economic complexity and evolutionary foundation in economic analysis', *Evolutionary and Institutional Economics Review* 5, no. 1 (2008), 94-95.

[76] Boylan and O'Gorman, 'Kaldor on Debreu', 24.

[77] Mirowski, 'The Unreasonable Efficacy of Mathematics in Modern Economics', 181.

discourages ways of thinking about economies and markets which deviate from the premise that their dynamics can be described comprehensively in terms of rational, optimising, individual agents.

Three-body problems and the impossibility of economic determinism

A general function of game theoretic models in economics is to calculate, for a given initial distribution of resources, whether the interaction of axiomatically described, rational agents will lead to a Pareto optimal outcome.[78] If such a solution exists, then the outcome is viewed as an efficient way to use resources. These models are either *directly deterministic* because they predict an outcome based on specified axioms and initial conditions, or *implicitly deterministic* because they assume that invisible hand dynamics operate as an underlying, 'natural' structure.[79] Most game theoretic models are also *scalable* because they can, like the Arrow-Debreu model, describe the market behaviour of any number of individual agents.

Consider, with determinism and scalability in mind, a mathematical problem which physicists have been wrestling with for over 300 years: *the three-body problem.*[80] The problem is easily understood if we picture an example from celestial mechanics, namely the motion of three large bodies such as stars or planets under mutual gravitational attraction (picture a star and two large planets). We should note first that the simpler version, the two-body problem (imagine two planets in mutual orbit), was described and solved by Newton in his 1687 *Principia.*[81] He was not, however, able to find a general solution for the three-body problem.

In fact, no-one has been able to generally predict the outcome of the gravitational interaction between three large bodies over a significantly large or infinite span of time. Some special cases have been found, for example by assuming that the third body has no mass or that the bodies are positioned in stable Lagrange points, but the overall conclusion is that there is no general solution for this problem.[82] It may seem surprising, but there is a good reason for this: "the orbits are good examples of chaos in nature, and deterministic series expansions are utterly unsuitable for their description".[83] It turns out, in this regard, that it is impossible for Newtonian mechanics to provide a general solution for the mutual gravitational orbits of three celestial bodies unless they start in *very* specific and unlikely circumstances.

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[78] Hausman and MacPherson in Hausman, Philosophy of economics, p. 242.

[79] Stochastic models are not *strictly* deterministic since they allow for a statistical distribution of randomness or probability. It is, however, regularly assumed – as we saw in rational expectations theory – that the behavioural probabilities of agents have a normal distribution around the rationally designed economic model. This imposes a sub-order of economic theory and ensures, as Koppl et al. explain, that stochastic GE models are, despite their avowed non-determinism, "law-governed in a strong mechanistic sense: [there is] in principle at least,… a set of equations that embodies the system's laws of motion up to an error term" (R. Koppl et al., 'Economics for a creative world', *Journal of Institutional Economics* 11, no. 1 (2015), 2). It is fair, in this regard, to say that stochastic GE economic models are built on an *implicit* determinist structure derived from economic assumptions about the self-regulatory capacity of a Platonic economy. See also: Chen, 'Equilibrium illusion, economic complexity and evolutionary foundation in economic analysis'; Lawson, *economics & reality*, 9-10.

[80] M. Valtonen and H. Karttunen, *The Three Body Problem* (Cambridge University Press, 2005), 5.

[81] Valtonen and Karttunen, *The Three Body Problem*, 1.

[82] Valtonen and Karttunen, *The Three Body Problem*, 2.

[83] Valtonen and Karttunen, *The Three Body Problem*, 2. Physicists have, in order to circumvent this issue, used computers to work out probabilistic estimates for the different ways in which the three-body orbits may develop. "At the present time we can solve any given three-body problem, starting from the known positions, velocities and masses of the three bodies, by using a computer. There is of course the limitation of the accuracy of calculation which may be quite significant in some cases. But notwithstanding the accuracy, the solution of an astrophysical problem usually involves much more than a calculation of a single orbit. Typically we have to sample three-body orbits in a phase space of up to eleven dimensions. Then the calculation of orbits is only one tool; one has to have a deeper understanding of the three-body process to make sense of the limited amount of information that is derivable from orbit calculations" (Valtonen and Karttunen, *The Three Body Problem*, 4).

And even these special solutions depend on assumptions about the absence of interference from outside the three-body system.

Recall, at this point, that neoclassical and modern economics are based on mathematics derived from Newtonian physics.[84] Is it plausible, if physicists are unable to solve the three-body problem – for bodies with *known* masses, *known* positions and *only* gravitational forces – that economists can use GE models to meaningfully predict outcomes for an *entire* economy with *any* number of agents?[85] With or without Platonist assumptions, it seems hard to imagine that economies and the interactions of multiple markets are less complex than the three-body problem.[86] It follows from this that it is questionable whether there is much, if any, scientific value in the creation of these models.

The self-fulfilling effects of economic performativity

Social scientific research on *performativity* also has relevant implications for the objectivity and interest of formal economic models. It shows that scientific theories about human behaviour and society may "contribute towards enacting the realities that they describe",[87] and establishes that economic models are entangled with, and not merely descriptive of, economic dynamics.

The starting point is to note that researchers have found that "*Our beliefs about human nature help shape human nature itself*".[88] They *also shape how we design our organisations and institutions*, for example in terms of authority, monitoring, and control structures. As Miller notes, "the image of humans as being self-interested leads to the creation of the kinds of social institutions (e.g., workplaces, schools, governments) that transform the image into reality."[89] Different kinds of beliefs and behaviours are rewarded and incentivised by different kinds of organisations and institutional arrangements.[90] This suggests that behavioural models based on self-interest, such as those used by economists, are not merely a neutral way to describe human behaviour.[91]

In fact, social norms such as self-interest can "become accepted truths and norms that govern behavior. People act and speak as though the theory were true".[92] Self-interested language also affects "what people see, how they see it, and the social categories and descriptors they use to interpret their reality. It shapes what people notice and ignore and what they believe is and is not important."[93]

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[84] Düppe, 'Debreu's apologies for mathematical economics after 1983', 8; Chen, 'Equilibrium illusion, economic complexity and evolutionary foundation in economic analysis'.
[85] For a discussion see: Chen, 'Equilibrium illusion, economic complexity and evolutionary foundation in economic analysis'.
[86] "Obviously, economics should be more complex than physics, chemistry, and biology. However, dynamical economic models are much simpler than the ideal gas model, the simplest physics model" (Chen, 'Equilibrium illusion, economic complexity and evolutionary foundation in economic analysis', 99).
[87] M. Callon, 'What does it mean to say that economics is performative?', *Do economists make markets? On the performativity of economics* (2007), 7.
[88] R.H. Frank, *Passions within reason: The strategic role of the emotions* (WW Norton & Co, 1988), 237 as cited in F. Ferraro, J. Pfeffer, and R.I. Sutton, 'Economics language and assumptions: How theories can become self-fulfilling', *Academy of Management review* 30, no. 1 (2005), 10.
[89] D.T. Miller, 'The norm of self-interest', *American Psychologist* 54, no. 12 (1999), 1053.
[90] For a discussion see: C.W. van Aartsen, *A journey into causes of corporate misbehaviour: Why corporate legal disciplines and regulation need to be structurally reformed*, PhD Dissertation (Maastricht: ProefschriftMaken, 2020), 228-235.
[91] D.O. Sears and C.L. Funk, 'The role of self-interest in social and political attitudes' in *Advances in experimental social psychology* (Elsevier, 1991), 3; Miller, 'The norm of self-interest', 1053; A. Kim, 'The curious case of self-interest: Inconsistent effects and ambivalence toward a widely accepted construct', *Journal for the Theory of Social Behaviour* 44, no. 1 (2014).
[92] Ferraro, Pfeffer, and Sutton, 'Economics language and assumptions', 9.
[93] Ferraro, Pfeffer, and Sutton, 'Economics language and assumptions', 9.

Research even suggests that *self-interest might be a "learned behavior, and [that] people learn it by studying economics and business*".[94] Free riding is more prominent among economics students than those of other disciplines, and economics graduates "were only half as likely as other subjects to indicate that they were 'concerned with fairness' in making their investment decision[s]."[95] Frank and Schulze found that "economists tend to pursue their own interest more consequently than other people [and that] economics students are significantly more corrupt than others".[96]

This performative entanglement between economics and human behaviour indicates that economics *exists in society, as part of it*. It does not, and cannot, have an independent, neutral, or objective frame of reference from which it can access Platonist truths about the economy.[97] Another illustration of performativity may be found in the work of MacKenzie on the Black-Scholes-Merton (BSM) model. This game theoretic model won Scholes and Merton a Nobel Prize in economics in 1997 and seen as "a defining—perhaps *the* defining— achievement of modern financial economics".[98] MacKenzie explains the core of this model as follows:

> "[The trio] assumed that a stock price fluctuates log-normally (with a fixed level of volatility), that the stock can be bought or sold at any point in time without incurring transaction costs or causing market prices to move, that the stock "pays no dividends," that options are "European," that money can both be borrowed and loaned at an identical, constant "riskless" rate of interest, and that short selling (sale of a borrowed asset) incurs no financial penalty. They showed that given these assumptions it was possible to construct a portfolio of an option and a continuously adjusted position in the underlying asset and lending/borrowing of cash that was riskless: changes in the value of the option would be cancelled out exactly by changes in the value of the position in the asset and cash. Since this perfectly hedged portfolio was riskless, it must earn exactly the riskless rate of interest. If not, there would be an opportunity for arbitrage: a way of making a profit that demands no net outlay of capital and involves no risk of loss. Such an opportunity could not persist: option prices would adjust so that it disappeared.
>
> This argument sufficed to derive the famous Black-Scholes option pricing equation, a differential equation linking stock price, option price, stock volatility, the riskless rate of interest, and time…. The extent of investors' risk aversion and whether investors expect stock prices to rise or fall are irrelevant: if the price of an option deviates from its Black-Scholes value, a risk-free profit opportunity that demands no net capital investment is created."[99]

The BSM model was developed in the 1970s, alongside the rise of economic formalism and the development of computing. It suited the efficient market thinking of its time, and quickly became the most authoritative academic view on the formation of option prices. It was, moreover, publicly available at a time that computing power, necessary to solve the equation, was also becoming publicly available. Computers were too unwieldy and slow for use on the trading floor so they:

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[94] Ferraro, Pfeffer, and Sutton, 'Economics language and assumptions', 14.
[95] G. Marwell and R.E. Ames, 'Economists free ride, does anyone else?: Experiments on the provision of public goods, IV', *Journal of public economics* 15, no. 3 (1981), 309.
[96] B. Frank and G.G. Schulze, 'Does economics make citizens corrupt?', *Journal of economic behavior & organization* 43, no. 1 (2000), 110.
[97] Mirowski remarks how "A mathematized world — say, a mathematized economy — by extension then also seems capable of policing itself, since it is being portrayed as existing independently of the way any analyst might characterize it, puttering along on its own terms. In this way, everyday Platonism (based in classroom pedagogy) can actually reinforce the belief in something like laissez-faire. Of course, no model comes equipped with an inevitable political orientation; but it does behoove us to stay aware of such subliminal messages potentially carried by this supposedly empty language" (Mirowski, 'The Unreasonable Efficacy of Mathematics in Modern Economics', 168)
[98] D. MacKenzie, 'Is economics performative? Option theory and the construction of derivatives markets', *Journal of the history of economic thought* 28, no. 1 (2006), 33.
[99] MacKenzie, 'Is economics performative?', 32-33.

> "…were used to generate Black-Scholes prices. Those prices were reproduced on sets of paper sheets which floor traders could carry around, often tightly wound cylindrically with only immediately relevant rows visible so that a quick squint would reveal the relevant price. While some individual traders and trading firms produced their own sheets, others used commercial services. Perhaps the most widely used sheets were sold by Fischer Black himself. Each month, Black would produce computer-generated sheets of theoretical prices for all the options traded on U.S. options exchanges, and have them photocopied and sent to those who subscribed to his pricing service."[100]

It is remarkable that in the early months of the Options Exchange, i.e. before the Black-Scholes prices became influential, "market prices tended to be substantially above Black-Scholes prices."[101] In reflection on the performative role of the BSM model, MacKenzie notes that:

> "Broad features of the Black-Scholes-Merton model were already present in the patterns of prices in markets prior to the formulation of the model. However, there were also significant discrepancies between the model and pre-existing price patterns… Similarly, when the Chicago Board Options Exchange opened for trading "initially prices were not in line with prices predicted from using the Black-Scholes model" (Scholes 1998, p. 486). These discrepancies suggest that the Black-Scholes-Merton model did more than simply express price patterns that were already there. As I shall argue below, there is reason to think that the use of the model altered price patterns"[102]

MacKenzie identifies that the relation between option pricing and the BSM model developed in several phases. There was, first, a "relatively poor fit". Then, when the model was introduced, "the fit improved rapidly (in part… as a performative effect of the model's use)."[103] He next shows how the unprecedented 1987 stock market crash could not be accounted for by the BSM model, and that from this time onwards the model no longer provided an accurate depiction of option pricing patterns (thus also establishing that the model does not reveal any 'objective' truth about the option pricing market). Overall he concludes that the BSM model "made a difference, and [that] part of that difference was that *market prices moved towards the postulates of the model*."[104]

The influence of performativity does not mean that economic models are literally able to *create* reality, or that all economic models are equally performative. Factors outside the model are also significant, and a dominant model is clearly more likely to have performative effects than an obscure one. It is even possible for some economic theories and models to be *counter-performative*, in the sense that they decrease the likelihood of their results being obtained.[105] It is important, in this regard, to study economic models and theories on a case-by-case basis and not to make blanket statements about the overall performativity of economics. It may, however, be inferred from performativity that economists are *fundamentally entangled with the economic phenomena that they are trying to investigate*.

This confirms our earlier arguments that economics is not an objective science and that the economy does not have an objective existence. The subjectivity of scientific practice, the implausibility of Platonism, the impossibility of mathematical formalism, the nominal connection between economic models and market phenomena, the three-body problem, and economic performativity each suggest that *formal economic models are much less impressive than might be concluded from their mathematics or predictions*.[106] Graeber's reflection on this point is quite telling:

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[100] MacKenzie, 'Is economics performative?', 36.
[101] MacKenzie, 'Is economics performative?', 38.
[102] MacKenzie, 'Is economics performative?', 40.
[103] MacKenzie, 'Is economics performative?', 49.
[104] MacKenzie, 'Is economics performative?', 50.
[105] MacKenzie, 'Is economics performative?'.
[106] Summers rightly remarks that "…an infinity of models can be created to justify any particular set of empirical predictions. And I suspect that there is a meta-theorem that any policy recommendation can be derived from some model of optimizing behavior. What then do these exercises teach us about the world? True, each fully worked

> "Economics is all about prediction. It came into existence and continues to be maintained with all sorts of lavish funding, because people with money want to know what other people with money are likely to do. As a result, it is also a discipline that, more than any other, tends to participate in the world it describes. That is to say, economic science is mainly concerned with the behavior of people who have some familiarity with economics – either ones who have studied it or at the very least are acting within institutions that have been entirely shaped by it. Economics, as a discipline, has almost always played a role in defining the situations it describes."[107]

It is quite possible, in this regard, that the influence of mathematical economic models is more a function of their popular standing and practical effects in academia, business, and politics than of their ability to objectively discern and describe market dynamics.

5.3 Reflection on the limits of economic methods

The methods of economic science have limits, like every tool that we use to understand and affect the world around us. The problem is not that this tool is imperfect, or that it does not provide a complete picture of exchange dynamics. Instead, the problem is that economists, and our societies more broadly, have come to believe in the universal relevance of this tool and seem to have lost sight of its limits. This has caused economics, at times, to become circular in its reasoning and self-perpetuating in its application. This problem is compounded by economic education which teaches students that it is an objective science, and seminal literature which suggests that it can be reasonably applied to any situation which involves human interaction.

We have seen, however, that there is nothing inherent to economics which is able to determine when and whether a situation should be examined in this way. Instead, it is a matter of subjective, personal judgment whether and when economics should be applied to investigate a certain phenomenon. As a tool, it cannot tell us when it should be applied. Unfortunately, we saw that it is precisely this safeguard of personal, subjective wisdom which has been structurally impaired in the contemporary scientific foundation of economics.

A belief in economic objectivity and reliance on Platonist ideas means that many economists are busy studying an economy that is supposed to exist 'out there', ready to be discovered. Unfortunately, this approach leaves them unable to see that the economy is a *methodological projection* of subjective fictions, metaphors, and assumptions which underpin and enable their scientific practice. The deeper that economists dive into this projection, and the greater their unawareness of its subjective foundation, then the more likely they are to succumb to circular reasoning and 'discover' the underlying symmetry of economic assumptions. If this symmetry is seen as proof for the validity of these same assumptions, instead of as an extension of them, then the circle is complete. Economics becomes a path to universal truth, a hammer that scientists can use for every nail, and it stops being recognised as a subjective and imperfect tool that we use to understand and shape the world around us. This belief in the universality of economics, a projection of the idea that it is objective, is arguably the greatest and most consequential flat earth theory of our time.

The consequences of these erroneous ideas are strongly evident in the reliance of economists on the invisible hand. Instead of seeing this metaphor, or its reiteration as an equilibrium between supply and demand, as a rough description of the relationship between price and exchange dynamics, it is instead

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out system defines laws of motion for its endogenous variables and so can in principle be "taken seriously econometrically" and confronted with data. But, as I have already argued, this tends not be a fruitful or memorable exercise. In fact only a small fraction of theoretical work [i.e. modelling work] is ever applied empirically in this way. If empirical testing is ruled out, and persuasion is not attempted, in the end I am not sure these [models] teach us anything at all about the world we live in" (Summers, 'The scientific illusion in empirical macroeconomics', 144-145.

[107] Graeber, *Toward an anthropological theory of value*, 15-16.

posited as an economic law of gravity which describes ‘how the economy really works’ and prescribes that markets should be liberalised to make optimal use of its gravitational effects. This leads, as we will explore in the following Chapter, to the belief that human societies have only one effective option, the free market, to organise their exchange arrangements. If this belief is true, and there is no alternative to the free market, then this is a structural problem for sustainability because, as we saw, the invisible hand is methodologically predetermined to subordinate non-economic concerns to economic dynamics.

Erroneous ideas are also enshrined in formal economic models which claim to provide relevant insight into economic dynamics and are used, for example, in IPCC Reports to create climate change scenarios, by states to evaluate the economic impacts of policies, and by international organisations such as the World Bank and International Monetary Fund to evaluate state activities and estimate GDP growth. The widespread use of these models is extraordinary since, as we have seen, they are little more than a mathematical iteration of principles from economic liberalism. They are, furthermore, only nominally related to economic theory, do not include competitive interactions between individuals, are deeply entangled with the phenomena which they purport to describe, and rely on deterministic simplifications about chaotic interactions. Overall, it seems that economic models are much less impressive and useful than their predictions and calculations might suggest, and that they provide little, if any, insight into how we should organise our societies and exchange arrangements.

6. The limits of economic objectives

This Chapter examines whether it makes sense to pursue the free market and efficiency objectives that are central to the scientific foundation of economics. To this end, it first explains that these objectives are part of a single, utopian vision, named *market fundamentalism*, which is immanent in the work of Smith and posits that liberalised markets are a natural, universal basis for human prosperity. It discusses this utopia in detail and reflects on its relationship to capitalism. Second, the Chapter assesses economic objectives through a discussion on the limits of market fundamentalism in terms of its reliance on pre-social individuals, treatment of markets as pre-social, and the sustainability consequences of its pursuit of economic efficiency.

6.1 Economics and market fundamentalism

Smith argued, as we noted in Chapter 2, that liberalised markets will lead in the aggregate to the greatest wealth of nations since they maximally enable the natural propensity of individuals to truck, barter, and exchange.[1] We also identified that his arguments should be understood within a broader, liberal context, and that they rely on the liberal premise that individuals were born free into a *state of nature* and signed a *social contract* in order to create social and political structures. We will now explore this premise in more detail, and see how it has merged with economic ideas to create a market fundamentalist blueprint for the relationship between the economy, society, and the state.

We can start our analysis with Hobbes, an early liberal who is well-known for arguing that the lives of people, when they lived in the state of nature before the rise of states, was bleak:

> "In such condition, there is no place for industry; because the fruit thereof is uncertain: and consequently no culture of the earth; no navigation, nor use of the commodities that may be imported by sea; no commodious building; no instruments of moving, and removing such things as require much force; no knowledge of the face of the earth; no account of time; no arts; no letters; no society; and which is worst of all, continual fear, and danger of violent death; and the life of man, *solitary*, poor, nasty, brutish, and short." [emphasis added][2]

The words are famous, but it is less well-known that his 1651 opus, *Leviathan*, also provided the *first European, post-Christian explanation for the origin of states*.[3] The originality and secularism of his ideas should not, however, be overstated since his state of nature arguments are derived from, and highly similar to, the same concept in the earlier work of Christian writers. As Tierney explains regarding the 12th century work of Gratian:

> "Embedded in the texts of the *Decretum*, and occasionally stated explicitly, there was an historical account of how human government emerged after an original age of prelapsarian innocence. After the Fall of Adam, men lived for a time as scattered individuals guided only by natural law [i.e. *the state of nature*]. According to Gratian this lasted until people began "to gather as one and live

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[1] This argument is still repeated, with economists such as Peter Bauer, for example, "arguing since the 1950s that the citizen of the third world is a natural entrepreneur, whose capitalist spirit is stifled by the policies of the colonial and developmental state The main reason why people in the south are poor, Bauer and his followers argued, is that the state's bureaucratic regulations and its failure to protect property rights discourage people's natural propensity to work hard and make a profit." (P. Bauer as cited in T. Mitchell, 'The work of economics: how a discipline makes its world', *European Journal of Sociology/Archives Européennes de Sociologie* 46, no. 2 (2005), 301.

[2] Hobbes, 1998, p. 84.

[3] B. Russell, *History of Western Philosophy: and its Connection with Political and Social Circumstances from the Earliest Times to the Present Day* (London: George Allen & Unwin, 1961), 540.

> together" in the time of Cain who first built a city (Gen. 4.17). Then there came an age of customary law until, finally, actual legislation began in the time of Moses"[4]

Both Hobbes and earlier Christian commentators[5] rely on the idea of solitary individuals living in a state of nature, i.e. a state where they are only subject to natural law.[6] Hobbes, however, edited out the theological elements of this allegorical sequence of development, such as the Fall of Adam and Garden and Eden, and reinterpreted what remained to provide a secular alternative based on the same underlying structure. There is, however, as we noted earlier, no historical evidence for the state of nature or social contract,[7] and can therefore identify that he ended up replacing one allegory with another. In this case: first there were individuals, their lives were miserable, and then they *agreed on a social contract* to restrain the worst human tendencies and, using the state, to end the "war of all against all".[8]

Hobbes is, of course, only one liberal perspective on the state of nature and social contract. Many liberal successors, ranging historically from Locke, Montesquieu, and Rousseau to the more recent works by Rawls, Nozick, Fukuyama, and Diamond, have provided their own views on these ideas.[9] We do not need to review their works in detail; it is enough to note that their political perspectives are diverse, and that they are as likely as not to support Hobbes' unhappy view of our distant past. More relevant for us is the premise that underpins their debates, which was already present in the Christian allegory, namely that individuals are analytically prior to states: *first individuals, then states*.

This premise dovetails beautifully with Smith's utopian vision for the wealth of nations. It is easy to imagine how a metaphorical butcher, baker, and brewer,[10] who are freely exchanging goods in a state of nature, may enter into a social contract and produce the first state. The *exchange relations of their original, free conditions are governed by the invisible, self-regulatory hand of supply and demand (i.e. natural laws)*, and the wealth generated by their exchanges can be taxed and used for social and political purposes in accordance with the social contract.

It follows that free exchange between individuals is the original source of wealth for social and political activities, and that liberalised markets are a pre-social foundation, even a precondition for, prosperous states and societies. In this regard it is not only that individuals came first, and then states, but also that markets came first, and then states. These ideas are represented in the following *market fundamentalist model* of the economy, state, and society.

Figure 5: The market fundamentalist model of the economy, state, and society

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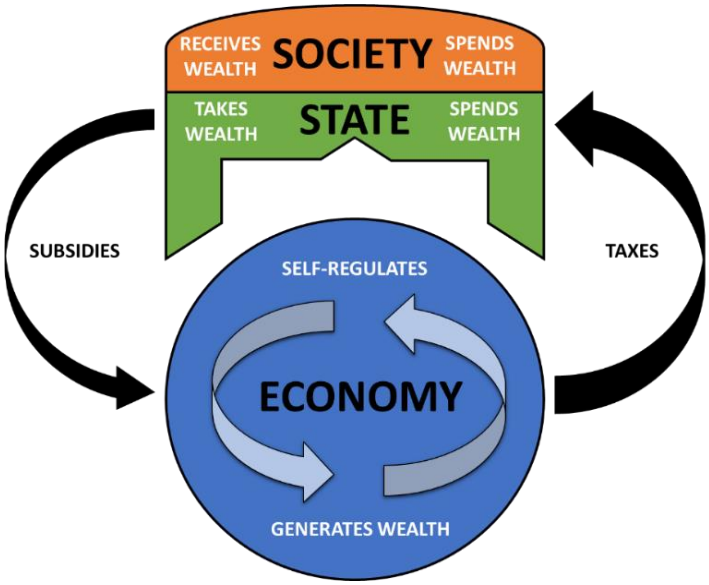
[4] B. Tierney, *The Idea of Natural Rights: Studies on Natural Rights, Natural Law, and Church Law* (Cambridge, UK: William B. Eerdmans Publishing Company, 2001), 145.
[5] [*Add reference, I think Graeber and Wengrow*] Such as Grotius.
[6] [*Add interpretation and definition from Tierney*]
[7] Section **Error! Reference source not found.**.
[8] Russell, *History of Western Philosophy*, 535.
[9] For a discussion, see: D. Graeber and D. Wengrow, *The dawn of everything: A new history of humanity* (Penguin UK, 2021), 10, 64 [*add references; they only touch on Fukuyama and Diamond*].
[10] A. Smith, *The Wealth of Nations* (New York: Bantam Dell, 2003 [1776]), Book I, Chapter II, 23-24.



The model shows how a pre-social, free economy provides the foundation for society and the state, i.e. for social and political structures and activities. The economy generates wealth through the individual pursuit of maximum self-interest and is governed by resource availability and the natural laws of supply and demand (as described by economic science). Part of this wealth is taxed by the state, in line with the conditions of the social contract.[11] The market fundamentalist model is underpinned by a dichotomy, also embedded in economics, between a *generative economy* and an *appropriative state*, i.e. between an economy which makes wealth and a state which takes wealth.[12] To understand this dichotomy better, it helps to clarify what kind of wealth is being generated by the economy. In traditional terms, we can think of wealth as money or financial value. If, however, we take a modern economic perspective, then it can be understood in terms of both *financial and non-financial value*.[13]

In general, there is no single or objectively right way to define the kind of wealth that is being generated by the economy. Instead, the main difference between the traditional and modern economic perspective

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[11] This idea builds on the standard economic view that there is a 'government budget constraint'. As Wray explains, "The idea is simple: a government's spending is constrained by its tax revenue, its ability to borrow (sell bonds), and "printing money". In this view, government…spends its tax revenue and borrows money from markets in order to finance a shortfall of tax revenue. If all else fails, it can run the printing presses, but most economists abhor this activity because it is believed to be highly inflationary" (Wray, Modern Money Theory, 2015). See also: S. Fischer and W. Easterly, 'The economics of the government budget constraint', *The World Bank Research Observer* 5, no. 2 (1990), 130.

[12] Thatcher captured these ideas well when she declared in 1983: "the state has no source of money, other than the money people earn themselves. If the state wishes to spend more it can only do so by borrowing your savings or by taxing you more… We know that there is no such thing as public money. There is only taxpayer money" (as cited in Kelton, *Deficit Myth*, p. 20). A similar statement may be found in Samuelson and Nordhaus' classic textbook: "Governments must pay for their programs. The funds come mainly from taxes, and any shortfall is a deficit that is borrowed from the public" (Samuelson and Nordhaus, *Economics*, p. 312). And Mazzucato writes that "Government is depicted as a drain on society, funded by obligatory taxes on long-suffering citizens. In this story, there is always one conclusion: that we need more market and less state. The slimmer, trimmer and more efficient the state machine the better… In all these cases, from finance to pharmaceuticals and IT, governments bend over backwards to attract these supposedly value-creating individuals and companies, dangling before them tax reductions and exemptions from the red tape that is believed to restrict their wealth-creating energies" (M. Mazzucato, *The Value of Everything: Making and Taking in the Global Economy* (Hachette UK, 2018), xvii). See also: M. Jacobs and M. Mazzucato, *Rethinking Capitalism: Economics and Policy for Sustainable and Inclusive Growth* (Wiley-Blackwell, 2016), 17, 21-22.

[13] See, for example: M.R. Kramer and M. Porter, 'Creating Shared Value: How to reinvent capitalism—and unleash a wave of innovation and growth', *Harvard Business Review* 17, The Big Idea, no. January–February (2011). Edmans (2020) *Grow the Pie*.

is that they lead to different standards of economic efficiency. The former is solely concerned with the efficient generation of financial value whereas the latter aims for the efficient creation of both financial and non-financial value, and is often relied upon in economic approaches to sustainability. Important to note for our later analysis is that *both views of wealth are compatible with the market fundamentalist model*.

To expand on the model, we can identify three potentials ways for the state to spend the wealth which has appropriated from the economy: (1) it can be used on state activities, such as the legal system and police force; (2) it can be spent on society, for instance in the form of social and cultural programs; (3) it can be used to subsidise the economy, for example to correct market failures or promote innovation. Within these three options there are a multitude of ways to spend state wealth, each of which may be more or less effective, and may lead to more or fewer distortions in the market foundation of state and society.

In terms of economic policy, the market fundamentalist model indicates that the state needs to liberalise the economy as much as possible since this will generate the largest amount of overall wealth (Smith's utopia). This is important because a maximally liberalised society will, since it has the largest and most prosperous economy, also be able to yield the largest amount of sustainable tax. Care must be taken in setting this level of taxation because there is a risk, if it is too high, that this will undermine economic dynamics, stifle exchange in the private sector, and undermine the economic goose that lays the golden eggs. In this regard it is generally desirable to organise activities through the private sector (i.e. the individual pursuit of self-interest) rather than through the state since the former generates, and the latter appropriates and consumes, wealth.[14] It follows that government policies which are consistent with economic principles are likely to grow or preserve overall wealth, and that those which deviate from these principles are, at best, unlikely to increase it and, at worst, bound to destroy it.

In terms of its scientific foundation, the market fundamentalist model builds on socio-economic bifurcation and the liberal economic premise that economic exchange among free individuals is prior to state and society. Economics is then the scientific discipline which 'objectively' explains how the economy works based on individual maximisation and the self-regulatory dynamics of supply and demand. It does not need to explain economic dynamics on the basis of social or political factors since these are *subjective and conceptually posterior to individual market exchange*.

The general benchmark for optimal economic performance is the neoclassical model of liberalised exchange, i.e. the 'frictionless surface' of perfect competition.[15] While markets are not and will never be frictionless, it is nonetheless considered that a society will be as-prosperous-as-possible whenever it approximates as-closely-as-possible this economic model.[16] *This does not mean that it will yield a*

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[14] As evidence consider how states have proven unwilling to implement an adequate carbon tax to compensate for the harms caused by carbon intensive activities. The lack of movement to challenge economic dynamics has resulted in the adoption of less effective alternative solutions such as mandatory information disclosure (J. Armour, L. Enriques, and T. Wetzer, 'Mandatory Corporate Climate Disclosures: Now, But How?', *Colum. Bus. L. Rev.* (2021). **Check article.**

[15] Williamson explains that "Transaction costs are the economic equivalent of friction in physical systems" (O.E. Williamson, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting* (The Free Press (Macmillan), 1985), 19).

[16] This underpins the EU pursuit of the single market. "The single market has an intrinsic logic that is purely functional, not political. This is reflected in the basic design…. Every time Member States or certain political forces pre-empt a fundamental deepening [of the single market], they are damaging their '*own* asset' and, in the process, also negatively affecting the value of the common asset for all others in the EU. And if all Member States act individually as if each one of them can find exceptions or define 'red lines' where not justified by single market logic (read: distortions or deficits), the single market would be hollowed out or erode quickly" (F. Coricelli et al., *A strategy for completing the Single Market: "the trillion euro bonus"*, Summary Report of the High-Level Panel of Experts to the IMCO Committee, European Parliamentary Research Service (2016), 27-31).

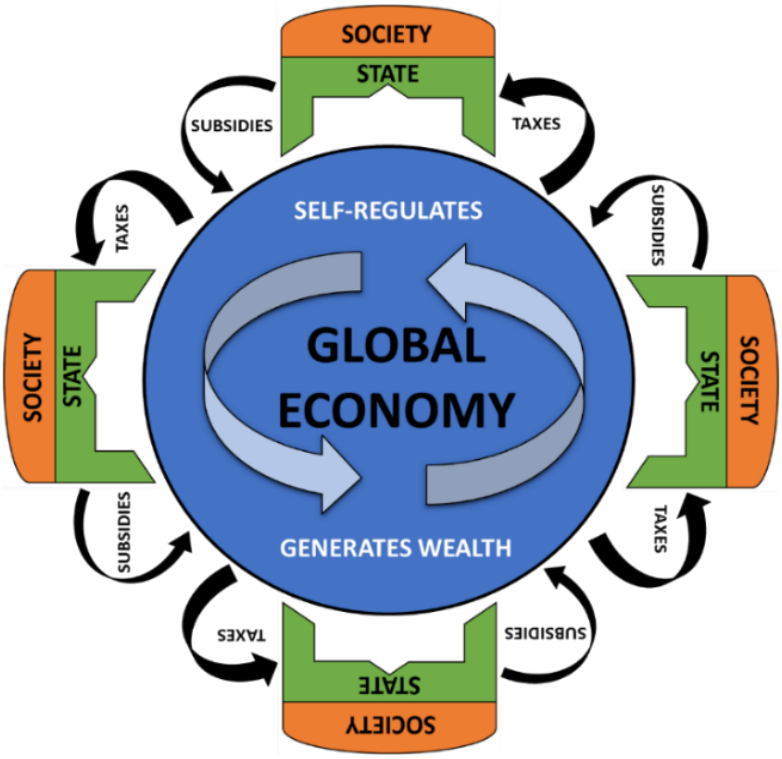
perfect economy, only that it will be optimally organised in the sense that it cannot achieve better economic outcomes under current conditions without new technologies, extra resources, etc. A society with a maximally liberalised economy is therefore as good as it gets in terms of the allocation of scarce resources. It is implicit, absent mismanagement, that such a society has also sustainably maximised the amount of money that it can spend on state and social activities, and that it could also not perform much better in areas of social, political, and environmental concern without imposing a counterproductive burden on the economy. There is, of course, an endless scope for political debate on the optimal level of state taxation, and how to spend the generated taxes.

The self-conception of economics as an objective science means that the market fundamentalist model is deemed appropriate for the social arrangements of *any* society.[17] It does not matter whether it is rich or poor, Western or not, two thousand years in the future, two thousand years in the past, human or even alien: *the natural laws of supply and demand equally to any and every society*.[18] This universal idea of economic gravity helps explain why the market fundamentalist model was extrapolated to the planetary level under globalisation, with little attention to the economic arrangements other societies and cultures. It explains, moreover, why proponents for the commercialisation of space find it so natural to extend commercial logic out towards the universe.[19] There is, as we have seen, no sense of passing borders.

The *global market fundamentalist model* is similar to the national one (see Figure 6 below). A liberalised global economy, which frees individuals to maximise their self-interest across state borders (a global 'return' to the state of nature), results in the overall largest amount of global wealth and most efficient allocation of resources. States subsequently compete, with more or less success, for the largest possible share of this liberalised global economy. It may not result in a perfect global society, but if we all liberalise and open our economies as much as possible, then this can be expected to lead overall to the most efficient use of resources, labour skills, and technologies. There will be states and individuals who are losing or winning at any given moment, but economic dynamics lead overall to an as-good-as-it-gets global economy and therefore the greatest level of global prosperity.[20]

Figure 6: The global market fundamentalist model

[17] As Allan notes regarding the idea of economic growth: "… neoclassical equilibrium models drive the conclusion that growth is a natural corollary to universal policies that aim to achieve scientific and technological progress. Growth is depicted as emerging effortlessly and automatically from the human propensity to gather scientific and technical knowledge… These connections legitimated growth by depicting is as a natural, inevitable part of the universe" (B.B. Allan, *Scientific cosmology and international orders* (Cambridge University Press, 2018), 247).
[18] See, for example: E.M. Wood, *The Origin of Capitalism: A Longer View* (Verso, 2002), 2, 16-17.
[19] Find something by Chris Kemp (Astra), Elon Musk or Jeff Bezos.
[20] Generally, see: J.A. Du Pisani, 'Sustainable development–historical roots of the concept', *Environmental sciences* 3, no. 2 (2006), 88.



The most competitive societies are those which liberalise their economies in line with the principles of economic science. There is no one size fits all approach, but they are all judged according to the same frictionless benchmark. A given society's competitiveness, trade relations, interest rates, conduciveness to business, and so on, are all assessed for their consistency with idealised, free market dynamics. States are encouraged, moreover, to incentivise and nudge economic behaviour into their population since this will optimise economic performance and result in the most prosperous and efficient society.[21] The most successful societies will have, by definition, the most resources available for social institutions, political structures, environmental protection, etc.

Adherence to the market fundamentalist blueprint is, in broad terms, policed by economic specialists in academia, business, and government. These specialists can be relied on to issue a standing warning, in line with economic theory, that policies which threaten idealised market dynamics are a political choice, which societies are free to make, but that will undermine resource allocation and societal prosperity.[22] International adherence to the blueprint is promoted by numerous international institutions such as the WTO, OECD, World Bank, and International Monetary Fund. And it is, importantly, enforced by the

[21] "It is impossible to exaggerate how much has changed over the intervening thirty years [since Friedman's market fundamentalist arguments]. Capitalism is now the name that the defenders of the system use to describe it. The business press routinely talks about capitalism, and the term has lost any hint of connection to a critical discourse. Moreover, the idea that the structure of the economy determines the basic frame of the larger society has been transformed from "vulgar materialism" into common sense. Most important, the fundamentally Marxian claim that capitalism as a system is global, unified, and coherent has been embraced by the apostles of neoliberalism. This is their foundation for arguing that each nation has no choice but to engage in the same process of privatization, deregulation, and public-sector retrenchment if it expects to prosper in an increasingly competitive global capitalist system" (F. Block, 'Deconstructing capitalism as a system', *Rethinking Marxism* 12, no. 3 (2000), 85.

[22] [*add reference which shows that economists warn against intervening in market dynamics*]

military, diplomatic, trade, clandestine, cultural and other activities of powerful countries such as the United States and European Union.[23]

If the market fundamentalist model is correct, then states and societies have no choice in economic matters other than to liberalise their economies as much as possible and then to optimise within this system, for example by addressing market failures and carefully designing taxes and subsidies. This is supposed to generate, as we have seen, the best possible kind of global economies and societies that we can sustain with current resources and technologies.

6.1.1 Understanding capitalism

At heart, *capitalism is the idea that the market fundamentalist model is inevitable*, and that there is no choice but to align the policies of states and the exchange arrangements of individuals in accordance with the natural laws of supply and demand. The scientific legitimation of this political economy suggests that divergence from this system is like trying to ignore the laws of gravity.[24]

It is surprising, but even Marxism adheres to this market fundamentalist view, at least in terms of how it sees the economy as the foundation for socio-political structures.[25] *Das Capital* was formulated within the liberal framework of classical political economy, and it is well-known that Marx based his work on a distinction between an *economic base* and a *social superstructure* (a variation on 'first markets, then states'). He used this iteration of socio-economic bifurcation to explain how the economic relations of slavery, with slaves and slave owners, transitioned into feudalism, with feudal lords and serfs, and then turned into capitalism, with capitalists and labourers.[26] In the long-run, Marx argued that capitalism was unstable due to contradictory dynamics in its economic base and superstructure, and that it would be transformed into communism, a utopian 'next level' of social and economic relations. The Marxist description of these contradictory dynamics is an interpretation of the natural laws of supply and demand, as viewed through a lens of economic relations between capitalists and labourers. It is, in this regard, an alternative formulation of market fundamentalism, and not a departure from it.

Also important to understand in terms of background is that the term 'capitalism' was, for a long time, a Marxist pejorative term to describe industrialised, commercial societies. It was not generally used by those who favoured Western-style political economies. As Block notes:

> "My own intellectual formation occurred in the United States in the 1960s when the term "capitalism" was not used in polite company. "Capitalism" was the polemical term used by Russian and Chinese Communists. Conservatives spoke of "free enterprise," and liberals talked about the "mixed economy." Even more fundamentally, the notion that the economic organization of society set the basic frame for the larger society was rejected as "vulgar materialism.""[27]

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[23] Foreign interventions in the affairs of states which do not adopt market fundamentalism are 'justified' on at least two counts: first, liberal economic principles are necessary for humanitarian reasons, to help the economic prosperity of the population living in the country subject to the intervention; second, a failure by one state to liberalise its economy undermines global economic performance, and therefore also undermines the prosperity of all other states. These arguments are a modern iteration of historical justifications for imperialist expansion by European states in the 19th century. Fabiola and Magana summarise these historical arguments as follows: "Imperialism was the outcome of the social and economic development of Western Europe. Thus: (a) economic development creates the need for expansion; (b) expansion creates the need for development of the non-West; (c) domination by the West is the only means by which the non-West can evolve" (F. Jara and E. Magana, 'Rules of imperialist method', *Dialectical Anthropology* (1982), 121).

[24] Wood, *The Origin of Capitalism*, 16-17.

[25] Block, 'Deconstructing capitalism as a system'.

[26] Adam's Fallacy, p. 95.

[27] Block, 'Deconstructing capitalism as a system', 84-85.

Today, there is a general consensus that we live in a capitalist political economic system and that free or open markets are the foundation of our civilisation and prosperity.[28] This remarkable inversion in the general perception of capitalism is part of the legacy of one of the intellectual juggernauts of modern economics, Milton Friedman.

Friedman embraced capitalism, the negative Marxist term, and redeemed it in his influential 1962 book, *Capitalism and Freedom*. In it, he provided a political and economic reply to Marxists who viewed capitalism as "a defective system [that was] inhibiting economic well-being and thereby freedom".[29] The paraphrased version of Friedman's argument is that:

> YES! Capitalism exists as a system of free enterprise, and its economic freedoms are foundational to human prosperity and political freedom.[30] People are poorer and less free in the USSR than in the US, so isn't it clear that democracy and prosperity are better promoted by capitalism than socialism? Aren't you better off living in the West than in the USSR?[31]

Friedman proudly embraced the capitalist system *as a system* and argued that it had proven better than the Marxist alternative. The consequence of these arguments[32] has been considerable:

> "It is impossible to exaggerate how much has changed over the intervening thirty years. *Capitalism is now the name that the defenders of the system use to describe it*. The business press routinely talks about capitalism, and the term has lost any hint of connection to a critical discourse. Moreover, *the idea that the structure of the economy determines the basic frame of the larger society has been transformed from "vulgar materialism" into common sense*. Most important, the fundamentally Marxian claim that capitalism as a system is global, unified, and coherent has been embraced by the apostles of neoliberalism. This is their foundation for arguing that *each nation has no choice but to engage in the same process* of privatization, deregulation, and public-sector retrenchment if it expects to prosper in an increasingly competitive global capitalist system." [emphasis added][33]

The result is that both proponents and critics of capitalism agree that there exists a capitalist system which operates according to economic laws of gravity. A practical consequence of this belief, now commonly viewed as a global system, is that it leaves one unable to imagine how the system can be transformed without large-scale transformation at the global level, i.e. without a revolution.

This problem is reflected in the following conceptual trap: if I want to change 'the system', then I have to convince others that I have understood the nature of that system and that I know the right way to transform it. A logical first step is to convince people and leaders in my state that we need to transform the system in the way that I have understood it. The difficulty, however, is that our society is 'stuck' in the global system, and that if I try to change anything locally, then various actors in the global system will intervene to hinder the change and maintain capitalism. Look, for example, what happened with

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[28] As an example, Moran and Ghoshal write, "there is little that would be controversial in a characterization of our organizational economy as comprising both intensely competitive markets and healthy firms, coexisting in a constant state of vigorous but creative tension with one another; an evolving state of continuous interaction between and among firms, on the one hand, creating and realizing new value, and markets, on the other, relentlessly forcing these same firms to surrender, over time, most of this value to others and, as a result, to never letup their relentless search for new ways to create and realize value, as part of their continuing struggle to remain viable and healthy" (P. Moran and S. Ghoshal, 'Value creation by firms', Academy of Management Proceedings (1996), 3-4).

[29] M. Friedman, *Capitalism and Freedom* (Chicago: The University of Chicago Press, 1982), 196.

[30] Friedman, *Capitalism and Freedom*, 4.

[31] "Who today can regard the chains of the proletarians in the Soviet Union as weaker than the chains of the proletarians in the United States, or Britain or France or Germany or any Western state?" (Friedman, *Capitalism and Freedom*, 197).

[32] Friedman was not the only person to promote this perspective. Consider, for example, the work of influential journalist Irving Kristol (I. Kristol, *Two Cheers for Capitalism* (Basic Books, 1978)).

[33] Block, 'Deconstructing capitalism as a system', 85.

Greece during the European debt crisis, or at any number of instances where states have (wisely or not) tried to deviate from economic gravity.[34] I therefore also need to convince the people and elites of other states, for example internationally or in the EU, that they need to transform the system in the same, 'right' way. The trap is thereby revealed: the 'solution' is to make almost everyone, everywhere believe in a single plan in order to change anything, anywhere.

This is an impossible task, based on the view of capitalism as some kind of autonomous 'system' with natural laws which dictate what is, or is not, possible in terms of economic reforms. To escape this trap, all we need to do is realise that *capitalism does not exist as an actual system*. It is a belief and mental projection, and not an objective truth or universal blueprint for economic organisation. In this regard capitalism is, like the invisible hand and the Arrow-Debreu model, just one of many different ways to interpret the subjective assumptions in the scientific foundation of economics.

In general, the idea that capitalism exists as a global system is enabled by socio-economic bifurcation and an assumption that the invisible hand of supply and demand operates in a way that transcends society and politics. We will later see that it is precisely this market fundamentalist ideology, which believes in a separate economy governed by economic gravity, which is self-defeating and impedes our ability to make practical and sustainable reforms for firms and markets in our societies.

It can, moreover, be seen as an ironic source of optimism that there are so many exploitative jobs around the world, that so many resources are being wasted, that new technologies are being used in regressive ways, and that sustainability issues are mounting.[35] As severe as they are, these structural issues help us see, contrary to market fundamentalism, that the current system does not lead to an as-good-as-possible allocation of resources, labour, technology, or money. If anything, it underscores that there must be other ways to organise our markets and exchange arrangements which are better, literally better, than market fundamentalism. We will later see that alternatives do exist, and can note here that a creative search for them is undermined by a limiting belief in capitalism.

As a final comment, the concept of market fundamentalism can help us further elaborate on the uneasy coexistence of description and prescription in economics. The former occurs when it is assumed that market fundamentalist dynamics are operative; the latter occurs when investigating how these dynamics can be extended. This dual process of explanation and diagnosis is central to the way that economists, both consciously and unconsciously, are promoting the market fundamentalist model that is at the heart of their scientific practice. In the end it is the promotion of this utopian model, and not capitalism, which is real and relevant for the sustainable potential of economics. With this in mind, the following section examines the limits of this utopia and, in the process, reveals the limits of economic objectives.

6.2 The limits of market fundamentalism

This section examines the limits of the economic blueprint that was outlined above. It first reflects on the idea that free individuals are prior to society, and discusses the characteristics and limits of this kind of methodological individualism. Second, it draws on anthropology, historical analysis, and philosophy of science to challenge the related idea that free markets are pre-social. Third, it examines the concept of economic efficiency and explores whether this concept helps us effectively achieve sustainability and other collective interest goals.

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[34] [*add reference to Greece and European debt crisis*]

[35] [*add references to (un)planned obsolescence, the counter-productive use of new technologies, and mounting sustainability issues*]

6.2.1 Individuals did not come first

We noted previously that economics has inherited from its liberal roots an assumption that individuals are analytically prior to society, and showed that there is no historical or anthropological evidence in favour of this idea. As Rubin summarises:

> "Social structure, property rights, and rule-like behaviour are older than Homo Sapiens, so it is not meaningful to talk about human beings existing solely as individuals in an environment with no political or legal structure. There never was a time when human beings existed with no rules… Specifically, chimps, humans, and ancestral and intermediate species lived in groups internally governed by a set of rules and hierarchies within those groups; moreover, all engaged in intergroup conflict. It is in this sense that we can be sure that no human or close ancestor of any human lived a solitary life."[36]

Aside from this factual assessment, one could still argue that individualism is methodologically necessary in order to provide a scientific explanation of economic and social phenomena. This kind of *methodological individualism* is dominant in economics, and has an ancient pedigree which can be traced back through the work of Locke and Descartes to that of Democritus in Ancient Greece.[37] We will, however, start our analysis with the work of sociologist Max Weber and his student, the economist Joseph Schumpeter, since these authors provided the modern expression of this concept.[38] The Stanford Encyclopaedia of Philosophy describes Weber's 1920s account of methodological individualism as a:

> "claim that social phenomena must be explained by showing how they result from individual actions, which in turn must be explained through reference to the intentional states that motivate the individual actors."[39]

Schumpeter elaborates with the following, 1954 description of 'sociological' individualism:

> "[a doctrine that] the self-governing individual constitutes the ultimate unit of the social sciences; and that all social phenomena resolve themselves into decisions and actions of individuals that need not or cannot be further analysed in terms of superindividual factors."[40]

Methodological individualism is therefore an *approach to scientific practice which claims that scientific accounts of collective, social phenomena must be explained with reference to, or as the result of, individual characteristics and actions*.[41] It is viewed by many scientists, including economists, as a common sense, universal principle for social scientific practice.[42] As Arrow remarks:

> "The starting point for the individualist paradigm is the *simple fact that all social interactions are after all interactions among individuals*. The individual in the economy or in the society is *like the*

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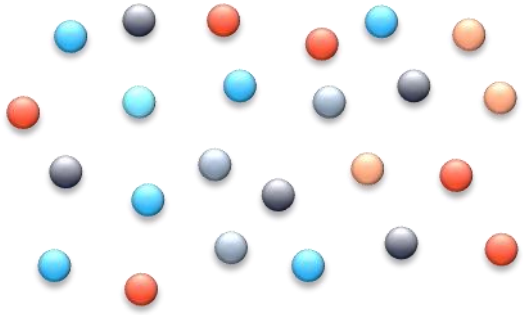
[36] P.H. Rubin, 'The State of Nature and the Evolution of Political Preferences', *American Law and Economics Review* 3, no. 1 (2001), 52.
[37] [*Add reference to ancient pedigree of methodological individualism. Can probably find in article around here*]
[38] G.M. Hodgson, 'Meanings of methodological individualism', *Journal of Economic Methodology* 14, no. 2 (2007).
[39] J. Heath, 'Methodological Individualism' in *The Stanford Encyclopedia of Philosophy* ed. E.N. Zalta (2020).
[40] J.A. Schumpeter, *History of Economic Analysis* (New York: Oxford University Press, 1954), 888 as cited in Hodgson, 'Meanings of methodological individualism', 213.
[41] "The methodological individualist claims that all true theories of social science are reducible to theories of individual human action, plus boundary conditions specifying the conditions under which persons act" (R. Nozick, 'On Austrian Methodology', *Synthese* 36, no. 3 (1977), 353). See also: C. Arnsperger and Y. Varoufakis, 'What Is Neoclassical Economics? The three axioms responsible for its theoretical oeuvre, practical irrelevance and, thus, discursive power', *Panoeconomicus* 53, no. 1 (2006), 8.
[42] Hodgson remarks that "most advocates and opponents of 'methodological individualism' have treated it as a purportedly universal principle for use in the social sciences" (Hodgson, 'Meanings of methodological individualism', 3). See also: F.A. von Hayek, 'Scientism and the study of society. Part I', *Economica* 9, no. 35 (1942), 283. Critically, see: S. Lukes, *Methodological individualism reconsidered* (Springer, 1970).

> *atom in chemistry*; whatever happens *can ultimately be described exhaustively in terms of the individuals involved*." [emphasis added][43]

The comparison with an atom is not incidental.[44] Methodological individualism is closely related to *methodological atomism*, a parallel concept from the natural sciences which argues that all natural scientific phenomena can be explained with reference to, or as a result of, the characteristics and interactions of fundamental atomic particles.

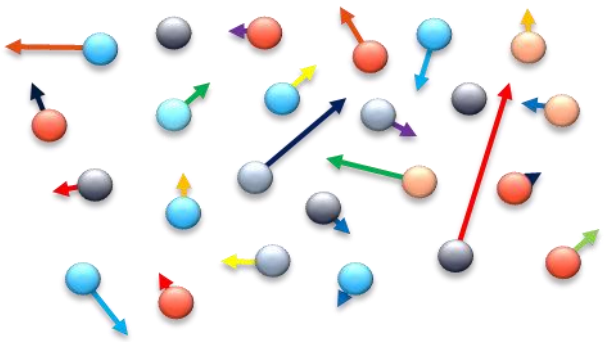
Crucially, this atomism builds on a *presumption of radical separation* between fundamental atomic units, with no emergent properties[45] or shared contextual influences between them. This assumption makes it possible to describe interactions between atoms as an exclusive product of their particular characteristics, and to model them as isolated billiard balls (Figure 7).

Figure 7: A billiard ball model of atoms (or isolated individuals)



Each of these atoms can then be imputed with certain characteristics (such as charge, mass, velocity, etc.). This is shown in Figure 8 below:

Figure 8: A billiard ball model with imputed characteristics



Economists, building on a tradition of methodological individualism, adapted these techniques for use in economic modelling and analysis.[46] However, instead of using charge or mass, they imputed their individual atoms with assumptions of rationality, egoism, maximisation, and perfect information. In the

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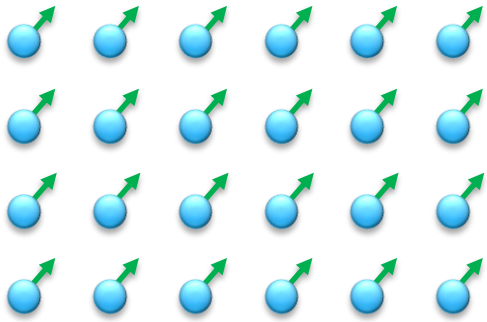
[43] G. Zwirn, 'Methodological individualism or methodological atomism: the case of Friedrich Hayek', *History of Political Economy* 39, no. 1 (2007), 49.
[44] T. Lawson, 'What is this 'school' called neoclassical economics?', *Cambridge Journal of Economics* 37, no. 5 (2013), 953-954.
[45] Emergent properties are collective properties which cannot be reduced to individual phenomena (Zwirn, 'Methodological individualism or methodological atomism', 55). "For example, a language system has powers irreducible to the human speech, and other communicative, acts on which it nevertheless depends" (T. Lawson, *Reorienting economics* (Routledge, 2012), 44).
[46] Generally, see: K. Raworth, *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist* (London: Random House, 2017), 96-99.

process, they created a model of regularised human behaviour based on *representative agents* (Figure 9). This creative decision, as we will see below, was necessary to enable neoclassical GE models and their more sophisticated modern economic counterparts.

Figure 9: A billiard ball model using a representative economic agents



We previously discussed the three-body problem, for which physicists have been unable to find a general solution. We also saw that they were able to identify solutions for certain specific cases, for example when one of the bodies has no mass, if the bodies are in stable Lagrange points, and so on. *The representative economic agent is an economic counterpart to these specific cases*. It simplifies and regularises human behaviour so that it becomes deterministic and possible to calculate predictions about outcomes.

In our earlier discussion on the limits of economic methods, we noted that economic predictions are not an adequate test for the correct application of economics 'because (part of) the economic realm has been *specially designed to isolate (i.e. co-create) statistical regularities and generate economic predictions*'. This is evident in the way that representative agents are necessary to reveal and describe the natural law determinism that is supposedly inherent to the dynamics of supply and demand. This shows that it is economic theories and methods, and not an objective, fundamental feature of market exchange, which has created the objective and deterministic universe of economic modelling.

If economists attempt to depart from the specific case of representative agents, for example to include varying motivations and effort levels, then this forces them to leave the reliable, deterministic universe that their specific case has created. Significantly, such attempts are unable to satisfy the objective scientific standards for formal modelling that were designed to apply to the specific case, and which are now common to economics in general.[47] This makes it difficult, if not impossible, for researchers to radically depart from representative agent approaches and methodological individualism and still be doing economics in accordance with the contemporary highest scientific standards of this discipline.

In this regard it seems that mistaken beliefs about economic science are perpetuating the use of a highly specific, generally unrealistic, and largely uninsightful way to study economic dynamics. An equivalent error would be for a physicist to argue that a specific case for the three-body problem could be used as a generalised solution; for example, that every third body in any model 'really' does not have any mass, and that this approach is the one right way to solve every three-body problem. This is, of course, the wrong way to think about the problem – a rare exception should not be turned into the rule.

There are additional problems with methodological individualism and economics, aside from the fact that the discipline has come to rely on the general application of a specific case for the creation of its standard, deterministic models. To see this, we need to examine more closely the *presumption of radical*

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[47] We previously cited Hausman on this point: "Most… economists agree that *economic theory should be grounded in* a Walrasian general equilibrium approach founded on optimization by individual economic agents" [emphasis added] (D.M. Hausman, *The Philosophy of Economics: An Anthology*, 3 ed. (Cambridge: Cambridge University Press, 2008), 304). See footnote 48.

separation which has been imported into economic theory and models via methodological atomism. Zwirn provides a helpful summary:

> "It is usual in economics to assume that individual actors are the equivalent of atoms, meaning that their constitution is fixed independently of context and that they generate their own separate, independent, and invariable effects.
>
> An individual actor whose nature and constitution is truly independent of context is defined by his or her substance only, much as in physics where a hydrogen atom (H) is not defined in relation to an oxygen atom (O). Accordingly, *an individual (and his or her properties) is assumed to be independent of other individuals* (although other individuals often form a crucial part of social context). That is, *individuals either stand in no relation to each other at all, or if they do, their relationship is an external one*. Two objects are externally related (like a fork and a spoon, tea and sugar, two passing strangers) if neither is constituted by the relationship that one has to the other (Lawson 1997). An *internal relation* between individuals is one in which the one is defined in relation to the other, such as landlord-tenant, teacher-student, and employer-employee. Internal relations are excluded in the common, dominant interpretation of [methodological individualism in economics]." [emphasis added][48]

The limits of atomistic approaches in economics become apparent when we consider *the truly radical effects of radical separation*. It requires, in effect, a factual assumption that there is no shared culture, geography, education, language, history, family, kinship, or any other kind of constitutive relationship between people which might constitute an internal relation or mediate their exchange relations. People are *nothing* but the narrow axioms of their material self-interest, perfect information, etc.[49] As Veblen wittily described this simulacrum of a person:

> "[A] lightning calculator of pleasures and pains, who oscillates like a homogeneous globule of desire of happiness under the impulse of stimuli that shift him about the area, but leave him intact. He has neither antecedent nor consequent. He is an isolated definitive human datum, in stable equilibrium except for the buffets of the impinging forces that displace him in one direction or another. Self-imposed in elemental space, he spins symmetrically about his own spiritual axis until the parallelogram of forces bears down upon him, whereupon he follows the line of the resultant. When the force of the impact is spent he comes to a rest, a self-contained globule of desire as before."[50]

The effects of radical separation explain why GE models could not include the capacity of individuals for negotiation, exchange, and competition. Such interactions are enacted as *internal relations* between buyers and sellers, and are therefore incompatible with methodological individualism. To elaborate, it helps to imagine an economy that consists only of buyers or sellers. It is easy to see that this situation is hardly 'economic' since there would be no exchange. Next imagine another economy which consists only of individual atoms, i.e. representative agents with imputed characteristics. It is easier and more plausible to imagine the latter because representative agents, as atoms, are not defined by the same types of internal relations as buyers and sellers. At this stage it becomes evident that it was the 'assuming

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[48] Zwirn, 'Methodological individualism or methodological atomism', 56.

[49] Demsetz writes that "The intellectual achievement of [the neoclassical perfect competition] model is its complete abstraction from centralized control of the economy…. What is modelled is not competition but extreme decentralization, and one can assess through its use whether extreme decentralization leads to chaotic resource allocation. The actors in this model maximize utility or wealth, and they do so in complete disregard of the decisions of others or, indeed, of even the existence of others. The same decisions follow from the same prices (and technology) whether or not anyone else is "out there" reacting to these parameters. If such impersonal maximizing behavior is competition, it is a very restricted variety. As Knight points out, doing better than others is not involved. No small amount of mischief has resulted from identifying this model with competition. Its appropriate name is perfect decentralization" (H. Demsetz, 'The theory of the firm revisited', *The journal of law, economics, and organization* 4, no. 1 (1988), 142). Lawson, 'What is this 'school' called neoclassical economics?', 954-955.

[50] Veblen as cited in S. Lukes, *individualism* (ECPR Press, 2006), 114.

away' of internal relations, required to enable atomism, that compelled economists to model people as passive price takers and to assume that a market mechanism allocates goods like a magical clockwork.

Also remarkable is that this 'market mechanism', whose coordinating effects are a direct product of economic theory, is conceptualised as some kind of magical force which exists in the vacuum between atoms. It follows from this that it is the *vacuum*, i.e. the 'frictionless market' which operates as a kind of Divine equation, which is the source of exchange and efficiency, and not actual individuals.[51] This is, of course, just another interpretation of socio-economic bifurcation which exists as part of our economic imagination. It is, moreover, a far cry from Adam Smith's liberal vision of free individuals exercising their natural propensity to truck, barter, and exchange in a creative manner. To connect to our earlier discussion of capitalism, we see here that it is written into economic methods and models that markets are 'coordinated' by an intelligence which exists 'out there' and whose logic is autonomous from that of market participants. With such a mental framework in place, which gives us no means of control over the coordinating intelligence, it is easy to see why it is impossible to change capitalism.

The above findings suggest that it was an attempt to enable a certain scientific methodology, and not an attempt to mirror reality as closely as possible, which caused GE models to depart so significantly from actual markets and exchange practices. A corollary of this insight is that GE models cannot be improved and made 'more realistic' (e.g. through game theory) because of the kind of unrealism (radical separation) that is embedded in their scientific design. Einstein's famous adage is quite appropriate in this regard: we cannot solve problems using the same kind of thinking that created them.

Overall, the shortcomings of radical separation and socio-economic bifurcation highlight that it not possible for economists to provide an adequate account of human exchange practices within a scientific framework which relies exclusively on methodological individualism and atomism. The fundamental problem, and the limit of this approach, is that *the individual and collective are internally related insofar as neither concept can be meaningfully described without reference to the other*.[52] As Lukes explains:

> "If this theory [of abstract and methodological individualism] means that in the social world only individuals are observable, it is evidently false. Some social phenomena simply can be observed (as both trees and forests can); and indeed, many features of social phenomena are observable (e.g. the procedure of a court) while many features of individuals are not (e.g. intentions). Both individual and social phenomena have observable and non-observable features. If it means that individual phenomena are easy to understand, while social phenomena are not (which is Hayek's view), this is highly implausible: compare the procedure to the court with the motives of the criminal. If the theory means that individuals exist independently of, e.g., groups and institutions, this is also false, since, just as *facts about social phenomena are contingent upon facts about individuals, the reverse is also true*. Thus, we can speak only of soldiers because we can speak of armies: only if certain statements are true of armies are others true of soldiers. If the theory [of individualism] means that all social phenomena are fictional and all individual phenomena are factual, that would entail that all assertions about social phenomena are false, or else neither true nor false, which is absurd." [emphasis added][53]

It is therefore not without reason that economic philosophers Hausman and MacPherson write that:

> "Economists have no qualms about explanations that cite facts about prices, incomes, laws, or contracts, and all of these are, of course, social entities. The explanatory individualism that

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[51] Keen makes a similar point in his *The New Economics*. He writes, "this is how the leading PhD-level Neoclassical textbook *Microeconomics*… puts Samuelson's assumption *approvingly*: "Let us now hypothesize that there is a process, ***a benevolent central authority perhaps***, *that*, for any given prices *p* and aggregate wealth function *w*, *redistributes wealth in order to maximize social welfare*" (S. Keen, *The new economics: a manifesto* (John Wiley & Sons, 2021), 133).

[52] See also: Lawson, 'What is this 'school' called neoclassical economics?', 954-955.

[53] Lukes, *individualism*, 97.

> economists typically assume maintains that the fundamental explanatory principles or laws (apart from the laws of the natural sciences) should concern the preferences, beliefs, and choices of individual human beings… *We are not sure whether this version of explanatory individualism is ultimately defensible*." [emphasis added][54]

The internal relation between individuals and collectives is apparent when, on closer analysis, even the idea of an 'individual' proves to be illusory. Biologists have found, for example, that human survival depends on trillions of bacteria in our guts and throughout our bodies.[55] These internal biomes affect our mental and physical processes and health; we could live without any one of them, but could not live without them as a collective.[56] Does this make them part of us as 'individuals'? A similar point is that human cells exist as a symbiosis between mitochondrial bacteria and a eukaryotic cell.[57] These bacteria contain their own genetic material. Are they part of us as individuals? In the end, while it seems that it should be trivial to identify an individual, it turns out to be fiendishly difficult, if not impossible, no matter the frame of reference that one uses. In this regard it is baseless to presume, as a matter of fact, that individuals can be comprehensively described as some kind of abstract, self-contained whole.[58]

Overall, it therefore emerges that the boundary between individual and collective is as fictional as the boundary between the economy and non-economy. It may be a useful fiction for scientific practice, but it is scientifically incorrect to regard this fiction as objective and fundamental, or to consider that all collective phenomena in social science need to be explained in terms of individuals. We can therefore suggest that *individuals did not come first; instead, they came together with*.

By extension, it is also the case that markets came together with social and political structures, and that they are not pre-social. It is precisely this point which is misunderstood in the conception of market fundamentalism as an objective blueprint for the structure of social arrangements, and which we will now examine.

6.2.2 Markets are not pre-social

We previously discussed how liberal philosophy and economic reasoning dovetailed to create a metaphor of butchers, bakers, and brewers engaging in free exchange in a state of nature, eventually leading to the signing of a social contract and the creation of a state. These ideas suggested that liberalised exchange existed before states, and that markets are a pre-social foundation for the creation of social structures.

Our starting point is to reiterate that *there is no evidence for these ideas*. If they were correct, then it would be possible for historians, anthropologists and archaeologists to search the historical record and find examples of individuals, or groups of individuals, living in a pre-state or pre-social setting (e.g.

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[54] Hausman and MacPherson in Hausman, Philosophy of economics, p. 234-235. Consider also Graeber's remarks on individual choice and trade-offs: "When one says that a person is choosing between having more money, more possessions, or more prestige, what one is really doing is taking an abstraction ("prestige") and reifying it, treating it as an object not fundamentally different in kind from jars of spaghetti sauce or ingots of pig iron. This is a peculiar operation, because in fact prestige is not an object that one can dispose of as one will, or even, really, consume; it is rather an attitude that exists in the minds of other people. It can exist only within a web of social relations" (D. Graeber, *Toward an anthropological theory of value: The false coin of our own dreams* (Springer, 2001), 17).

[55] [*add reference to our survival depending on gut bacteria*]

[56] [*add reference to our survival depending on gut bacteria, and its influence on our mental and physical health*]

[57] [*add reference to symbiosis between mitochondrial bacteria and a eukaryotic cell*]

[58] As Commoner once outlined as a first principle of ecology, "everything is connected to everything else" (B. Commoner, *The Closing Circle: Nature, Man & Technology* (New York: Knopf, 1971) as cited in A. Battistoni, 'Rethinking Domination in the Age of the Externality', Annual Conference 2023 of the American Society for Political and Legal Philosophy (2023), 30).

solitary farmers, nomads, pastoralists, etc.) and whose activities are governed primarily by liberalised exchange (i.e. barter). Such evidence has never been found. As Graeber explains:

> "For almost a century, anthropologists like me have been pointing out that there is something very wrong with this picture. The standard economic-history version has little to do with anything we observe when we examine how economic life is actually conducted, in real communities and marketplaces, almost anywhere."[59]

Instead, we find that these societies are primarily governed by kinship, honour, patriarchal, or other principles which are not primarily commercial in nature.[60] As Humphrey notes, "No example of a barter economy, pure and simple, has ever been described let alone the emergence from it of money; all available ethnography suggests that there has never been such a thing."[61] This does not mean that exchange does not exist in these societies, it:

> "…just means that it's almost never employed, as Smith imagined, between fellow villagers. Ordinarily, it takes place between strangers, even enemies… who will, likely as not, never meet again, and with whom one certainly will not enter into any ongoing relationships. This is why direct one-on-one exchange is appropriate: each side makes their trade and walks away. [Such exchanges in pre-state societies are] all made possible by laying down an initial mantle of sociability in the form of shared pleasures, music, and dance – the usual base of conviviality on which trade must always be built. Then comes the actual trading…"[62]

It turns out, in this regard, that contemporary market societies are a recent creation and historical exception. As I noted in my PhD thesis:

> "Market exchange as a social organisational principle is premised on the existence of property rights, but these can only emerge alongside other social and political structures. While it may be possible to barter consumable items such as apples or bread, it does not go without saying that it would be similarly possible to exchange land, labour, money or information without some sort of land registry, enforceable contracts, formally recognised currency or intellectual property rights and thus without some form of organised (i.e. state) authority in the background. Distinguishing between natural and fictitious commodities, Polanyi argued long ago that no sound argument can be made that fictitious commodities – land, labour, currency and, I would add, information – can be treated as a pre-political part of economic theory: "A market economy can only exist in a market society" where social and political structures have established rules and rituals to commodify artificial commodities. *Market societies are socially constructed, and not separate, 'natural' or pre-political*."[63]

This is difficult for economics to recognise because its scientific foundation has, since the marginalist revolution, been wed to a belief that the social arrangements of liberal exchange, such as property rights and contracts, are a *universal reflection* of individual, self-interested rationality rather than a *particular outcome* of history and liberal tradition. As Clarke explains:

> "[M]arginalism does not simply offer a theory of rational choice. The theory also purports to explain the rationality of the fundamental social relationships of capitalist society, by deriving those institutions from the rationality of the individual: property, exchange, money, the division of labour and the separation of the labourer from the means of production *are all explained not as forms of historically specific social relations, but as technical instruments that facilitate the most perfect realisation of individual rationality*. It is only on this basis that marginalist economics abstracts the economic institutions of capitalist society from their social and historical context, reducing them to

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[59] D. Graeber, *Debt: The First 5,000 Years*, 2 ed. (London: Melville House, 2004), 22.
[60] K. Polanyi, *The Great Transformation: The Political and Economic Origins of Our Time*, 2 ed. (Boston: Beacon Press, 2001 [1944]), 48-58; Graeber, *Debt*, Chapter II.
[61] Humphrey, as cited in Graeber, *Debt*, 29.
[62] Graeber, *Debt*, 29-32.
[63] C.W. van Aartsen, *A journey into causes of corporate misbehaviour: Why corporate legal disciplines and regulation need to be structurally reformed*, PhD Dissertation (Maastricht: ProefschriftMaken, 2020), 238-239.

> the rationally developed instruments appropriate to the optimal allocation of scarce resources. *It can only make economics a 'natural science' because it 'naturalises' the fundamental economic relationships of capitalist society*." [emphasis added][64]

The naturalisation of liberal exchange arrangements is, of course, a form of prejudice against cultures which are not economically liberal since it posits the objective superiority of these arrangements, i.e. 'my way of doing things is objectively better because it conforms to natural economic laws'. This liberal economic bias was already identified as a key part of the scientific foundation of economics. However, we did not yet examine how it undermines historical analysis and conceals other, possibly more ethical and sustainable, ways to think about economics and market arrangements.

In terms of historical analysis, the issue is that political bias and a belief in economic objectivity lead to a form of reasoning which *does not consider that economic science or exchange arrangements could have reasonably developed otherwise*.[65] This prejudice entails that other ways of thinking, for example about markets, exchange, or resource allocation, are not investigated as potentially valid and insightful. Instead, alternatives are classified *a priori* as failures to attain modern scientific levels of economic understanding and progress. They are discarded as obsolete, suboptimal deviations from objective standards, and are rarely, if ever, economically evaluated on their own terms and merits. This results in a one-sided, flawed kind of historical analysis known as *Whiggism* (which is by no means exclusive to economics[66]):

> "[Whiggism] conceives the past as, somehow, the preparation for the present. In its most extreme formulations, it considers explicitly the corresponding transition as amounting to the upward 'evolution' or 'progress' of what is 'less developed' toward what is 'more developed'."[67]

As Kuhn elaborates:

> "Reading a work of the past, [a contemporary researcher] regularly seeks [a historical] author's positions on current problems, criticizes them with the aid of current apparatus, and interprets his text to maximize its coherence with modern doctrine. In that process the historic original is often lost… Most examples of the Whiggishness enforced by placing history in the service of a parent discipline are more subtle but no less unhistorical."[68]

We identified several examples of Whiggism in our discussions so far. It is evident, for example, in the way that corporate governance theorists mistakenly identified the problem of separation and control in Adam Smith's work. It is also revealed in the erroneous belief that the Arrow-Debreu model provided proof for Smith's ideas regarding the superiority of liberalised exchange. Whiggish reasoning also made it possible for marginalists to view liberal economic arrangements as an outcome and natural extension of individual rationality. It may also have enabled the paradoxical development of the neoclassical model of the firm, insofar as Whiggish reasoning makes it easier to disregard the caveats of Marshall and Pigou and discover, in circular manner, the 'true' underlying economic principles and thus a 'more developed' economic theory of the firm.

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[64] S. Clarke, *Marx, marginalism and modern sociology* (Springer, 1991), 151.

[65] As Blaug explains it, "the tendency to view history as a relentless march of progress from past errors to present truths" (M. Blaug, 'Misunderstanding Classical Economics: the Sraffian interpretation of the surplus approach' in *Competing Economic Theories: Essays in Honour of Giovanni Caravale*, ed. S. Nisticò and D. Tosato (Routledge, 2002), 80). "It is as if capitalism has always been the destination of historical movement and, more than that, the movement of history itself has from the beginning been driven by capitalist 'laws of motion'" (Wood, *The Origin of Capitalism*, 2).

[66] [*add examples of Whiggism that are not economic*]

[67] A. Baltas, 'On the harmful effects of excessive anti-Whiggism' in *Trends in the Historiography of Science*, ed. K. Gavroglu, J. Christianidis, and E. Nicolaidis (1994).

[68] T.S. Kuhn, 'History and the History of Science' in *The Essential Tension: Selected Studies in Scientific Tradition and Change*, ed. T.S. Kuhn (London: The University of Chicago Press, 1977), 154-155.

In addition to these, we can identify an *important instance of Whiggism in the idea that capitalism emerged out of the economic arrangements of feudalism*. This idea sustains the belief in capitalism as a really existing system, was already present in the work of Smith, and is unfortunately common in both Marxist and non-Marxist economic research on the history and workings of capitalism.[69] The gist is that, if capitalism is a real system, and it emerged out of feudalism, then it is by extension helpful to describe and analyse feudalism *as a system* in order to understand capitalism.

This Whiggish idea has a powerful hold on discussions regarding capitalism, which is why we will discuss how it has been undermined by an influential line of iconoclastic historical research. It is worth quoting the seminal article, Brown's 1974 'The tyranny of a social construct' at some length:

> "Since the middle of the nineteenth century the concepts of feudalism and the feudal system have dominated the study of the medieval past. The appeal of these words, which provide a short, easy means of referring to the European social and political situation over an enormous stretch of time, has proved virtually impossible to resist, for they pander to the human desire to grasp-or to think one is grasping-a subject known or suspected to be complex by applying to it a simple label simplistically defined. The great authority of these terms has radically influenced the way in which the history of the Middle Ages has been conceptualized and investigated, encouraging concentration on oversimplified models that are applied as standards and stimulating investigation of similarities and differences, norms and deviations. As a result scholars have disregarded or paid insufficient attention to recalcitrant data that their models do not prepare them to expect…
>
> The phrase [feudal system] has thus become for us so large and vague that it is quite possible to maintain that of all countries England was the most, or for the matter of that the least, feudalized; that William the Conqueror introduced, or for the matter of that suppressed, the feudal system… The variety of existing definitions of the term and the general unwillingness of any historian to accept any other historian's characterization of feudalism constitute a prime source of confusion…
>
> The hesitancies, contradictions, and inconsistencies that have been reviewed – and that are wholly typical of statements found in the books on medieval society published in the past twenty years – clearly demonstrate how necessary it is to reassess the value of the words "feudal" and "feudalism." It must be admitted that there is little possibility of ridding the historical vocabulary of them, adopted as they have been by the scholarly community in general and by the economists in particular."[70]

As Reynolds elaborates in her 1994 work on *Fiefs and Vassals*:

> "Even when the historians follow the terminology of their documents and take pains to establish the phenomena recorded, they tend to fit their findings into a framework of interpretation that was devised in the sixteenth century and elaborated in the seventeenth and eighteenth. Learned as were the scholars of those times and as much as we owe to them, they knew less than we know about the middle ages and much less about the differing ways that societies may be organized. We cannot understand medieval society and its property relations if we see it through seventeenth and eighteenth-century spectacles. Yet every time we think of fiefs and vassals we do just that. Feudalism in its 'narrow sense' of relations within the noble class seems to me a much less important subject than feudalism in its Marxist sense, which involves not only relations between nobles and peasants but consideration of the whole economic structure of society and the reasons for economic and social change. At present, however, study of the broader subject seems

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[69] We already identified an early echo of this idea in Smith's historical argument that liberal principles had been discovered by the ancient Romans, only to be lost and rediscovered by Europeans, who were then using free exchange to displace and transcend the inefficient and unfree feudal relations of the Middle Ages. The idea of capitalism emerging out of feudalism featured in the work of Marx, Hayek and many others, and remains highly prevalent: [add references to P. Anderson, *Lineages of the Absolutist State*. Wood, *The Origins of Capitalism – A longer view*. Hayek (check books). Robé, 2020 (check his book for some additional references).] Wood, *The Origin of Capitalism*. H. Landreth and D.C. Colander, *History of Economic Thought*, 4 ed. (Houghton Mifflin, 2002), 371-372.

[70] E.A. Brown, 'The Tyranny of a Construct: Feudalism and Historians of Medieval Europe', *The American Historical Review* (1974).

> to be impeded by its inheritance from the narrower one of the idea that fiefs and vassalage were central and defining institutions of medieval European society. In particular, the comparative use of feudalism in study of non-European societies, although generally conducted in what is intended to be a Marxist sense, is gravely hindered by a tendency to bring fiefs and vassals into the discussion in 'the Cinderella slipper strategy' of trying to fit one whole society into a conceptual model derived from a quite different one. That seems peculiarly unfortunate when the model was constructed so long ago at such an early stage of comparative social science."[71]

In effect, the Whiggish idea that capitalism emerged out the feudal system is trapped in a conceptual model that was first developed over four-hundred years ago, and which has been debunked by modern historians for being inconsistent and unable to explain the wide variety of institutional arrangements that existed during the European middle ages (and elsewhere in other 'pre-capitalist' societies).

The idea that capitalism emerged from feudalism is counterproductive because it wrongly portrays capitalism as something with particular characteristics which can be identified from a historical analysis of feudalism and capitalism. This sustains the idea that capitalism 'really exists' and conceals its market fundamentalist origins in the scientific practice of economics. Wood's comments in the introduction to her 2002 study, *The Origins of Capitalism*, are quite revealing in this regard:

> "In most accounts of capitalism and its origin, there really *is* no origin. Capitalism seems always to *be* there, somewhere; and it only needs to be released from its chains – for instance, from the fetters of feudalism – to be allowed to grow and mature. Typically, these fetters are political: the parasitic powers of lordship, or the restrictions of an autocratic state. Sometimes they are cultural or ideological: perhaps the wrong religion. These constraints confine the free movement of 'economic' actors, the free expression of economic rationality…
>
> It is as if capitalism has always been the destination of historical movement and, more than that, the movement of history itself has from the beginning been driven by capitalist 'laws of motion'…
>
> The market was supposed to be an arena of choice, and 'commercial society' the perfection of freedom. Yet this conception of the market seems to rule out human freedom. It has tended to be associated with a theory of history in which modern capitalism is the outcome of an almost natural and inevitable process, following certain universal, trans historical, and immutable laws. The operation of these laws can, at least temporarily, be thwarted, but not without great cost. Its end product, the 'free' market, is an impersonal mechanism that can to some extent be controlled and regulated, but that cannot finally be thwarted without all the dangers – and the futility – entailed by any attempt to violate the laws of nature."[72]

Wood's insightful comments unfortunately do not lead her book in the direction of a radical departure from Whiggism. This may be because a historical analysis of capitalism is unlikely to lead to the insight that it is a by-product of market fundamentalism in economic science.

Importantly, the *absence* of an origin story for capitalism is only intelligible when we recognise it as a false belief in the inevitability of market fundamentalism. After all, if economic gravity is real then it does not matter when or where we live since it will always have an autonomous impact on our societies and the structure of our social arrangements. This leads, on the one hand, to the discovery of market fundamentalism (i.e. capitalist dynamics) in the social arrangements of every society that has ever existed (which is why it cannot have an origin story). On the other hand, it highlights the 'discovery' of capitalism as a post-feudal European innovation to structure society in accordance with the principles of economic gravity, as described by economics. Either way, the result is that the exchange practices of all societies are evaluated in terms of their degree of compliance with economic gravity.

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[71] S. Reynolds, *Fiefs and vassals: the medieval evidence reinterpreted* (Clarendon Press, 1994). [*Add page number for Reynolds (1994) Fiefs and Vassals*]
[72] Wood, *The Origin of Capitalism*, 2, 4, 16-17.

Whiggism provides, therefore, a legitimation for the scientific rationality of Anglo-European economics as well as a scientific justification for the global spread of Anglo-European economic arrangements (such as Western-style property rights, contract laws, company laws, etc.). These are naturalised and disseminated as scientific improvements rather than as cultural and political exports.[73] To counter this view, it is important to stress that *economic science is an extension of Anglo-European scientific and cultural beliefs, and not simply a neutral or objectively desirable form of education*.

We can identify, moreover, that the scientific legitimation of economics undermines the analysis of alternative, non-market fundamentalist approaches to markets and exchange arrangements. Like a self-reinforcing 'Cinderella slipper', the scientific practice of economics is only able to judge alternative arrangements against the 'objective', natural law dynamics of economic science, and forces them to fit into a Whiggish, economic narrative about capitalist history. These approaches are mutually reinforcing and help perpetuate the universality of economic science and the existence of a capitalist system.

Fortunately, this conceptual trap can be avoided and transcended by adopting a *broad, interdisciplinary approach to the analysis of exchange practices*. In their review of archaeological and anthropological findings, Feinman and Garraty draw a helpful distinction between marketplaces, market exchange and market models:

> *Marketplaces* are "physical places in which market exchanges are generally conducted at customary times".[74]
>
> *Market exchanges* are "economic transactions where the forces of supply and demand are visible[75] and where prices or exchange equivalencies exist. In theory, market exchanges may be atomized/impersonal or personal/embedded... However, in practice… all market transactions presuppose social relationships among the parties to an exchange and so are embedded".[76]
>
> *Market models* are "an idealized conception that an economic (market) system is the cumulative effect of market transactions between self-interested buyers and sellers".[77]

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[73] For a discussion, see: Jara and Magana, 'Rules of imperialist method'. Jara and Magana emphasise that this is not a peaceful process: "The aim was to create free labour, i.e., destroying the indigenous inhabitants' means of production and existence, depriving them of their social world, in order to create free competing individuals/labourers for the plantations and railway companies [67]. To introduce free labour and wages, colonial administrators used all possible means. Compulsory labour for private companies and the state was imposed in the villages and abroad. Where free or forced labour was not accepted, punitive military expeditions were sometimes carried out. When the Abbeys on the Ivory Coast rebelled against compulsory labour for the construction of a railway, their villages were burned and heads were displayed on poles by the railway stations and in front of huts in the villages. Compulsory labour was imposed everywhere in British colonies. Native work on 'free' land and on communal lands was prohibited. Spears and arrows were forbidden to prevent hunting and force people to engage in agriculture. Africans were denied firearms for the same reason. In agriculture, compulsory crop cultivation was imposed. Another way of compelling people to work for wages (and to get revenues for the metropolis) was the imposition of taxes in cash. In the British colonies a wide range of taxes was imposed: poll-tax for agriculturalist communities; hut-tax; labour-tax, etc. People were forced to abandon their fields and villages - in French Equatorial Africa, as a consequence of hunger, the population diminished from 15 million at the beginning of the twentieth century to 3 million in 1921 (Jara and Magana, 'Rules of imperialist method', 129-130). Generally, see: B. Allan, *Scientific Cosmology and International Orders*. [*add page number for Allan. add book on development. Add reference to Adas*]

[74] G.M. Feinman and C.P. Garraty, 'Preindustrial markets and marketing: Archaeological perspectives', *Annual Review of Anthropology* 39 (2010), 170.

[75] "[M]eaning that important changes in relative prices, salient shifts in quantities or availability of goods offered or sought, or the quality of marketed goods available create palpable modulations in supply and demand forces that are perceptible to market participants" (Feinman and Garraty, 'Preindustrial markets and marketing', 171).

[76] Feinman and Garraty, 'Preindustrial markets and marketing', 171.

[77] Feinman and Garraty, 'Preindustrial markets and marketing', 170.

These definitions allow us to distinguish between marketplaces and market exchanges, which have historically been characterised by broad variations in social, political, and environmental factors, and market models which are *idealised fictions about the supply-demand dynamics of individual, liberalised exchange*. The former have existed since time immemorial, and the latter developed, as we have seen, out of economic science and Smith's utopian vision in the *Wealth of Nations*.

One problem with Whiggism and market fundamentalism within economics is that marketplaces and market exchanges (together, 'exchange practices') have been generally conflated with market models. The reasoning is simple: if exchange practices in all places, all societies, and at all times are subject to natural economic laws, then the predominant economic policy question is the extent to which exchange practices are consistent with the economic gravity of supply and demand. It then only makes sense to compare exchange practices against the template provided by market models. While reflecting on the impact of this issue for the analysis of markets and Islam, Reda explains how:

> "For the most part, markets are treated as an isolated entity, transcending history and society, and progressing along a given developmental path. *Islam, and any other religion for that matter, is then scrutinized with respect to the degree that it converges to or diverges away from this abstract construct of a market*. This approach fails to realize the true nature and role of markets in Islam, because the very form in which the inquiry is positioned from the outset will influence its assumptions, method, and inferences. Instead of examining a potentially distinct Islamic formulation of markets, what is examined is how Islam "measures up" to this abstract formulation of markets. *Instead of assessing markets from an Islamic perspective, we end up assessing Islam from a "market" perspective*." [emphasis added][78]

We can move beyond this reductionism when we see capitalism as a product of market fundamentalism in economic science, and recognise that it is incorrect to anchor the scientific analysis of commercial practices in the market models that were developed from the 18th century onward based on the work of Smith, Ricardo, Walras, Fisher, Arrow, Debreu, and many others. The simple fact is that these models and their underlying theories do not, as a general framework, help us understand how exchange practices have operated throughout history and in different cultures.

In this regard it is important to stress that *15th to 18th century European marketplaces were not uniquely different from other marketplaces that existed in other places throughout history*. A wealth of historical and anthropological research into exchange practices shows that it is "untenable [to believe in] the once axiomatic notion of a transformational past that sets off the past two centuries of Euro-American capitalism as qualitatively unique or exceptional from everything that came before."[79]

Currency, commerce, division of labour, large-scale and long-distance trade existed in many forms before European dominance.[80] Wage labour and capital markets operated at the time of the Early Roman Empire, and Roman marketplaces were vibrant and full of goods.[81] Mesopotamian, Greek, Venetian and Islamic rulers developed elaborate and complex rules for money, interest and banking.[82] Corporation-like entities can be found in ancient Rome and as far afield as Buddhist Thailand.[83] The

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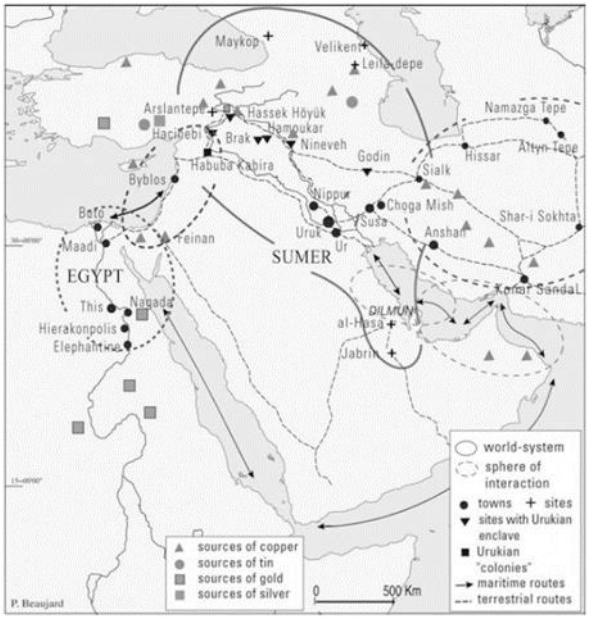
[78] A. Reda, 'Islam and markets', *Review of Social Economy* 71, no. 1 (2013), 21-22.
[79] Feinman and Garraty, 'Preindustrial markets and marketing', 176.
[80] M. Pearson (ed.), *Trade, Circulation, and Flow in the Indian Ocean world* (London: Palgrave MacMillan, 2015). G.C. Comninel, 'English feudalism and the origins of capitalism', *The Journal of Peasant Studies* 27, no. 4 (2000), 4-7.
[81] [*add reference to wage labour and capital markets in Roman times*]
[82] [*add reference to Mesopotamian, Greek, Venetian and Islamic rulers developed elaborate and complex rules for money, interest and banking*]
[83] [*add reference to Corporation-like entities can be found in ancient Rome and as far afield as Buddhist Thailand*]

oldest examples of large-scale trade across cultures and vast distances relate to ancient trade between Egypt and Sumer, shown in the following figure:[84]

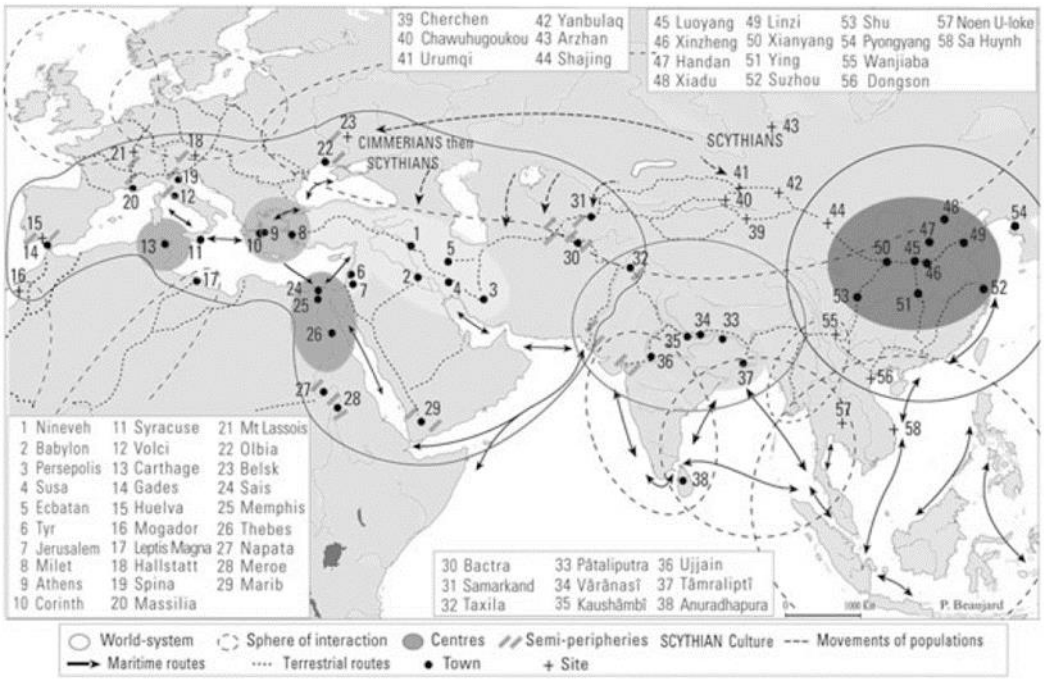
Figure 10: Map of trade in Western Asia and Egypt 3500-3000 BCE



Trade networks developed, over time and between cultures, across Asia, the Indian Ocean, and the Mediterranean. Their size and scope ebbed and flowed with environmental, political, economic, social, technological, and other developments, but generally expanded over time. Archaeological evidence suggests that by 500 BCE, overlapping trade networks extended from the rock of Gibraltar to the east coast of China:

Figure 11: Map of Afro-Eurasian trade between 750 and 350 BCE[85]

[84] P. Beaujard, 'The Worlds of the Indian Ocean' in *Trade, Circulation and Flow in the Indian Ocean World*, ed. Michael Pearson (ed.) (London: Palgrave Macmillan, 2015), 16.
[85] Beaujard, 'The Worlds of the Indian Ocean', 19.



This trade has been embedded, from the beginning, in *diverse relationships between people, culture, law, politics, religion, administration, and government*. Consider, for example, Frankopan's comments on the Persian Empire which expanded from the 6th century BCE onwards:

> "The willingness to adopt new ideas and practices was an important factor in enabling the Persians to build an administrative system that allowed the smooth running of an empire which incorporated many different peoples. A highly educated bureaucracy oversaw the efficient administration of the day-to-day life of the empire, recording everything from payments made to workers serving the royal household, to validating the quality and quantity quality of goods bought and sold in marketplaces; they also took charge of the maintenance and repair of a road system criss-crossing an empire that was the envy of the ancient world…
>
> Tolerance of minorities was legendary, with one Persian ruler referred to as the 'Messiah', and the one who the 'Lord, the God of Heaven had blessed', as the result of his policies which included the release of the Jews from their Babylonian exile.
>
> Trade flourished in ancient Persia, providing revenues that allowed rulers to fund military expeditions targeting locations that brought yet more resources into the empire. Spectacular buildings were erected in huge cities of Babylon, Persepolis, Pasargadae and Susa, where King Darius built a magnificent palace using the highest-quality ebony and silver from Egypt and Cedar from Lebanon, fine gold from Bactria, lapis and cinnabar from Sogdiana, turquoise from Khwarezm and ivory from India. The Persians were famous for their love of pleasure and, according to Herodotus, only had to hear of a new luxury to yearn to indulge it."[86]

Consider also Graeber's writing on pre-industrial China, which explains how central authorities:

> "…actively promoted markets, and as a result, commercial life in China became far more sophisticated, and markets more developed, than anywhere else in the world. This despite the fact that Confucian orthodoxy was overtly hostile to merchants and even the profit motive itself. Commercial profit was seen as legitimate only as compensation for the labor that merchants expended in transporting goods from one place to another, but never as fruits of speculation. What this means in practice was that they were pro-market but anti-capitalist. Again, this seems bizarre, since we're used to assuming that capitalism and markets are the same thing, but, as the great French

[86] P. Frankopan, *The Silk Roads: A New History of the World* (Vintage Books, 2017), 1-4.

> historian Fernand Braudel pointed out, in many ways they could equally be conceived as opposites".[87]

Similarly, if we look at the Islamic Empire (around 700 CE), recall ancient Persia, and the fact that the Prophet Muḥammad was a trader before he started receiving Divine revelations in 610CE, then it is unsurprising that:

> "…trade and markets have existed in Islamic societies since the early days of Islam, and have played a key role in the promulgation of the faith and its steady expansion into vast geographical regions".[88]

Reda explains that this pre-industrial trade was, in contrast to Graeber's remarks on trade in China, pro-merchant with a particular emphasis on the ethical relationship between religion and exchange.[89] He argues that there is an "Islamic position on markets, and that this position is not only tolerant and positive, but in fact treats markets as a "natural" or "Islamic" phenomenon "divinely" endowed to perform a necessary social function."[90]

Nor were markets limited to the African-Eurasian landmass. Spanish conquistadors, arriving in the Basin of Mexico in the 16th century were "awestruck by the central bustling marketplace at Tlatelolco, which shared an island location with the Aztec imperial capital, Tenochtitlán," and was "so large… that it will hold seventy thousand or even one hundred thousand people, who go about buying and selling."[91] A 16th century eyewitness recalls that:

> "[W]e turned to look at the great market place and the crowds of people that were in it, some buying and others selling, so that the murmur and hum of their voices and words that they used could be heard from more than a league off. Some of the soldiers among us who had been in many parts of the world, in Constantinople, and all over Italy, and in Rome, said that so large a market place and so full of people, and so regulated and arranged, they had never beheld before" (Díaz del Castillo 1956, pp. 218–19).

Historical accounts indicate that exchanges at this Aztec market occurred *silently*, with buyers taking the mobile sellers' goods into their hands and squeezing these goods to indicate their willingness to haggle; an unwilling seller would quietly reclaim the item and move on.[92]

It is beyond the scope of this book to examine the exchange practices of all these societies in the detail which they deserve. The examples above should, however, suffice to establish that there is a rich and diverse history of different exchange practices and policies which should be studied on their own terms, without being unfairly benchmarked against the models and scientific standards of economic science.

In summary, the main point is that exchange practices are ancient and diverse, and that no barter society or exchange-based state of nature has ever existed. This provides conclusive evidence against the idea that markets are pre-social, and confirms that we should not grant objective status to the market fundamentalist model. Importantly, we also saw that Whiggish reasoning is responsible for the mistaken idea that capitalism developed out of a feudal precursor system, and reaffirmed that these ideas impede our ability to investigate the exchange practices of different cultures. This, in turn, undermines the extent to which we can investigate and imagine alternative, perhaps more ethical and sustainable, ways to organise our markets and the activities of firms. This is a crucial insight since, as we will see in the following Section, the scientific foundation of economics relies on a highly unsustainable definition of efficiency to manage our scarce resources.

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[87] Graeber, *Debt*, 260.
[88] Reda, 'Islam and markets', 23.
[89] Reda, 'Islam and markets'.
[90] Reda, 'Islam and markets', 39.
[91] Feinman and Garraty, 'Preindustrial markets and marketing', 168.
[92] Feinman and Garraty, 'Preindustrial markets and marketing', 168.

6.2.3 Economic efficiency is unsustainable

In Chapter 4 we identified that the calculation of efficient solutions in GE models is, due to its reliance on *Pareto optimality*,[93] partially a matter of subjective economic definition and not simply the objective result of a pure, mathematical calculation.[94] We also noted that Pareto optimality is an efficiency criterion which identifies solutions based on *maximum intensity of beneficial exchange without redistribution*, i.e. it is efficient when all trades occur which provide any degree of individual (utilitarian) benefit. As explained by Stiglitz:

> "To an economist, "efficiency" of the market has a simple meaning: the allocation of resources generated by the market is said to be efficient (Pareto optimal) if there does not exist an alternative *feasible* resource allocation which can make some individual better off without making someone else worse off."[95]

At this stage we can add that *Pareto optimality corresponds to the ideal outcome which is obtained after the implementation of Smith's utopia*. Once individuals have maximally pursued their self-interest through liberalised exchange, so when there are no further trade opportunities, then the nation has achieved the largest possible amount of aggregate wealth. This way, *the absence of additional trade opportunities can be used as a proxy for the identification of ideal, liberalised conditions*.

This proxy is useful because it can be tested for *without examining directly and in detail whether individuals are free or have made maximal use of their available exchange opportunities*. This is how Pareto optimality makes it possible for GE models to calculate the results of competitive exchange without integrating any competitive interactions between individuals, and without checking whether each individual has maximised their utility. The convenience, and power, of this workaround explains why Pareto optimality has become the general standard for economic efficiency in economic theories and models.

Other important approaches to economic efficiency include technical efficiency[96] and Kaldor-Hicks efficiency. The first standard is prominent in microeconomics and focuses on the *maximum production* of goods and services to achieve "as much output as possible from a given amount of inputs or resources".[97] It is commonly understood that technical efficiency is incompatible with allocative (Pareto) efficiency because it may produce goods and services which are not desired by consumers.[98] As explained by Krugman and Wells:

> "…it's important to understand that efficiency in production is only *part* of what's required for the economy as a whole to be efficient. Efficiency also requires that the economy allocate its resources so that consumers are as well off as possible. If an economy does this, we say that it is *efficient in allocation*."[99]

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[93] See also: M. Bichler, M. Fichtl, and G. Schwarz, 'Walrasian equilibria from an optimization perspective: A guide to the literature', *Naval Research Logistics (NRL)* 68, no. 4 (2021), 497.
[94] Wight remarks that "Efficiency is a concept arising out of, and defended by, normative arguments. Calling something "efficient" requires that one place the highest value on a preselected goal, and such a choice is driven by values. Once a goal is selected, the determination of efficiency can entail scientific measurements. The scientific features should not obscure the normative nature of the undertaking" (J.B. Wight, 'The ethics behind efficiency', *The Journal of Economic Education* 48, no. 1 (2017), 16). See also: F. Donzelli, 'Walras and Pareto on the meaning of the solution concept in general equilibrium theory' in *New Essays on Pareto's Economic Theory*, ed. L. Bruni and A. Montesano (London: Routledge, 2009).
[95] J.E. Stiglitz, 'The allocation role of the stock market', *Journal of Finance* 2 (1981), 235.
[96] Technical efficiency is sometimes also called productive efficiency, though not by the specialised literature on this topic. For an in-depth analysis see the first two chapters of Fried et al. 2008.
[97] Colander, Economics, 2020, p. 28.
[98] Colander, Economics, 2020, p. 28-29.
[99] Krugman and Wells, p. 29.

The fact that technical efficiency is not viewed by economists as the socially optimal standard means that we will not discuss it further in this section. We will, however, return to it in a later discussion on firms and economic efficiency since it plays an important role in measuring firm performance.

The second, Kaldor-Hicks efficiency, plays an important role in welfare economics and is closely related to Pareto optimality. It *also focuses on maximum exchange intensity but permits redistribution* provided that the beneficiaries of a given measure gain more marginal utility than the losers.[100] It is often presented as a better approach to efficiency because redistribution should make it possible to attain higher levels of total utility than Pareto optimality.[101] It is also seen as more progressive insofar as it can help compensate for undesirable initial distributions of wealth.[102] A failure to do the latter is widely recognised as a basic flaw in the Pareto criterion. As Sen puts it:

> "an economy can be optimal in [the Pareto] sense even when some people are rolling in luxury and others are near starvation. …In short, a society or an economy can be Pareto-optimal and still be perfectly disgusting".[103]

Despite its potential for progressive redistribution, Kaldor-Hicks efficiency plays a relatively marginal role in economics when compared to Pareto optimality.[104] This, in combination with the fact that it is *also focused on maximum exchange intensity*, is why we will not discuss it further.

In general, we can note that economic efficiency based on Pareto optimality has become the dominant standard for efficient and desirable outcomes in economic modelling and theory.[105] It is, moreover, the default form of economic efficiency which is taught to students as an objective benchmark and neutral goal for the rational use of scarce resources.[106] It is in light of this dominant role that the remainder of this section will examine the origins of Pareto optimality and evaluate its sustainability.

The origins and effects of Pareto optimality

The Pareto criterion was proposed by Vilfredo Pareto at the beginning of the 20th century following his empirical work on interpersonal comparisons of utility. In it, he found that the utility of poor and wealthy people could not be compared.[107] This contradicted the common marginalist belief, held for example by Jevons, Menger, and Walras, that utility existed as a *cardinal measure*, i.e. as an objective, measurable fact.[108] Pareto's findings suggested that it would not be possible for economists to develop an objective standard for measuring utility, or to compare the total utility of different market outcomes. This, in turn, would make it difficult to calculate equilibrium outcomes in GE models. It was in response to these challenges that Pareto suggested that his optimality criterion could be used as an impersonal standard for the identification of such outcomes.[109]

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[100] [*add reference to Kaldor-Hicks efficiency*]
[101] Wight, 'The ethics behind efficiency'. S. Ingham, 'Pareto-optimality' in *Encyclopedia Britannica* (2023).
[102] [*add reference to Kaldor-Hicks efficiency being seen as more progressive*]
[103] A. Sen, *Collective choice and social welfare* (San Francisco, CA: Holden-Day, 1970), 22 as cited in Wight, 'The ethics behind efficiency', 18. See also: Hausman and MacPherson in Hausman, Philosophy of economics, p. 241.
[104] Wight, 'The ethics behind efficiency'.
[105] D.T. Luc, 'Pareto Optimality' in *Pareto Optimality, Game Theory and Equilibria*, ed. P.M. Pardalos et al. (Springer, 2008), 481-482; Wight, 'The ethics behind efficiency'.
[106] "By the late twentieth century… more and more students have been taught that economic efficiency is a scientific construct, applicable as physics or mathematics to any society anywhere in the world" (Wight, 'The ethics behind efficiency', 21).
[107] N. Häring and N. Douglas, *Economists and the powerful: Convenient theories, distorted facts, ample rewards* (London: Anthem Press, 2012), 12.
[108] Landreth and Colander, *History of Economic Thought*, 228. See also: Davies, *The Happiness Industry*, p. 54-57.
[109] [*find reference to Pareto's work saying his criterion can be used as an impersonal standard*]

Pareto's ideas gradually gained in influence and became part of the foundation of mainstream economics from the 1930s onwards, when they were integrated into the work of prominent economists such as Paul Samuelson, Abba Lerner, John Hicks, and Oscar Lange.[110] They were also popularised by Lionel Robbins alongside his renowned, scarcity-based definition of economics: "Economics is the science which studies human behavior as a relationship between ends and scarce means which have alternative uses".[111]

One long-term consequence of Pareto's findings is that they framed the comparison of individual consumer choices (e.g. should a person purchase cigarettes or water?) as something which is invariably subjective, and therefore beyond the general scope of objective economic analysis.[112] This is one reason why economists usually decline to comment on the wisdom of individual consumer choices. A second consequence is that questions on efficient distributions of wealth became mathematically unsolvable and were also excluded from the scope of orthodox economic analysis due to their subjectivity.[113] These developments gradually discredited a long tradition of economic work which was concerned with wealth (re)distribution.[114]

A third consequence of Pareto's work is that it, through the Pareto optimality criterion, *enabled the use of universalist models which could be used to simulate the market for any good or service*. This provided marginalist economists with a scientific tool of unprecedented scope, even as it discredited the need for scientific discussions on wealth redistribution. Both points were important, as we saw previously, to address the scientific and political challenges faced by economists during the marginalist revolution.

If we consider the limits imposed by the first two consequences, and the potential offered by the third, then we can identify something ironic, even Faustian, about the way that scientific developments have given economics an unparalleled scope for social scientific analysis at the price of fundamental issues in its scientific foundation.

Economic efficiency and sustainability

We have seen that economic universalism was enabled through the use of representative agents, ideas on market fundamentalism, and the adoption of Pareto optimality. Working together, these ideas created an internally regimented, deterministic, and homogenous *fictional* economy whose outcomes could be predicted by economic modelling and used to represent the idealised supply-demand dynamics for any good or service. This granted economists a powerful scientific tool, but also turned the internal workings of the *actual* economy (its various exchange practices, wealth distribution, etc.) into a subjective, non-economic black box.

Thinking in terms of the black box can also help us understand the role of Pareto optimality with regards to economic efficiency. Insofar as the internal workings are supplanted by economic assumptions, and therefore made unmeasurable, it became necessary to measure economic performance by looking at the objective scale, and not the subjective wisdom, of economic activities.[115] Put differently: if economists

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[110] Donzelli, 'Walras and Pareto on the meaning of the solution concept in general equilibrium theory', 117.
[111] As cited in Häring and Douglas, *Economists and the powerful*, 12.
[112] Häring and Douglas, *Economists and the powerful*, 12. See also: Mazzucato, *The Value of Everything*, 12-15.
[113] This is arguably unsurprising given the limits of methodological individualism and the fact that inequality is only an intelligible concept when examined in a way which takes into account the existence of internal relations.
[114] Häring and Douglas, *Economists and the powerful*, 12-13.
[115] In reflection on these developments, Häring and Douglas invite us to: "note carefully what happens when economists focus on scarcity rather than allocation: economics stopped looking at the wisdom or sanity of general patterns of allocation in society on the basis that no one can reliably compare *individual* differences of preference. Instead, it now focuses all resources upon maximizing the efficiency of the economic machine, on the basis that a rising tide lifts all boats. In short, it depersonalized economics for the very first time, making the wellbeing of the economic machine the priority above all else, including long-term sustainability or the human beings inside that machine" (Häring and Douglas, *Economists and the powerful*, 13). It also explains why economists stopped

cannot look inside the box, then at least they can tell us how large it is.[116] This latter approach is enabled by the Pareto approach to economic efficiency.

This narrow view on evaluating economic performance is reflected not only in Pareto optimality as a measure of maximum intensity of beneficial exchange, but also in the common use of Gross Domestic Product (GDP). The latter is an *estimate of surplus value created by exchange activities*,[117] and has long been criticised for lacking wisdom and relevance as a measure of welfare and economic performance.[118]

> "A major issue is that it interprets every expense as positive and does not distinguish welfare-enhancing activity from welfare-reducing activity… For example, an oil spill increases GDP because of the associated cost of cleanup and remediation, but it obviously detracts from overall well-being... GDP also leaves out many components that enhance welfare but do not involve monetary transactions and therefore fall outside the market. For example, the act of picking vegetables from a garden and cooking them for family or friends is not included in GDP. Yet buying a similar meal in the frozen food aisle of the grocery store involves an exchange of money and a subsequent GDP increase. GDP also does not account for the distribution of income among individuals, which has a considerable effect on individual and social well-being"[119]

The same arguments also hold for Pareto optimality.[120] It does not account for distributions of wealth, and does not, moreover, consider whether particular exchanges are welfare enhancing or reducing, or whether they may be better organised outside of the market rather than through exchange. An additional issue with Pareto optimality is that maximum intensity of beneficial trade requires that *every trade, everywhere, which can lead to a marginal increase in utility for anyone, anywhere, should be made in order to attain maximum efficiency*. This has stark implications in a market fundamentalist context where economic reasoning is applied to solve sustainability issues.

To start our analysis, we can first recall that the liberal foundation of market fundamentalism entails that people should, to the greatest extent possible, be left free to buy and sell as they wish. Second, we can recall that economic imperialism and methodological prejudice against non-economic phenomena entail that more and more aspects of society and the environment are converted into something that is essentially economic whenever they are analysed by economic reasoning. This occurs, as we have seen, because anything in the non-economic realm can become part of the economic realm whenever it can be made to cohere with economic reasoning.[121] Together, these points mean that *economics is a science*

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discussing rents (the idea of unearned income) and the distinction between productive and unproductive work (more generally, see: Mazzucato, *The Value of Everything*, 70-74).

[116] In light of this, it is interesting to consider Graeber's anthropological work on theories of value. As he explains regarding economics, "the most important ideological work [of market-based ideologies] is done by extracting all the most fundamental questions of desire from society, so that it is possible to conceive of happiness largely as one's relations with objects (or at best, people one treats like objects)" (Graeber, *Toward an anthropological theory of value*, 215). He does not consider it, but it is possible that this is required, at least in part, to enable a certain kind of economic methodology.

[117] L. Fioramonti, *Gross domestic problem: The politics behind the world's most powerful number* (Bloomsbury Publishing, 2013); J.S. Landefeld, E.P. Seskin, and B.M. Fraumeni, 'Taking the pulse of the economy: Measuring GDP', *Journal of Economic Perspectives* 22, no. 2 (2008); Mazzucato, *The Value of Everything*, 83.

[118] Fioramonti, *Gross domestic problem: The politics behind the world's most powerful number*; Mazzucato, *The Value of Everything*, 98. K. Dynan and L. Sheiner, *GDP as a measure of economic well-being*, Hutchins Center Working Paper (2018).

[119] I. Kubiszewski et al., 'Beyond GDP: Measuring and achieving global genuine progress', *Ecological economics* 93 (2013), 57.

[120] See, for example: R.M. Dworkin, 'Is wealth a value?', *The journal of legal studies* 9, no. 2 (1980).

[121] There are many examples: Communal resources should be privatised (tragedy of the commons). Government regulation should not create, but address instances of market failure (welfare economics). Voting is converted into an expression of individual self-interest (theory of public choice). Family relationships are turned into investments (Becker's work on the family). Ecosystems are evaluated for their ecosystem services (inclusive accounting). Corporate ethics is a means to attain corporate competitiveness (corporate social responsibility). Carbon emissions

with a political commitment to ensuring that there is minimal interference with economic interactions, and with a methodological commitment to converting non-economic factors into economic factors. To see why this is problematic, we will now examine the economic idea of market failures and its relation to sustainability.

In general, *market failures* are defined to occur whenever a market does not attain an efficient, Pareto optimal outcome.[122] This happens whenever there is a misallocation of resources, i.e. when trade does not occur between private parties which would yield more utility. The result is a market outcome which does not maximally satisfy the preferences of individual market participants. These preferences can be thought of in traditional economic terms as exclusively financial, or in more modern economic terms as both financial and non-financial.

Next, we can identify that market failures can arise due to various reasons, for example when there are non-competitive markets, information asymmetries, transaction costs, externalities, or goods which cannot be privately owned (i.e. public goods).[123] In general, each of these reasons may be viewed as a cause of deviation from perfectly competitive conditions which can be potentially corrected so that a given market tends, as far as possible, towards perfect conditions.

For our discussion on sustainability, we can focus on information asymmetries, transaction costs, and externalities as the most relevant forms of market failure. *Information asymmetries* exist whenever people's preferences for sustainable outcomes (e.g. fewer environmental harms, no labour exploitation in the supply chain, etc.) are not accounted for in market dynamics.[124] They occur, for example, when consumers are unaware of human rights abuses in the production of goods and services, and would have purchased differently if they had been aware. *Transaction costs* can lead to market failure when they prevent people from contracting together to achieve more sustainable outcomes.[125] This can happen, for example, when each person in a local area is willing to spend 10 euros on a park to preserve biodiversity, but the park is not built because it is prohibitively expensive to coordinate all of their contributions. *Externalities* are a cost or benefit to third parties which is not, but should be, included in the price of a given exchange.[126] They exist, for example, when someone buys a car and is not required to pay for the long-term costs of pollution which the car imposes on other people. Important to highlight is that externalities are deviations from the ideal prices that would have been obtained under perfectly competitive conditions.[127]

Underpinning these ideas of market failure is a promise that, if the parties were perfectly informed, if their exchanges were costless and liberalised, and if all costs and benefits to third parties were accounted for, that the sustainability-related issue(s) would not have occurred.[128] This is clearly plausible: 'if the

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are turned into a tradeable commodity (market failure solution to environmental problems). Only wealthy societies with prosperous, liberalised markets can afford to protect the environment (environmental Kuznets curve).

[122] F. Bator, 'The Anatomy of Market Failure', *Quarterly Journal of Economics* 72, no. 3 (1998).

[123] [*reference to standard literature on market failures*]

[124] [*reference to information asymmetries*]

[125] [*reference to transaction costs*]

[126] Demsetz explains that "Externality is an ambiguous concept. For [his paper], the concept includes external costs, external benefits, and pecuniary as well as nonpecuniary externalities. No harmful or beneficial effect is external to the world. Some person or persons always suffer or enjoy these effects. What converts a harmful or beneficial effect into an externality is that the cost of bringing the effect to bear on the decisions of one or more of the interacting persons is too high to make it worthwhile, and this is what the term shall mean here" (H. Demsetz, 'Toward a Theory of Property Rights', *The American Economic Review* 57, no. 2 (1967), 348. For a critical history and analysis, see: Battistoni, 'Short Rethinking Domination in the Age of the Externality'

[127] If we also assume that people act rationally based on available information. This is highly doubtful, and contradicted by evidence (van Aartsen, *A journey into causes of corporate misbehaviour*, 350-351).

[128] As an example, consider the following argument from Demsetz: "Some costs and benefits are not taken into account by users of resources whenever externalities exist, but allowing transactions increases the degree to which internalization takes place. For example, it might be thought that a firm which uses slave labor will not recognize

parties A and B to the exchange had been aware of information μ, and if their exchange was free and frictionless, then there would have been no externality β.' *Cast in this form, we can solve any sustainability-related problem by addressing market failures*.[129] Consider, however, the logical extreme of what is being proposed here: 'if market participants A and B are made omniscient and omnipotent (perfectly informed and no transaction costs) then there will be no negative consequences from their exchanges'. This suggests that we can solve all sustainability-related issues of economic activities by perfecting markets and empowering market actors to a God-like extent.

The problem with this market failure diagnosis is that it is *indiscriminate and tautological*. It explains all exchange-related issues with no regard for their non-economic characteristics. It is, moreover, true as a matter of economic definition and provides no useful insight. Of course there would be no problems if we all had God-like powers, and if markets were as perfect as posited by economic theories. This does not explain why sustainability issues arise in the first place and is therefore unable to address root causes. The shortcomings of this approach were already recognised by Hayek in 1946,[130] Coase in 1960,[131] and named the 'Nirvana fallacy' by Demsetz in 1969. Demsetz noted his concerns as follows:

> "The view that now pervades much public policy economics implicitly presents the relevant choice as between an ideal norm and an existing "imperfect" institutional arrangement. This nirvana approach differs considerably from a comparative institution approach in which the relevant choice is between alternative real institutional arrangements. In practice, those who adopt the nirvana viewpoint seek to discover discrepancies between the ideal and the real and if discrepancies are found, they deduce that the real is inefficient…. Given the nirvana view of the problem, a deduced discrepancy between the ideal and the real is sufficient to call forth *perfection by incantation*, that is, by committing the grass is always greener fallacy."[132] [emphasis added]

The Nirvana fallacy is not inevitable,[133] but its occurrence is greatly increased by the common view of economic efficiency as an objectively desirable standard, and by the standard framing of social and

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all the costs of its activities, since it can have its slave labor by paying subsistence wages only. This will not be true if negotiations are permitted, for the slaves can offer to the firm a payment for their freedom based on the expected return to them of being free men. The cost of slavery can thus be internalized in the calculations of the firm" (Demsetz, 'Toward a Theory of Property Rights', 348).

[129] Mazzucato, for example, shows how this line of reasoning can be extended to eliminate 'rents' from the economy: "… to get to these 'optimal' outcomes, we must ensure that equilibrium holds: all obstacles to equilibrium, such as an interfering government, monopolies, other rents arising from scarcity and so on, must be obliterated. Our problems, marginalism holds, derive solely from imperfections in, and inhibitions on, the smooth working of the capitalist machine. Rent is no longer seen as 'unearned income', as it was by the classical political economists, but as an imperfection that can be competed away" (Mazzucato, *The Value of Everything*, 68).

[130] Hayek already noticed this issue in 1946, arguing further that there would be no competition or market activities if there was perfect information: "how many of the devices [used in market activities] would still be open to a seller in a market in which so-called 'perfect competition' prevails? I believe that the answer is exactly none. Advertising, undercutting, and improving ('differentiating') the goods or services produced are all excluded by definition — 'perfect' competition means indeed the absence of all competitive activities" (F.A. Hayek, *Individualism and Economic Order* (Chicago: University of Chicago Press, 1948), 94).

[131] R.H. Coase, 'The Problem of Social Cost', *The Journal of Law and Economics* 3 (1960).

[132] H. Demsetz, 'Information and Efficiency: Another Viewpoint', *The Journal of Law and Economics* 12, no. 1 (1969), 1, 3.

[133] Demsetz, 'Information and Efficiency: Another Viewpoint', 1, 3. Coase supports Demsetz, writing that "A better approach would seem to be to start our analysis with a situation approximating that which actually exists, to examine the effects of a proposed policy change and to attempt to decide whether the new situation would be, in total, better or worse than the original one. In this way, conclusions for policy would have some relevance to the actual situation" (Coase, 'The Problem of Social Cost', 43). Fischel also concurs: "The relevant comparison is not between the ideal and the real, but between different institutional arrangements. Thus one cannot conclude that regulation is superior to the operation of markets because markets are imperfect-regulation may be, and in most cases is likely to be, more imperfect. Similarly, it is a form of the nirvana fallacy to conclude that the structure of corporations or corporation law should be changed because existing institutional arrangements are imperfect.

environmental issues as externalities.[134] An indicator for the presence of this fallacy is when non-economic issues are primarily framed and resolved as a failure to empower market participants and achieve efficient market outcomes.

This is unfortunately recognisable in the design of the OECD *Guidelines for Multinational Enterprises* and most of the EU's approach to economic and firm sustainability.[135] It underpins, for example, the architecture of the European Emissions Trading Scheme, the EU *Green Deal*, and the EU *Taxonomy for sustainable activities*. These policies are designed to promote competition and achieve efficient market outcomes, on the presumption that this will address sustainability issues as market failures. Their effectiveness and impact are 'objectively' evaluated by economic models which are embedded in market fundamentalism and the pursuit of economic efficiency.

Critically, however, it must be asked: is it really the root cause of sustainability issues that market actors are not all-knowing and all-powerful? Is a lack of information and an abundance of transaction costs and externalities the main reason that we have global social and environmental problems? Does it make sense to believe that we can effectively solve social and environmental issues by making our markets more efficient? These questions demonstrate that *economic solutions to sustainability problems are primarily designed to empower individual market participants, and only secondarily to address non-economic issues*. They reflect, in other words, the economic prejudice against non-economic concerns.

We can also identify that economic solutions to sustainability issues are similar to ancient superstitions which saw disasters as evidence of a lack of piety: 'X occurred because of our absence of faith and dedication towards Y'. In this case, we are dealing with a lack of faith and dedication towards market fundamentalism: 'our failure to attain economic efficiency and idealised liberal conditions is the root cause of our social and environmental problems'. Stated as such, the market failure diagnosis leads not only to 'perfection by incantation' but also offers a universal problem diagnosis and panacea by incantation.[136] It strikes me as clear, however, that sustainability issues around the world are not caused by a collective failure to elevate market interactions to an omniscient and omnipotent level. We are not Gods, so the problem cannot be that we are not Gods.

Instead, our analysis suggests an alternative diagnosis, namely that market fundamentalism in the scientific foundation of economics has turned this discipline into an *unbounded science*. It has an imperialist tendency and no sense of passing borders between disciplines and different phenomena. It is methodologically predetermined to absorb different parts of society and the environment into an ever-expanding economy. Methodological individualism, with its inherent radical separation, ensures that this expansion displaces and erodes internal relations which are essential to the sustainable foundation

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The proper comparison is between the costs and benefits of existing arrangements and the alternatives being proposed" (D.R. Fischel, 'The Corporate Governance Movement', *Vanderbilt Law Review* 35, no. 6 (1982), 1272).

[134] As examples of this view, see: A.M. Pacces, 'Sustainable Corporate Governance: The Role of the Law' in *Sustainable Finance in Europe: Corporate Governance, Financial Stability and Financial Markets*, ed. D. Busch, G. Ferrarini, and S. Grünewald (Springer, 2021); Armour, Enriques, and Wetzer, 'Mandatory Corporate Climate Disclosures' For a critical analysis of this approach, see: Battistoni, 'Short Rethinking Domination in the Age of the Externality'

[135] van Aartsen, *A journey into causes of corporate misbehaviour*, 164-173.

[136] As Friedman remarks regarding the use of market failure to justify government intervention: "there is no transaction between individuals that does not affect third parties to some extent, however trivial, so there is literally no governmental intervention for which a case cannot be offered along these lines" (M. Friedman, 'Adam Smith's Relevance for 1976' in *The Indispensable Milton Friedman: Essays on Politics and Economics*, ed. L. Ebenstein (Washington, D.C.: Regnery Publishing, 2012), 45-46 as cited in Battistoni, 'Short Rethinking Domination in the Age of the Externality', 9.

of our societies. This results in *economic disembedding*,[137] and is the wellspring of our greatest social, environmental, cultural, economic, and other crises.

The above issues are compounded by economic reliance on Pareto optimality as a standard for economic efficiency. The latter can only be attained when everything economic, which is potentially anything, is traded in the market to improve total utility. The long-term, persistent pursuit of economic efficiency is therefore predicated on the liberalised sale of every tree, every fish, every plot of land, every chunk of ore, every social relation, every moment of our time, anything anywhere, whenever it provides a small and immediate contribution to marginal utility. This is the only way that we can continuously comply with natural economic laws, satisfy the market fundamentalist blueprint, compete in a global economy, address market failures, and obtain the largest possible GDP. It follows that *economic efficiency is inclined to overuse the resources of our planet and erode the internal relations which sustain our societies and living environment, all justified by a market fundamentalist illusion that this is objectively necessary and socially beneficial*.

It is unlikely that most economists would, if asked, endorse an expansion of economic activities in this manner. However, it must be recognised that this is the implicit, long-term destination of their ongoing scientific practice. We have seen, moreover, that their discipline has structurally developed through the misinterpretation, naturalisation, and extension of economic assumptions. The issues which this entails are not common knowledge because economists are generally highly specialised, uneducated about the political foundation of their discipline, and conditioned to view economic solutions as a technical and neutral improvement to the way that our societies allocate scarce resources. They are led, moreover, by market fundamentalism in economics to believe that these developments are objectively desirable.

The justifications are plausible and conventionally accepted. If the economy expands, then there will be more overall prosperity and more resources available to address sustainability issues. Free markets are not perfect, but everyone benefits from fewer market failures. It is therefore a blessing and objective improvement when we attain Pareto optimality in more and more areas of our economies and societies. We can make things and more ethical and sustainable by focusing on the financial *and* non-financial preferences of market participants. In the process, all we are trying to do is address market failures and figure out better ways to allocate scarce resources in a way that benefits everyone.

We have seen, however, that economic efficiency is not a neutral blueprint for objective improvements and that it cannot lead to the wise management of global resources. It does not examine the desirability of economic activities, is prejudiced against non-economic concerns, contributes towards economic disembedding, and erodes the internal relations which are needed for sustainability and the long-term thriving of our species. Economic efficiency therefore does not provide a scientific foundation to enable the sustainable transformation of our economies or firms, and is in fact antithetical towards that purpose.

6.3 Reflection on the limits of economic objectives

We have seen in this Chapter that the free market and efficiency objectives of economic science are animated and enabled by a liberal political vision on the relationship between individuals, society, and the economy. This vision was articulated and worked out, over time, using theories and methods based on methodological individualism and the belief that economics can, and should be, an objective science.

This approach cannot provide a complete account of economic dynamics. It relies on an impoverished view of market participants and their context, and does not consider their internal relations. Economists have tried to compensate for these shortcomings by modelling people as atoms and passive price takers who are inertly affected by market forces which operate, as Divine equations, in the vacuum between

[137] [*add reference to discussion on economic disembedding*]

individuals. In the process, they unwittingly removed the scope for individual and collective initiative from economics since neither individuals nor societies are able to escape the 'laws of economic gravity'.

In light of the above, it is no small irony that economics, a science which extols the virtues of individual competition and free trade, relies so deeply on models which denies these same individuals the chance to shape their own futures other than as agents for the invisible hand. It is unsurprising, moreover, that this science is also unable to provide a basic conceptual framework within which internal relations can thrive, on an equal footing and on their own terms.

The dismissal of internal relations also helps to explain why the universalist approach of economics is unable to provide a conceptual framework to examine, without prejudice, the exchange practices of different societies, including our own. As implied by market fundamentalism, all the essential creative choices have been decided by the deterministic unfolding of natural economic laws. This lack of choice is captured in a sentiment, echoed by numerous commentators, that it is easier to imagine the end of the world than to imagine the end of capitalism.

Fortunately, there is no reason for such pessimism. Human exchange practices have a longer, more diverse, and more interesting history than is evident through the lens of economic science. This needs to be investigated appropriately and not simply judged from an erroneous, Whiggish viewpoint. Overall, it is a cause for celebration that economics is not objective, and that it is an extension of Anglo-European social, cultural, and scientific beliefs. After all, this suggests that there is not, and should not be, one logic to determine how we, as a species, should organise our exchange practices.

This creates space for diversity in exchange practices, invites us to respect economic differences as a legitimate matter of social choice, and reveals that there are opportunities to balance economic and non-economic concerns in any number of creative ways. As we explore these options, we can feel liberated that there is no fundamental need to pursue the false utopian standards of free markets and Pareto optimality. In fact, it seems likely that we will need to depart from these universal standards if we want to effectively address the range of sustainability issues which are being caused and exacerbated by economic disembedding. This suggests that it is through the differentiation of exchange practices, and not their universalisation, that we will be able to make the activities of firms sustainable. This needs an entirely different kind of scientific logic, as we will explore in Part C of this book.

Part C: The limits of economic theories of the firm

We identified in Part A that there is a close coupling between theoretical developments in the economic mainstream and developments in economic theories of the firm. It follows that our findings in Part B, on the limits of economic methods and objectives, are also generally applicable to these latter theories. However, we also noted in the introduction that it would not be very interesting if our only ambition in this Part would be to restate these same limits in the latter context. We therefore promised to examine the consequences of economic limits in a broader context, and to explore how they might be transcended by developing a scientific alternative to economics.

In terms of structure, the first Chapter of this Part investigates the limits of economic methods for the analysis of firms. It extends our analysis of economic objectivity, the invisible hand, and economic modelling to modern economic theories of the firm, and examines how they impact the ethical analysis and regulation of firms, with a primary focus on corporations. The three subsequent Chapters address the limits of economic objectives, as reflected in the market fundamentalist utopia that we identified earlier. They focus respectively on the limits of economic individualism, economic theories on markets, and the idea of economic efficiency. More specifically, the second Chapter reviews the assumption that individuals and, by extension, firms are pre-social. It explores the limiting effects of this assumption in the modern view of the corporation as a nexus of contracts, in discussions on corporate ownership, and in debates on their good governance. Next, the third Chapter challenges economic theories on markets and tries to outline an alternative scientific framework that we can use to think, in a more sustainable way, about the relationship between firms, markets, and the state. Lastly, the fourth Chapter examines how economic ideas on efficiency, and the limits of these ideas, are evident in the way that we think about and reward firms. It also asks, building on the previous Chapter's alternative scientific framework, how we might think about the performance of firms if not in terms of economic efficiency.

At this point in our analysis it helps to revisit the generic conception of sustainability that we have been using thus far and provide a precise definition. This will make our criticism of economics more concrete and allow us to address the complaint that sustainability "lacks solid meaning" and is an unworkable concept.[1] We can start by identifying that there is nothing novel about issues such as environmental degradation, overexploitation of natural resources, or the idea that people may undermine the conditions which are necessary for their long-term thriving and survival.[2] As Du Pisani notes:

> "… the demand for raw materials and its impact on the environment have been a constant issue throughout human history. As early as the ancient Egyptian, Mesopotamian, Greek and Roman civilizations environmental problems such as deforestation and the salinization and loss of fertility of soil occurred, which we would today refer to as sustainability problems. Plato in the 5th century BC, Strabo and Columella in the 1st century BC and Pliny the Elder in the 1st century AD discussed different types of environmental degradation resulting from human activities such as farming, logging and mining." [3]

It is, however, a relatively new phenomenon in the English language to describe these issues as being related to sustainability. In fact, it was only after a "growing concern for the environment during the 1960s and 1970s", and the publications of the 1972 *Limits to growth* report by the Club of Rome, the 1972 *A blueprint for survival* special issue by the Ecologist, and the 1987 *Our common future* report by

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[1] Newton and Freyfogle (2005) Sustainability – a dissent, p. 24.
[2] Perkins in his 1864 *Man and Nature* already "described how different aspects of the natural environment had been disturbed by human intervention and argued that the Earth might become unfit for human habitation, which might even result in the extinction of humankind" (Du Pisani (2006) Sustainable development - historical roots of the concept, p. 86). See also: Brinkmann (2023) The Palgrave Handbook of Global Sustainability, p. 4. Waas et al. (2011) Sustainable Development A Bird's Eye View, p. 1639.
[3] Du Pisani (2006) Sustainable development: historical roots of the concept, p. 86.

the UN, that the terms sustainability and sustainable development entered the popular English lexicon.[4] This may be contrasted with the Dutch, French, and German terms for sustainability which have been in use for many centuries.[5] Robertson describes the earliest German use as follows:

> "The German equivalent, *Nachhaltigkeit*, first appeared in the 1713 forestry book *Sylvicultura Oeconomica* written by Hans Carl von Carlowitz, a mining administrator in a region whose mining and metallurgy industry depended upon timber and who realized that deforestation could cause the local economy to collapse. Carlowitz described how through sustainable management of this renewable resource, forests could supply timber indefinitely."[6]

A shared, semantic feature of these different languages' approach to sustainability is their emphasis on continuity, endurance, maintenance. It is often ambiguous, however, who or what is being sustained, and who or what is doing the sustaining.[7] Part of the problem is that this depends on the unique context and content of a given sustainability issue. It matters, in this regard, whether we are talking about the sustainable profits of a firm, the sustainable energy production of a country, or the sustainability impacts on a transnational ecosystem such as the Amazon.[8]

To study these disparate uses it helps to distinguish between idiosyncratic applications of sustainability, as evident in particular sustainability issues, and the international sustainability discourse that emerged from Anglo-American intellectual circles in the 1960s. The latter provides a conceptual framework, including discursive elements such as metaphors and ideas,[9] which is broadly used to identify, describe, and address the former. We are distinguishing, in other words, between abstract, overarching ideas on sustainability and the way that these ideas are, with varying degrees of effectiveness and consistency, used in different contexts.

One significant feature of the sustainability discourse is that the concepts sustainability and sustainable development gained traction at around the same time. This coupling arose, at least in part, because the discourse was articulated as a critical response to the, at the time dominant, discourse of development which suggested that it was possible to have unlimited economic growth and technological progress on a finite planet.[10] Importantly, the new sustainability discourse was not opposed to growth or progress but instead argued that these aims needed to be pursued within the limits and capabilities of society and the environment. This developmental orientation, which seeks to work with and within 'nature', may

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[4] Robertson (2017) Sustainability Principles and Practice, p. 25. Ruggerio (2021) Sustainability and sustainable development - a review of principles and definitions, p. 2-3. Waas et al. (2011) Sustainable Development A Bird's Eye View.

[5] As Du Pisani notes, based on the work of Van Zon, that "Although the terms 'sustainability' and 'sustainable' appeared for the first time in the Oxford English Dictionary during the second half of the 20th century the equivalent terms in French (*durabilite´* and *durable*), German (*Nachhaltigkeit*, literally meaning 'lastingness', and *nachhaltig*) and Dutch (*duurzaamheid* and duurzaam) have been used for centuries" (Du Pisani (2006) Sustainable development - historical roots of the concept, p. *85*). See also: Brinkmann (2023) The Palgrave Handbook of Global Sustainability, p. 4.

[6] Robertson (2017) Sustainability Principles and Practice, p. 25.

[7] Newton and Freyfogle (2005) Sustainability – a dissent, p. 24. Farley and Smith (2013) Sustainability If It's Everything, Is It Nothing, Chapter 1.

[8] As Newton and Freyfogle explain, "What few observers have noted is that sustainability is also vague in terms of who is doing the sustaining, and the vagueness here is just as troubling. The problem becomes apparent whenwe reduce the termto its root as a verb. Sustain dates from the thirteenth-century French word *sustenir* and the Latin *sustinere*, meaning to hold up or support something from below. As a verb it connects a subject, the one who is sustaining, to an object, the thing being sustained. Yet who or what is the subject? Is nature supposed to sustain itself? Are humans doing the sustaining? Or is the Creator sustaining all?" (Newton and Freyfogle (2005) Sustainability – a dissent, p. 24-25).

[9] [*Add reference to, and details from, Allan*]

[10] Generally, see: Purvis et al. (2019) Three pillars of sustainability in search of conceptual origins. Du Pisani (2006) Sustainable development - historical roots of the concept, p. 89.

be contrasted with conservationism which aims to preserve and insulate nature from human activities.[11] This is relevant because it reveals that the sustainability discourse emerged as a compromise position between two opposed ideals, namely the pursuit of unlimited development and the idea that we need to conserve nature. As Du Pisani explains:

> "Formerly development and conservation had been regarded as conflicting ideas, because conservation was understood as the protection of resources, and development as the exploitation of resources (Paxton 1993: 1). Now the concept of sustainable development emerged as a compromise between the notions of development and conservation, which came to be seen as interdependent issues. The term 'sustainability', a noun used in ecology to refer to a state or condition that can be maintained over an indefinite period of time, was introduced on a more regular basis than before into development discourses"[12]

A second significant feature is that, even though the sustainability discourse arose primarily in response to concerns about the environment, it was from the beginning also intertwined with social and economic issues.[13] This interconnectedness can be recognised as a consequence of its compromise position and is evident, for example, in the *Our Common Future* report:

> "Until recently, the planet was a large world in which human activities and their effects were neatly compartmentalized within nations, within sectors (energy, agriculture, trade), and within broad areas of concern (*environment, economics, social*). These compartments have begun to dissolve. This applies in particular to the various global 'crises' that have seized public concern, particularly over the past decade. These are not separate crises: an environmental crisis, a development crisis, an energy crisis. They are all one." [emphasis added][14]

It is worth noting that the three areas of concern (environment, society, economy) are central to the most influential models of sustainability that have emerged over the past decades.[15] They appear, for example, in the 'three pillars of sustainability' model for sustainable development that was adopted by the UN General Assembly at the 2005 World Summit as the "overarching framework of UN activity."[16] They also underpin the 'triple bottom line' and 'triple P' (People, Planet, Profit) models that have long guided corporate social responsibility, and inspired the nomenclature for business ESG (environment, social, governance) activities.[17]

A third significant feature of the sustainability discourse is that it originates in *systems thinking*.[18] In this regard it is not based on a mere, positive feeling about relations between society, the environment, and the economy, but on a premise that the three areas of concern are systems[19] whose functioning and

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[11] Farley and Smith (2013) Sustainability If It's Everything, Is It Nothing, Chapter 1.
[12] Du Pisani (2006) Sustainable development - historical roots of the concept, p. 91.
[13] Farley and Smith (2013) Sustainability If It's Everything, Is It Nothing, introduction.
[14] Brundtland (1987) WCED - our common future.
[15] Farley and Smith (2013) Sustainability If It's Everything, Is It Nothing, introduction.
[16] Farley and Smith (2013) Sustainability If It's Everything, Is It Nothing, introduction.
[17] Elkington, John, and Ian H. Rowlands. "Cannibals with forks: The triple bottom line of 21st century business." *Alternatives Journal* 25.4 (1999): 42 [*add references to ESG and triple P*]. Consider also the Prosperity, People, Planet agenda of Business Europe for the European Union 2019-2024 (2019-11-13-Prosperity-People-Planet_interactive.pdf (euyourbusiness.eu)).
[18] Robertson (2017) Sustainability Principles and Practice, p. 26-27. References to systems and systems thinking are pervasive in literature on sustainability, as evident for example in terminology such as ecosystems and earth systems science. For particular examples, see: Jacques (2020) Sustainability *The Basics, 2nd Edition*. Newton and Freyfogle (2005) Sustainability – a dissent.
[19] "The study of sustainability is the study of systems. A system is a coherently organized set of interconnected elements that constitute a whole (Meadows 2008, 188), where the identity of the whole is always more than the sum of its parts. The properties of the whole cannot be predicted by examining the parts; they are emergent properties, arising from the relationships and interactions of the parts. Systems are nested within other systems. A cell, an organ, and a human body are all systems, as are an ecosystem, an ocean, and an economy. The Earth itself

mutual impacts need to be aligned so that they can be sustained, together, in the long-term.[20] It is then an open question what this alignment should look like, or how the relationship between the various systems should be conceptualised. What does it mean, for example, for these system to survive or thrive, and do they exist as multiple, overlapping systems or as part of a single, larger system? The openness of these questions, and their intertwined relation to ontology and peoples' values, explains why there is no universal or objective approach to sustainability, and why there is a great deal of variation in the way that sustainability is conceptualised in relation to particular issues.

Turning to our definition of sustainability, it is relevant to highlight that systems thinking was not an original contribution of the sustainability discourse. In fact, such thinking was already foundational to earlier ideas on development which, in keeping with economics, saw the economy as a system that is driven by self-interest and governed by natural economic laws, and which suggested that it is possible to have unlimited economic growth and technological progress. Also relevant is our earlier finding that the ability of economists to describe the economy as a system is built on an assumption that individuals are radically separate from their society and environment.[21] One consequence of this assumption is that economics can only study interactions between economic, social, and environmental systems through the lens of its prejudice against non-economic concerns. When seen through this lens, these interactions are either non-economic, in which case they are irrelevant or inefficient, or they are really just economic, in which case they can be explained in terms of self-interested market exchange. The former approach leads to their neglect and the latter leads to the reductionist approaches of economic imperialism.

It follows from the above that the aims of the joint compromise, i.e. to plot a sustainable course between development and conservation, cannot be attained alongside a belief that the economy is a system with dynamics that can be described by economic science. This incompatibility lies, in my view, at the heart of common criticisms against the idea of sustainable development for being too focused on economic rather than social or environmental outcomes.[22] Our analysis does not, however, suggest that there is anything particular about sustainable development which makes it an inherently economic concept. Put differently, there is nothing about either sustainability or development that is 'naturally' economic. This means that we should be able to disentangle the sustainability discourse from its connection to economic systems. This should subsequently provide us with a definition of sustainability that we can use for the remainder of our analysis.

In light of this aim, we can identify common, non-economic threads in the sustainability discourse and use them for our definition. We already noted an emphasis on the continuity, endurance, or maintenance of a certain 'something', and that it is an open question what this something is, or should be, in terms of its ontology and relation to human values. We can add that this something is expansive and includes what we can tentatively describe as people, society, and the environment, while also conceding that these are not necessarily the right, best, or even sufficiently comprehensive, terms to describe it. This brings us to another common thread, namely that people, society, and the environment interact together and are mutually constituted by these interactions. This echoes the sustainability discourse's reliance

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is a system, made of myriad other nested and interconnected systems; it is the focus of a field of study known as Earth system science" (Robertson (2017) Sustainability Principles and Practice, p. 26).

[20] "We are part of linked systems of humans and nature, so the study of sustainability goes beyond environmentalism. A key attribute of the field is a recognition of three interrelated dimensions: ecological, economic, and social. The planet faces many problems that are connected, including poverty, impaired health, overpopulation, resource depletion, food and water scarcity, political instability, and the destruction of the life support systems we all depend on. Scholars debate about whether environmental destruction causes poverty, or whether poverty causes environmental destruction out of sheer desperation, but it is agreed that they go together (Caradonna 2014, 224). We cannot fix one problem in isolation because they are all connected" (Robertson (2017) Sustainability Principles and Practice, p. 25).

[21] See section 6.2.1.

[22] [*search for criticisms of sustainable development for being too economic in its orientation*]

on social, economic, and environmental systems but departs from its reliance on systems thinking and its view of the economy as a system. It also posits that people, society, and the environment are part of a larger, 'universal' whole, and imagines that the different parts of this whole, however described, are inherently connected not only through their interactions but also through internal relations. If we weave these threads together, then this leads to the following definition of sustainability: *ensuring that humans can endure and thrive as an integral part of the web of personal, social, environmental, and universal relations that helps to constitute their existence*.

In general, it is interesting to identify that this definition is consistent with ecological principles[23] and Indigenous theories on sustainability. As Virtanen et al. explain regarding the latter:

> "Sustainability can be seen as the capacity of a certain community to create and maintain communal existence through the management of the local natural resources in a way that assures the survival and interconnectedness of the members of both the community and the environment… One of the characteristics for Indigenous theories of constructing sustainability and communal well-being is that they draw from contextualizing one's healthy relations with other humans and other-than-human beings (understood as nonhuman beings, such as plants, animals, and many other lifeforms regarded in animist conceptualizations), rather than considering them as independent entities. Furthermore, these relations depend on the particular and thus varying geographical, historical, and temporal circumstances that Indigenous peoples relate to. Their knowledge production of what constitutes sustainability is produced contextually, locally, and is based on the experiences of multiple generations"[24]

It is also worth emphasising, in support of these Indigenous theories, that the meaning of sustainability as applied to particular issues is always a composite product of circumstances such as time, geography, and history in combination with peoples' beliefs and values about the world and how it should be. A corollary to this insight is that sustainability *is a performative concept* which cannot be exhaustively defined in an objective or perfect way.[25]

It is also significant that our definition is anthropocentric and focuses on the endurance and thriving of human activities. This is consistent with the developmental origins of sustainability and the fact that we are proposing an ideal for people rather than for non-humans or the environment. It seems conceited, moreover, to imagine that we, as humans, could formulate a developmental ideal for anything other than our own species. Fortunately, the anthropocentrism of our definition does not exclude non-human or environmental interests from human activities because it recognises that *our* survival and thriving is internally related to *their* survival and thriving. We will explore these connections in detail towards the end of Chapter 10, when we introduce a new theory of value for the mobilisation of money, people, and resources.

As a final remark, we should clarify that our definition of sustainability is not simply a strawman that has been pre-arranged to attack economics and accuse it of unsustainability. It is possible for such an impression to arise because our definition of sustainability is grounded in internal relations and since we already described that these are incompatible with the methodological individualism of economics. It must be stressed, however, that all we have done is reconceptualise ideas on interconnectedness that were already part of the discourse on sustainable development, and were already incompatible with the

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[23] "Any living thing that hopes to live on the earth must fit into the ecosphere or perish. The environmental crisis is a sign that the finely sculptured fit between life and its surroundings has begun to corrode. As the links between one living thing and another, and between all of them and their surroundings, begin to break down, the dynamic interactions that sustain the whole have begun to falter and, in some places, stop" (Commoner and Egan (2019) The Closing Circle, introduction, *add page number and maybe quote that everything is connected to everything else*)

[24] Virtanen et al. (2020) Toward more inclusive definitions of sustainability, p. 78.

[25] The performativity of sustainability was already recognised by Hallin et al. (2021) Transition towards and of sustainability Understanding sustainability as performative.

scientific foundation of economics. Additionally, it should be recognised that it does not follow from our definition of sustainability that economics should be prejudiced against non-economic concerns or that it should adopt a definition of efficiency that is incompatible with the wise, long-term use of people and resources. Each of these faults is inherent to the scientific foundation of economics, and has major consequences that we will continue to explore in the following Chapters.

7. The limits of economic methods for the analysis of firms

The content of this Chapter follows the same structure as our earlier analysis of the limits of economics. First, it explores the limits of ideas on economic objectivity in relation to economic theories of the firm. More specifically, it outlines how these theories have become leading in legal discussions and how their limits are affecting the regulation and legal classification of firms in society. Second, the Chapter shows that economic ideas on the invisible hand, and the idea that firms are essentially economic, are unable to properly account for the existence and activities of firms. It demonstrates how this deficient economic account contributes towards an impaired understanding of individual moral autonomy in organisational settings, and it conceals the influence of economic reasoning on peoples' moral decision-making. Third, we assess the limits of formal economic models for the analysis of firms.

In support of this Part's overarching focus on modern economic theories of the firm, this introduction will now reiterate the main aspects of the principle-agent and incomplete contracts theories. *Principal-agent theories* are grounded in the view that firms are the result of free, contractual bargaining between individuals as principals and agents. A principal-agent situation exists whenever the welfare of one individual (the principal) is dependent on another (the agent). Interactions between principals and agents are described as conflicts of interest. These conflicts emerge because people have diverging interests and are not perfectly informed. The latter condition entails that principals are unable to create a perfect set of contractual or other incentives to maximise the welfare-creating activities of their agents. The argument is nonetheless that principal-agent conflicts should be minimised as much as possible since this promotes efficient results. A distinguishing feature of principal-agent theories is that their contractual perspective is extended not only towards firms and market behaviour, but towards all human relations. It follows that there is no difference between firms, governments, charities, courts, and other organisations; all of them are the result of private bargaining between imperfectly informed individuals.

Incomplete contracts theories also focus on individual bargaining and rely on transactions as "the basic unit of analysis".[1] They explain that firms result due to market failures, and that different responses to these failures have, over time, resulted in a range of organisational archetypes. An evolutionary analysis of these different responses explains that the most effective type of organisation for addressing market failures is the large corporation with multi-stage hierarchies and functional specialisation.[2] In general, firms emerge when they offer a "coordinating potential that… transcends that of the market".[3] They emerge, in other words, when it is more efficient to organise economic activities in firms than under imperfect market conditions. A main difference between incomplete contracts theories and principal-agent theories is that the former does not claim that all human relations can be folded into contractual bargaining between individuals.

In terms of shared features, both groups of theories argue that firms are *fully explainable in terms of market dynamics under imperfect conditions*,[4] and that features such as governance structures emerge endogenously under these conditions.[5] Both contend, moreover, that *individual behaviour and firm*

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[1] Williamson, *The Economic Institutions of Capitalism*, p. 41.
[2] Williamson, *Economic Institutions of Capitalism*, p. 15.
[3] [*add reference to quote, probs Williamson*]
[4] "Problems of economic organization may in generic terms be represented as games where the Nash equilibrium is not Pareto-optimal. While this formally includes, for example, coordination games of the stag-hunt variety (Camerer and Knez 1996), the modern theory of the firm generally disregards coordination type problems. The problem is to aligning incentives rather than to coordinate actions. The function of contracts, governance structures and mechanisms such as reputation is to influence incentives in such a way that agents choose those strategies that result in the choice of an equilibrium that is Pareto-superior relative to the Nash equilibrium. Ultimately, the causes of inefficiency as well impediments to reaching first best outcomes are transaction costs. Production costs play no direct role in the explanation" (Foss and Klein 2006, p. 20).
[5] Williamson, 1996, p. 173.

activities need to be made as efficient as possible, i.e. brought into an as-close-as-possible alignment with the perfect neoclassical model. Armed with this background, we now turn to the limits of economic methods for firms.

7.1 Economic methods are not an objective way to examine firms

We saw in Chapter 5 that economics is not an objective science because it relies, for example, on liberal ideas and an assumption of socio-economic bifurcation. At this point it is trivial to note, by extension, that economic theories of the firm are also not objective. There are, however, additional consequences to the limits of economic objectivity in the case of theories of the firm that are relevant for sustainability. These include, for example, the influence of economic theories of the firm on the regulation and legal classification of firms in our societies. This influence matters since the law provides a basic framework for many aspects of firm existence and activity and, as we will discuss, has been significantly adapted to suit the market fundamentalist tenets of economics. If we are right to argue that economic science is unsustainable, for example because it is not objective, then this same impairment will be evident, and creating issues in, the legal treatment of firms.

To start with economics, we can identify that it is a crucial decision in any economic analysis of firms to see their dynamics as *essentially economic*, explainable in terms of market failures and dynamics, or as *essentially non-economic*, part of the non-economic realm and not explainable in terms of economic theory. As we noted earlier, there was a preference in the early 20th century to view the internal workings of the firm as non-economic, as reflected for example in the work of Coase, Berle, and Means.[6] Almost a century later, and the pendulum has swung firmly in the opposite direction following the 1950-1980s development of economic theories of the firm by Alchian, Demsetz, Jensen, Meckling, and Williams. These authors decided to view *the internal dynamics of the firm as an endogenous expression of market dynamics* rather than as a joint product of market, social, and political interactions.[7]

Over time, this choice has had a notable influence on the classification of firms in relation to the *public-private divide*. This divide is a traditional legal dichotomy which distinguishes between a private realm of society, governed by individual freedoms and autonomy, and a public realm, governed by public rights and obligations.[8] In general, the *private realm* is a legal 'space' in society where individuals are strongly protected against regulations and interventions from government.[9] Its scope is determined, in the first instance, by constitutional protections which enshrine our 'natural' or human rights. The *public realm* is subsequently the legal 'space' where the state is empowered to act, within circumscribed limits, to promote the public interest.[10] The *public-private divide* is then the boundary between these realms.

The precise scope of the public and private realms, and reasons for state intervention, are a perennial point of political discussion and friction between individuals and different groups in society.[11] There is, moreover, always a standing reason for central authorities to intervene if this is necessary to prevent substantial individual or collective harm(s).[12] It follows that *the public-private divide is not an absolute division, but a fiction*, and that its content is not something which is objective or discoverable 'in nature'.

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[6] Hodgson writes that "economists in the early twentieth-century took it for granted that the firm and the market were different things" (Hodgson, 2002, p. 5).
[7] Some contemporary economists still espouse the traditional view. See, for example, Hodgson, 'The legal nature of the firm and the myth of the firm-market hybrid', *International Journal of the Economics of Business*, 2002.
[8] [*add references to public-private divide theory and history, can rely on PhD*]
[9] [*add references to public-private divide theory and history, can rely on PhD*]
[10] [*add references to public-private divide theory and history, can rely on PhD*]
[11] [*add references to public-private divide theory and history, can rely on PhD*]
[12] [*add references to public-private divide theory and history, can rely on PhD*]

We can also note that this divide is not shared by all societies and cultures, and that it can be seen as an expression of Anglo-European culture which has been promoted around the world.[13]

The fictional status of the public-private divide does not, however, automatically undermine its significance.[14] It informs and enables the scientific foundation for our legal, economic, and political systems, helps empower and control our governing institutions, and has a powerful influence on social, cultural, and economic dynamics. It matters, in this regard, how we talk and think about the scope and substance of the public-private divide. It is *an integral part of the Anglo-European narrative which influences how we relate to each and to our environment*.

Turning to firms, the importance of the public-private divide is evident in *long-standing discussions on whether corporations are private or public*.[15] If corporations are private, then they are an expression of individual freedoms, and should have a high level of autonomy and protection from state intervention. If they are public, then there is a greater scope and responsibility for governments to reduce individual and collective harms which are caused by corporations. The choice for one classification or the other has an important impact on the balance of power between corporations, individuals, and the state, and influences how we design, conceptualise, and enforce corporate regulation and liabilities.

To examine these impacts in more detail, we will draw on historical and US developments regarding the dominant legal theories of the corporation. Our focus on this latter jurisdiction is justified by its unparalleled influence on legal discussions and corporate regulation around the world.

The traditional, legal answer to the question whether firms are public or private was heavily influenced by the emergence of the first 'modern' corporations such as the Dutch and British East India Companies. These corporations were created as *concessions* from the state, imbued with an enforceable monopoly over trade with the East Indies, and granted the right to raise armies and rule overseas territories.[16] At the time it was clear, given these special privileges, that corporations were public entities created under the auspices of the state, and that they were therefore (potentially) subject to a greater degree of state control and regulation.[17] This concession approach persisted for many years so that, for example in the US in the early 19th century, it was still common for corporations to be created for a limited, specific purpose (such as creating and maintaining a bridge, railroad, or canal), and for them to be created with special government permission.[18]

Over time, however, alongside the rise of liberalism and the promotion of free trade, corporations were deprived of their monopolistic privileges.[19] States started to adopt general incorporation statutes which made it possible, in principle, for anyone to create a corporation for the pursuit of any lawful commercial

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[13] [*add references to anthropology of public-private divide*]

[14] In my view, a key difference between capitalism and the public-private divide as fictions is that the former functions primarily as a limiting belief whereas the latter provides a framework which we can use to build and organise relations between people and their environment. This is, of course, a matter of degree, and I would argue that we should depart from the public-private divide when we can think of a fiction which provides a better, more ethical and sustainable way to organise our societies. After all, any fiction can, at some point, become a limiting belief which holds us back rather than empowers us and moves us forward. It stands to reason that this difference is only a matter of time, knowledge and circumstance.

[15] See, for example: Ciepley, 2013, 'Beyond public and private: towards a political theory of the corporation'.

[16] *A journey into causes of corporate misbehaviour*, p. 1-2. Kemp (2022) 'Naar een werkbaar en realistisch model voor stakeholder governance', p. 34. A concession approach was also traditional in Germany (Fleischer (2021) Corporate Purpose - A Management Concept and its Implications for Company Law, p. 167-168).

[17] Ciepley, 2013, 'Beyond public and private: towards a political theory of the corporation' p. 139.

[18] [*add reference to history of concession theory of the firm*]

[19] Ciepley, Utrecht workshop, p. 61-62

purpose; they were not granted any particular kind of monopoly.[20] This limited the amount of corruption and favouritism in granting corporate concessions, and led to a major expansion in their use.[21]

These developments were accompanied by shifts in the prevailing legal theories of the corporation. By the 1930s in the US, *concession theories* had been replaced by *natural entity theories*. These latter theories posited that corporations are "natural products of individual initiative [with] powers conferred by their constituent shareholders."[22] Corporate law subsequently "lost much of its public character and instead took on a private law aspect as its focus turned from external concerns to the internal problem of corporate governance."[23] This shift in focus was retained throughout the next, dominant legal theories of the corporation: the 1930s *private property rights theories* (or 'owner-trustee' theories), and the 1970s *nexus of contracts theories*. The latter, which we already examined, are currently dominant in international discussions on corporate law and governance.

The content of these theories is, at this point, less relevant for our analysis than their *overall progression from public to private*.[24] In this regard it is interesting to note, first, the rising influence of individualist reasoning in the view of firms as a product of contractual initiative, and second, how legal theories were displaced over time by their economic counterparts.[25] For context, it should also be noted that lawyers are becoming increasingly dissatisfied with economic theories and that the tide may be turning on this progression.[26]

In any case, the long-standing shift from a public to private view of corporations is relevant for us since it can be understood in terms of the scientific foundation of economics. More specifically, we can recall that economics builds on a premise that economic dynamics are separate from society and politics, and that economic activities are a result of individuals' natural propensity to truck, barter, and exchange. These premises entail that corporate activities are invariably framed as an exercise of individual natural freedoms, meaning that *economics is methodologically predisposed to 'discover' that corporations and other firms are private rather than public actors*.

This *private disposition of economic theories of the firm* has several consequences. First, it means that economic theories cannot be used to understand the public nature of corporations, or used to determine whether firms are public or private. To do so is like asking a red pen to decide how much artwork should be drawn in red or blue.

A second consequence of this private disposition is that *economic theories of the firm are able to provide suggestions for corporate regulation which can be easily applied within legal systems which rely on a public-private divide*. This ease may be contrasted with other disciplines, such as anthropology or earth systems science, whose scientific foundations are not grounded in liberalism and whose findings and proposed reforms, for example to address sustainability issues, are not so readily implementable in these

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[20] As Davoudi et al. note, "in 1811, the state legislature in New York allowed the free incorporation of manufacturing companies for a period of twenty years. New Jersey followed New York's innovation in 1816, and Connecticut allowed for the free incorporation of any business pursuit in 1837" (Davoudi et al. (2018), p. 33).
[21] Avi-Yonah (2005) The cyclical transformations of the corporate form: A historical perspective on corporate social responsibility, p. 792.
[22] Millon, 'Theories of the Corporation', p. 211.
[23] Millon, 'Theories of the Corporation', p. 213.
[24] For a detailed review, please refer to: Millon, 2000.
[25] Easterbrook and Fischel (1989), 'The Corporate Contract'. Gordon and Ringe (2018) The Oxford Handbook of Corporate Law and Governance, p. 291. This latter development latter is especially remarkable given the general agreement among lawyers, and increasing recognition among economists, that the corporation *cannot* be a product of individual initiative – it depends on state action for its creation since individuals would not, for example, be able to generate legal personality (Gindis, 2009, p. 4. [He references Hansmann and Kraakman, 2000]). Also from the Utrecht workshop – Ciepley, Samuel, Claassen.
[26] Ciepley, Utrecht workshop, p. 18.

legal systems. In fact, other disciplines' incompatibility or incommensurability with the liberal logic of the public-private divide is likely to generate friction, for example in relation to individual rights and the pursuit of economic efficiency.

As an example, consider the structural changes which are needed to address sustainability issues such as climate change and biodiversity loss, and which are often criticised as being economically unwise and contrary to individual rights and freedoms.[27] In terms of sustainability, the problem is that the suggested changes need to be translated into law in a way which maintains their effectiveness. Put differently, it is necessary to translate the findings of one discipline and implement them in the context of another (in this case from earth systems science into law). As we can infer from our reflection of the nature of scientific practice,[28] this can only be achieved through a nuanced discussion on the insights, scientific foundation, and limits of the different scientific approaches. Such a discussion is, however, significantly undermined by the misrepresentation of economics as an objective science.

To provide one example of this undermining, we can discern that economic theories of the firm are, due to their private disposition, structurally biased against state interventions which may limit the rights and freedoms of private actors such as firms (unless this leads to more efficient outcomes). The influence of this bias is amplified, first, by the common belief among economists that their discipline is objective, and second, by the powerful policy-related positions which are granted to economists and people with economically-oriented expertise in government, business, and academia. It is compounded, moreover, by the prejudice of economics against non-economic concerns which, as we have seen, is predetermined to place sustainability issues in a subordinate position relative to economic objectives. These conditions make it highly unlikely that the reform suggestions of non-economists will receive an impartial hearing, or receive the necessary funding or resources, whenever they are contrary to market fundamentalism.

This does not, of course, mean that economists and related experts will ignore the issues. Instead, they will attempt to find realistic solutions which are compatible with 'how the economy works', typically by empowering market participants, addressing externalities, and reducing other instances of market failure. Importantly, such solutions are, due to the private disposition of economics, generally consistent with the public-private divide and are therefore relatively easy to implement in the legal system. We can add, moreover, that the symmetry between law and economics is likely to be interpreted as further proof of the superiority of economic approaches to sustainability. In general, the shared liberal origins of these disciplines has granted them a scientific affinity which, together with the conditions outlined above, may help explain why so many[29] sustainability policies are built on a foundation of economic science.

A third consequence of the private disposition of economic theories of the firm is that it grants firms a *presumption of political innocence and shields them from political intervention.* This follows from socio-economic bifurcation and the premise that the activities of firms are fully explainable in terms of market dynamics. This approach suggests that firms or individuals do nothing more than (passively) act out the rationality of market forces and take advantage of potential market failures. A corollary is that firms, like markets, are pre-social products of supply and demand dynamics between individuals. This view is, as we have seen, reflected in modern economic theories of the firm. A corollary to these theories is that firms are not the result of historical and political decisions by the individuals and central authorities of particular societies.[30] Nor are firms, or the individuals therein, political agents who

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[27] [*add reference to sustainability regulation being criticised as economically unwise and contrary to individual rights and freedoms*]

[28] Section 5.1.

[29] Some examples from the EU are the *Emissions Trading Scheme*, *Green Deal*, *Taxonomy*, *Disclosure Regulation*, *Corporate Sustainability Reporting Directive*, and *Communication on Corporate Social Responsibility*.

[30] The evidence against this position is overwhelming (Pistor, Mazzucato, Ciepley, Van Aartsen, Robins, *The Corporation That Changed the World*, Perrow, *Organizing America: Wealth, Power, and the Origins of Corporate*

actively shape history, society, and the environment. This passive, apolitical view of firms gives rise to the presumption of their political innocence.

If firms are private entities and a natural, pre-social expression of economic dynamics, then the default position must be that their existence is a neutral fact and that they should have the same rights as natural persons in terms of their right to exercise their natural propensity to truck, barter, and exchange. It also suggests, more broadly, that firms should have the same political, social, and other rights as natural persons, with the result that their lobbying, marketing, political, and other activities are framed, *a priori*, as politically innocent. It is then an inefficient political act, and a potential breach of private rights, whenever central authorities affect firm dynamics for any other reason than promoting economic efficiency. In this way, economic theories provide firms with a general shield against different kinds of political intervention.[31]

In general, the view that economic theories of the firm are objective and that firms can be fully explained in terms of market dynamics is pregnant with political implications. It is predisposed to classify firms as private actors and leads to an economic and non-economic presumption of their political innocence. This imbues economic theories of the firm with a permanent, interdisciplinary stance against regulatory intervention except to address market failures. A corollary to this reduction in scope is that regulatory policies, and the academic efforts which underpin and surround them, will be more likely to focus on economic efficiency and the optimisation of individual decision-making. The next Section shows that these aims are questionable insofar as supply-demand dynamics are unable to adequately explain the existence and activities of firms.

7.2 The invisible hand does not adequately explain the activities or existence of firms

Dynamics between supply and demand can be an interesting and useful, subjective way of looking at some aspects of firm activities and developments. It is not, however, a sufficient, universal, or objective way of explaining their activities or existence. This Section examines how the shortcomings of this latter view lead to particular deficiencies in economic theories of the firm.

In terms of context, we can recall how economists in the 19th century translated Smith's metaphor of an invisible hand into a self-regulating equation between supply and demand. In the 20th century, this metaphor was adapted to game theory in the form of a Nash equilibrium between competing, rational, and self-interested actors. As noted, these developments were premised on socio-economic bifurcation and an artificial division between exchange relations and all other firms of human interaction. Both divisions were required to 'reveal' the invisible hand and translate it into theoretical and mathematical terms. This converted the invisible hand from a suggestive metaphor into a scientific tool which, when coupled with the belief that supply-demand dynamics have an objective and universal effect on human behaviour, could be used to explain not only market exchange but also numerous other areas of human activity.

These developments were embraced by principal-agent and incomplete contracts theories of the firm, and embedded in their underlying assumption that the activities and existence of firms is exclusively economic. We previously noted that this makes it difficult to draw meaningful distinctions between markets and firms, and can add here that it also *makes it difficult to account for internal relations and non-exchange dynamics between firms, people, and the environment*. Some examples can help to make the absence of these relationships more concrete.

Capitalism, Ewen, S. Ewen, *PR! A Social History of Spin*, New York, Basic Books, 1996).

[31] It may also underpin the common view that it is somehow 'less political' for Apple, Google, or Facebook to run an online platform and collect our data for commercial purposes without democratic accountability, than for governments to do these same activities for public purposes and with democratic oversight.

An objective economic lens makes it difficult, for instance, to account for *shared and diverse values and motivations*, such as those which relate to prestige, religion, or collective interest. These are either ignored or reduced to a matter of individual preference and utility.[32] It matters, however, whether people work for money or other reasons, and when people in an organisation have different motivations.[33] This can affect, for example, the environmental impact of firm activities, the quality of products and services, and the relationships to people without influence over the firm.

It also matters for firm dynamics *whether and how people inside and outside of firms are related*. A contractual perspective is unable to differentiate between people as family members, friends, colleagues, rivals, enemies, part of a broader social network, or as mere strangers and isolated atoms. Also relevant are *differences in status*, i.e. formal and informal distributions of power and ranking, and *whether people are autonomous* from, or dependent on, their job at the organisation in question. Both affect interactions between people in more ways than can be stipulated in a contract.

Also missing from a market exchange perspective is *a multi-dimensional assessment of different kinds of work activity*. The work of lawyers, accountants, secretaries, managers, researchers, engineers, plumbers, and others is not just a matter of time spent in exchange for money. They could be trained and employed as part of a profession, in which case the content of their work crosses organisational boundaries and transcends the logic of individual firms and contracts. Furthermore, the content of their work, for instance in healthcare, innovation, or education, can also have societal implications which are far broader than efficiency, personal preferences, and individual contractual agreements.[34]

A similar argument may be raised in relation to *the substance of business models*. It matters what kind of products and services are being provided, where they take place, if the activities are commercial or non-commercial, and what kinds of technology are being used, or not.[35] A black box of economic dynamics, which does not discriminate between different kinds of market activities, is unable to capture in sufficient detail the social, environmental, or economic aspects of these different business models.

A final example relates to the importance of *business context*. Interactions between firms, and between firms and government authorities, are oversimplified if firm dynamics are framed as competitive, self-interested transactions between autonomous market actors. Even a cursory analysis shows that activities such as corporate lobbying, and the relationship of these activities to local, regional, and national state policies and enforcement, can have an importance influence on firm dynamics, and economic dynamics more broadly.[36] Consider, for example, how decades of interaction between banks and governments led to the deregulation of financial derivatives and government oversight in the run up to the 2008 Financial Crisis.[37]

The above examples cannot be fully incorporated into an employment contract or an exchange between individual buyers and sellers. They do, however, have a significant effect on firm activities and on people's experiences, behaviours, and beliefs, and on firm activities. The wide scope of these examples suggests, moreover, that it is not a binary choice for economists of the firm to examine firms as either markets or hierarchies. Instead, it seems that the real dilemma is whether to 'objectively' study fictions about market exchange and rational agents, or to 'subjectively' study the internal relations in which people's economic activities are actually embedded.

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[32] See our later discussion on values monism and pluralism (Section 10.5).
[33] [*Add reference to psychological literature which shows that it matters whether people work for money or for other reasons*]
[34] [*Add reference to Hodges' big book and the section on social psychology*]
[35] [*Add reference to book on Organisational theory Burrell and Morgan*]
[36] [*Add reference to Perrow, Glasbeek, Kaplan "Who regulates whom"*]
[37] C. van Aartsen, *A Journey into Causes of Corporate Misbehaviour*, p. 296-302.

The implications of this dilemma are circumvented by the economic premise that firms can be fully explained in terms of individual exchange and supply-demand dynamics. To reclaim and reveal in more detail what is missed by this approach, not only in terms of internal relations but also in terms of scientific insights, the remainder of this Section will examine the influence of organisational structure on individual behaviour, and show how the prejudice of economics against non-economic concerns undermines the capacity of firm agents to act on behalf of the collective interest.

7.2.1 The influence of organisational structure on individual moral autonomy

It is standard for economists to assume, as part of their methodological individualism, that individuals are able to make autonomous decisions which are free from external influence. This is consistent with the liberal foundation of their discipline which, as we have seen, posits that people were once living as free, solitary individuals in a state of nature. We noted, however, that such a state of nature has never existed, and that individuality and collectivity are internally related and mutually constitutive. This entails, first, that individuals have never been wholly 'free' from external influence such as that of social and political structures. And second, that people in firms are not 'autonomous', in the sense of radically separated atoms, as suggested by economics.

However, in fairness to both economics and liberalism, there are also reasonable arguments to defend the fictional idea that people make free decisions. One is that the idea of 'free will', following the rise of Christianity, has become deeply embedded in Anglo-European culture, and is part of how this cultural group relates to each other.[38] This is evident, for example, in the way that Anglo-European legal notions of individual responsibility are rooted in the idea that individuals who freely make beneficial decisions should retain the benefits of these decisions, and that individuals who freely make harmful decisions should be liable for the consequences.[39] In this regard the idea of free, autonomous individuals is consistent with Anglo-European culture, law and history, and is again not a 'mere' fiction.

A second argument in favour of the fiction that people make free decisions is that it simplifies the decision-making context of people and makes social scientific analysis more tractable. As we have seen, there is nothing inherently wrong with using imperfect and subjective assumptions to analyse reality; this is an inescapable part of scientific practice. This does not, however and again, excuse the mistaken idea that free or autonomous decision-making can be relied on as an objective scientific approach.

The above suggests that it is, in principle, legitimate for economists to examine firms on the premise that people are able to act autonomously. It does not, however, follow from this that firms are essentially economic, and that the entirety of their existence and activities is explainable on the basis of exchange dynamics between autonomous individuals. By contrast, we find that there are *powerful arguments to indicate that individuals are less free when making decisions in firms* than when they are exchanging in a market setting. And if individuals are less autonomous in firms, then it is necessarily the case that economic analysis is unable to provide a complete account of firm dynamics.

The following subsections explore some of these arguments, and show how individual moral autonomy is impaired by organisational features such as roles, hierarchies, and committees. The first leads to role-based reasoning, the second to fractured autonomy, and the third limits individual moral autonomy.

Moral impairment and organisational roles

Role-based reasoning occurs when a person subordinates their own, personal morality to the perceived morality of their organisational role.[40] To understand this process, it helps to consider how the same

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[38] [*add reference to e.g. Siedentop*]
[39] [*add reference to PhD*]
[40] [*Add reference to Wolgast*]

role in an organisation, such as that of a manager, teacher, lawyer, or accountant, may be filled by different people over time. The role endures as people come and go, with different people performing similar tasks and making similar decisions over time.[41] Given this, it is reasonable for people to associate the moral implications of their organisational decisions with the content of their role, and the rules and values of the organisation, rather than with their personal morality.

To clarify, an organisational role is not something which is set in stone or can be completely known either to its occupant or their colleagues. It is an emergent product of the tasks and responsibilities of the role, the formal and informal rules of the organisation, and the idiosyncratic characteristics and views of the occupant and other people working in the organisation. It is, in this regard, a complex, amorphous and ineffable concept which can, at the same time, have relatively enduring and concrete components (e.g. the same report which needs to be filed every month).

Important for us is that role-based reasoning has a systematic tendency to reduce the scope of individual moral autonomy. As Wasserstrom explains:

> "roles provide a degree of moral simplification that makes it much easier to determine what one ought to do… Psychologically, roles give a great power and security because they make moral life much simpler, less complex, and less vexing than it would be without them."[42]

The effects always depend on the person in question, but the general risk is that non-role considerations of morality are discouraged in favour of organisational and role-based concerns. This phenomenon is well-known to criminologists such as Tombs and Whyte, who write that "managers within [a] firm, both senior and middle managers, [adapt] their own motives and responsibilities to the motives and responsibilities of the corporation".[43] This can lead to a form of restricted, "balkanized morality".[44]

Without being exhaustive, we can identify several common, organisational factors which encourage role-based reasoning. The first is a standard legal duty for directors and managers to work in the best interests of the firm, which is explicitly not their personal idea of what is the 'right' thing to do.[45] Second, career prospects entail that people are rewarded for promoting the firm's ends rather than their own.[46] Third, role-based reasoning may be encouraged by codes of conduct. After all, the purpose of these documents is to provide organisational standards and rules to guide, and thus reduce the autonomy and potential for errors of, individual decision-making.

As noted above, individuals are never completely 'free' since they are also constituted by collective factors such as history, culture, education, parenting and so forth. We can, however, identify in addition to this basic level of unfreedom that role-based reasoning tends towards to a further reduction in autonomy whenever individuals make decisions in and on behalf of organisations. Peoples' decisions in an organisational context are therefore different from those of a natural person in the market. This loss of autonomy is compounded by other organisational features such as hierarchies.

Moral impairment and hierarchies

The basic model of Western moral theory and responsibility is that a person takes a decision, executes that decision, and is capable of being held responsible for it.[47] In this model, a person's action consists of two parts: *the decision* and *its execution*. When people act as agents on behalf of an organisation, it

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[41] Wolgast, *Ethics of an Artificial Person*, p. 56.
[42] As cited in Wolgast, *Ethics of an Artificial Person*, p. 22.
[43] Tombs and Whyte, *The Corporate Criminal*, p. 113.
[44] Wolgast, *Ethics of an Artificial Person*, p. 25.
[45] [*add reference to director's duties*]
[46] [*add reference to career-oriented decision making*]
[47] Wolgast, *Ethics of an Artificial Person*, p. 65.

is common for the two parts of this action to become separated. One person decides, another executes. One consequence of this *fractured autonomy* is that:

> "the author and the actor are each missing part of the paradigm. The actor is missing the process of reasoning and choice; the author is missing… the "moral phenomenology" of the action. [This] means the experience of actually doing the thing, one's felt response to the action he has reasoned about."[48]

Wolgast demonstrates the importance of this experience by imagining a person who, from childhood, was only permitted to give orders to others, and not to execute an action themselves.[49] Like a king looking at a map and ordering his soldiers to fight, a drone operator dropping bombs from halfway across the planet, or a consumer purchasing meat without seeing the slaughter of an animal, it is not possible for this person to experience the full moral phenomenology of their action.

Part of the problem is that the separation between deciding and acting entails that those implementing the action are less free to change their minds. If, after a visit to the battlefield, the King is horrified by what he sees then he is relatively free to change his mind about continuing the war. By contrast, a soldier who is horrified by the war has little, if any, recourse to stop it. Similarly, a consumer who is asked to kill an animal before purchasing meat, and who is forced to look into the eyes of the creature they are about to slaughter, is more likely to change their mind about buying meat than when they purchase an anonymous, clean package from the supermarket shelf.

These examples show that *fractured autonomy*, and the loss of moral phenomenology which it entails, results in a situation which is morally deficient by comparison.[50] This has important implications for the morality and accountability of decision-making in firms:

> "…if deliberation and choice of action are not wedding to doing – which is to say, if the person who decides is not the one who acts – there is a strong reason for arguing a person's non-responsibility. If this is so, it means that an [agent] cannot act fully and morally *by definition*. She cannot because she acts as another person's surrogate, and such action cannot be assimilated to the [individualist] moral paradigm"[51]

A CEO who sets challenging targets, cascades these throughout an organisation, and demands results, does not know exactly what it entails for these targets to be achieved. What then if an employee does something unethical, like breaking the law, to achieve their targets. Is it the employee or the CEO who 'is' responsible?

The employee may indicate that the targets were impossible to achieve, and that upper management was not interested in hearing what could not be done. In their turn, the CEO remarks that the targets, while challenging, were aspirational and designed to make everyone work more efficiently. The point was not, of course, for employees to break the law. The CEO explains, moreover, that the firm has established a code of conduct, that there are ethical trainings, and that upper management is often asked

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[48] Wolgast, *Ethics of an Artificial Person*, p. 67.
[49] Wolgast, *Ethics of an Artificial Person*, p. 76.
[50] [*add reference to Wolgast*] One could also argue that moral autonomy arises due to fragmentation of decision-making in corporations. As Kakavelakis and Edwards explain, "task specialisation in combination with the pace of managerial work which is "punctuated by quick huddles and endless meetings" mean that "issues do not come at managers in any integrated, coherent way but rather in a piecemeal fashion" (p. 88). Thus, segmentation of tasks leads to a fragmentation of consciousness whereby actions are taken in an ad-hoc fashion ignoring the root cause of problems. Emphasis is placed on immediate issues of the moment that need to be tackled, postponing decisions on other, seemingly, less pressing matters. Despite some degree of awareness that "today's minor issues can become tomorrow's major crises" the pressure for immediate results overrides any careful consideration of long-term consequences" (Kakavelakis and Edwards (2022) The Impact of Structure and Corporate Ideology on Leader–Follower Relations in the Bureaucratic Organization: A Reflection on Moral Mazes, p. 74).
[51] Wolgast, *Ethics of an Artificial Person*, p. 65.

to emphasise the importance of ethical behaviour. The employee subsequently retorts, in a dry voice, that people are being rewarded for their ability to attain targets rather than for their ethical performance or honest communication. They would never have broken the law if it was not for the demands of the CEO.

Here, the remarkable consequence of fractured autonomy is that neither party feels responsible for the unethical act, even though both are implicated. As Luban explains regarding this situation:

> "Psychologically, role players in such organizations lack the emotional sense that they are morally responsible for the consequences of organizational behavior… Politically, responsibility cannot be localized on the organizational chart, and thus in some real… way no-one – no *one* – ever is responsible."[52]

This loss of responsibility also features in criminological analysis. As Tombs and Whyte comment:

> "It is the complex bureaucratic structure of the corporation that creates particular modes of motivation and removes responsibility for particular actions taken by people within corporations… The structural features of corporate hierarchies create distance vertically between managerial and various levels of employee in the organisation…[T]he same hierarchical structures that [may lead to] atrocities [are then used by] those at the top of the hierarchy in order to secure their impunity."[53]

And Wolgast:

> "The multiplicity of agents and of their roles protects people in bureaucracies and insures that Nobody does whatever is done. The arrangement leads a chase through warrens and thickets of roles, instructions, interpretations and chains of command. With increasing distance between order and action, with the attendant increase in ambiguity, responsibility is harder to retrieve from the cracks. Thus it seems that institutions themselves are the problem."[54]

Fractured autonomy entails that there is less scope for people to make moral decisions in firms and other organisations than when they make decisions as natural persons. This reaffirms our earlier point that it is incorrect to assume an equivalence between individual decision-making in firms and markets.

As a final remark, we can note that the moral deficiency of fractured autonomy may be compounded when people are hired for particular organisational roles based on their moral elasticity. The military will not, for example, hire a pacifist as a soldier and butchers are unlikely to hire vegetarian assistants who cannot stand the sight of blood. Such decisions may negatively shape the moral content of different organisational roles and exacerbate the moral distance between the decider and executioner.

Moral impairment and committee-based decision-making

Many firm decisions are made in committees, specialised organisational structures that rely on a number of people to make collective decisions on behalf of the organisation. These structures can be mandated by law, as is the case for corporations which (depending on the jurisdiction) are required to have a one-tier board of executive and non-executive directors, or a two-tier board with supervisors and managers.

An important question such committees is who, precisely, is responsible when a decision is made within this structure.[55] Is the whole committee responsible for the decision? Are the committee members responsible for their individual votes and decisions? Or are none of them responsible since they decide together on behalf of the organisation?

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[52] D. Luban, *Lawyers and Justice*, Princeton, Princeton University Press, 1989, p. 123 as cited in Wolgast, *Ethics of an Artificial Person*, p. 88.
[53] Tombs and Whyte, *The Corporate Criminal*, pp. 114-115.
[54] Wolgast, *Ethics of an Artificial Person*, p. 35.
[55] Wolgast, *Ethics of an Artificial Person*, pp. 89-95.

Imagine that a majority decision is made by a committee with a small chance to break the law. One could argue by political analogy, as Hobbes did, that the whole committee is responsible since "citizens are equally and individually responsible for the actions of the sovereign."[56] What, however, if the minority committee members dissented against the risky decision, and would have chosen a less risky option if they had a chance? And what if they had suggested an option which was more likely to break the law?

These hypotheticals reveal that our views of personal responsibility are influenced by the positions of individual committee members. This is not necessarily an argument against responsibility for the whole committee. Instead, its purpose is to demonstrate that committee members are, again, more constrained in their moral decision making than natural persons.

Consider, moreover, the tendency of committees to encourage role-based reasoning. This is especially likely when a committee has clearly defined responsibilities such as acting in the best interests of the company, or maximising returns for shareholders. Such responsibilities, which are often legal duties, also contribute towards a decreased scope for personal moral autonomy.

In summary, our discussion of role-based reasoning, fractured autonomy, and committee-based decision making has shown that organisational decision making is morally impaired relative to decisions made by individuals in other settings (which may of course have their own impairments). While these features do not represent an exhaustive account of moral impairment in organisations,[57] their ubiquity is sufficient to establish that *decisions in and on behalf of firms are fundamentally different from decisions made by individuals in the market*.

It follows that market dynamics are unable to provide a comprehensive explanation for the existence of firms. While this does not mean that such dynamics are irrelevant to firm activities, it does indicate that there are deep flaws in the scientific claims of modern economic theories of the firm.

7.2.2 Firm agents and the prejudice of economic reasoning

The invisible hand is, as we have seen, premised on socio-economic bifurcation. When combined with the belief that economics is objective, the result of this division has been to deny the existence of a level playing field between economic and non-economic factors. This prejudice entails that economic logic is unable to provide an adequate level of protection for non-economic concerns such as those related to sustainability. These limits have particular implications for the ability of firms and their agents to act on behalf of the collective interest.

Our starting point is to recognise that the existence and continuity of firms in liberal market economies is conditional on their economic performance.[58] This *economic survival condition* exists because the minimum extent of firm activities is circumscribed by the availability of economic resources to purchase supplies, raw materials, hire employees, repay debts, and so on. Absent these resources, the firm will eventually cease to operate. This condition applies regardless of whether a firm is trying to maximise profits or pursue a more socially oriented purpose. It is possible to imagine some temporary exceptions, such as a new firm relying on the free labour of its founder and other volunteers, or a struggling firm receiving a line of credit from the bank, but these approaches cannot be sustained in the long run.

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[56] Wolgast, *Ethics of an Artificial Person*, p. 90.

[57] It can help to further examine limited liability, groupthink, bureaucratic structures, culture, etc. (M.A. O'Connor, 'The Enron Board: The Perils of Groupthink', *University of Cincinnati Law Review*, vol. 71, 2002, pp. 1233-1320; Ripken, 'Corporations are people too'; Hansmann and Kraakman (1991) Towards unlimited shareholder liability for corporate torts).

[58] [*Optional reference: Maybe make a comparison to the economic licence to operate?*]

The *economic survival condition is a firm-level analogy of the state market fundamentalist model* that we described earlier. In this case, the firm's economic foundation generates resources for other activities which are non-generative, or at least not directly so, such as charitable donations, political lobbying, corporate social responsibility, and so on. As an aside, we can note that the economic survival condition also applies to individuals and households in liberal market economies. They, too, are constrained by the availability of economic resources and, assuming there is no social support, may disappear without them.

The individualist foundation of liberalism and economics suggests that the economic survival condition of firms and households, as evident throughout in European states, may have been extrapolated upwards by economists as a (universal) metaphor for the state's economic affairs.[59] Consider, in this regard, that leading economists usually have their own households, and that they often work in and on behalf of firms; home and work are common settings for them to refine their economic understanding.[60] Consider, moreover, that it is money and economic resources ('the numbers') in a liberal market economy which limits what people and firms can afford in terms of food, clothing, housing, education, and so on. It is easy to imagine how these existential conditions may feed into a Platonist perspective in which the subjective expression of personal beliefs, environmental concerns, and so on is contingent on the 'objective' economic performance of a household or firm. This suggests that it is not mere coincidence that economics is underpinned by market fundamentalism and a state-firm (or state-household) analogy.

We will explore the shortcomings of this analogy and its relation to market fundamentalism in Chapter 9. For now, we will examine how it affects individual decision-making in firms and the capacity of firms and agents to act morally in society.

A first consequence of *market fundamentalism*, as reflected in the economic survival condition, is that agents are encouraged to give categorical priority to the economic foundation of the firm over its non-economic dimensions (*economic primacy*).[61] A second consequence is that agents are unable to properly differentiate between the economic and non-economic activities of the firm (*economic imperialism*). The latter occurs because, as we have seen, economic reasoning has no sense of passing borders and is unable to differentiate between the economic and non-economic aspects of reality. A third consequence, which derives from economic imperialism and prejudice against non-economic concerns, is that agents are predisposed to use the non-economic aspects of firm activities to promote its economic foundation (*subordination of non-economic concerns*).[62]

We can describe the potentially harmful, joint effects of economic primacy, economic imperialism, and the subordination of non-economic concerns as ***firmophilic tendencies*** in the behaviour of firm agents which result from market fundamentalism and the limits of economic reasoning. While these tendencies exist in every firm, their realisation is aided or discouraged by factors such as personal idiosyncrasies, organisational roles, governance arrangements, historical developments, regulation, firm culture, and so on.

Consider, for example, the way that economic expertise and responsibility for the firm's economic foundation are distributed in a corporation. The board of management and board of directors are legally responsible for major decisions (which affect its economic foundation) and are likely to have a high level of economic education and expertise.[63] They are, moreover, legally or economically required to pursue objectives such as the best interests of the firm or the pursuit of shareholder value,[64] both of

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[59] [*not sure if reference is needed or feasible*]
[60] [*add references to Mill, Ricardo, Modigliani Miller, others?*]
[61] [*any potential references to economic primacy?*]
[62] [*Add reference to Hodges' work*]
[63] [*add reference to legal responsibility of board of management and directors*]
[64] Brealey, et al. (2016) *Principles of Corporate Finance*.

which depend on the sustained well-being of the firm's economic foundation. These objectives operate in conjunction with the moral deficiencies of organisational life caused, for example, by role-based reasoning, fractured autonomy and committee-based decision making.

These circumstances suggest that agents in the upper echelons of firms have a strong tendency to make decisions in accordance with firmophilic tendencies. This may be contrasted with a small co-operative whose agents are less likely to have an economics education, and where people without economic expertise are more likely to be included in decisions about the firm's economic foundation. While we may also expect them to experience firmophilic tendencies (*inter alia* due to the economic survival condition),[65] these features make it relatively less likely that they will act on them to the same extent.

For firms in general, it is reasonable to assume that *agents with economic expertise*, such as managers, directors, and accountants, have more knowledge of, and responsibility for, the economic foundation of the firm as compared to secretaries, teachers, or the human resources department.[66] It follows that they are more likely to apply economic reasoning in their work-related objectives, and to act in accordance with the firmophilic tendencies outlined above. This implies, first, that *we cannot reasonably expect agents with economic expertise to voluntarily undermine the economic foundation of their firm where its wellbeing may conflict with the collective interest*. And second, that *we cannot rely on agents with economic expertise to reason adequately about non-economic and non-firm interests*.

One might argue that despite these implications the collective interest will be voluntarily respected, perhaps even promoted, by agents with economic expertise when this potentially benefits the firm or does not harm its foundation. There are, however, two shortcomings of this argument. The first is that economic reasoning is only able to formulate an impaired, market fundamentalist perspective on the collective interest. This perspective is inherently limited since, as we have seen, it is methodologically prejudiced against non-economic concerns. The second is that economic reasoning is unable to describe a set of 'neutral' activities which does not harm the economic foundation of the firm. The time of firm agents is not free, and there is, in principle, always something else which they could be doing which is more directly or indirectly beneficial to the firm. In this regard the opportunity costs of neutral activities by firm agents are an inefficient 'harm by omission'. While agents with economic expertise can, and clearly do, rely on non-cost-based arguments such as the benefits of increased motivation, reputational gains, customer loyalty, and so on, the weight of these arguments will be generally circumscribed by their perceived overall, relative cost and benefit to the economic foundation of the firm.[67] When this is not the case, it is unlikely that they will be acting in accordance with their professional role, or with the legal duties which are associated with their function.

The general result is that *the moral decision-making capacity of agents with economic expertise is constrained by economic reasoning and the ongoing well-being of the firm's economic foundation*.[68] These moral limits are especially evident in the case of firms whose economic foundation relies on the legally permitted or legally unaccountable production of social and environmental harms. Consider, for example, fossil fuel firms which are trying to become more sustainable even as they lobby to distort

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[65] Since co-operatives also have a market fundamentalist foundation in terms of their resource constraints.

[66] As Fields writes in the introduction to *The Essentials of Finance and Accounting for Nonfinancial Managers*: "This is a book for businesspeople. All decisions in a business organization are made in accordance with how they will affect the organization's financial performance and future financial health. Whether your background is marketing, manufacturing, distribution, research and development, or the current technologies, you need financial knowledge and skills if you are to really understand your company's decision making, financial, and overall management processes." (Fields (2002) *The Essentials of Finance and Accounting for Nonfinancial Managers*, p. 1)

[67] This explains why firm agents who want to make their firms more sustainable or ethical generally feel compelled to explain their activities as a long-term benefit to the firm rather than as being 'the right thing to do' [*add reference to Hodges big book*].

[68] [*Add reference to PhD thesis*]

sustainability-related education, weaken environmental legislation, and seek out new sources of fossil fuel.[69] Or agribusiness firms which minimise their average resource footprint even as they profit from, and lobby in favour of, the continued use of unsustainable industrial farming techniques.[70] Or financial firms which repented their sins after the 2008 Financial Crisis, claimed that their industry has been reformed, and continued to resist structural reforms while exploiting structural weaknesses in the (global) financial system.[71] Or DuPont, a chemical firm which was long hailed for its environmental performance and which, while enjoying this reputation, increased production and pollution of PFOA even after knowing for decades that it "is toxic, does not break [down] in the environment, and accumulates in human blood."[72] Economic reasoning and firmophilic tendencies, concentrated in the upper echelons[73] of these firms, make it possible to explain these contradictory behaviours. The argumentation is as follows:

First, economics outlines, in accordance with market fundamentalism, that the economic activities of firms are a public good since they provide goods and services and generate the resources that we need to address matters of social and political concern. In other words, we need firms to 'create value' and provide jobs, goods and services which can be taxed.[74] Second, economics establishes that it is objectively desirable to make the economy efficient and to liberalise it to the largest extent possible. Third, it explains that the economic dimensions of sustainability issues can be solved by addressing social and environmental externalities, i.e. by making markets more efficient. It is implicit in these arguments that sustainability issues are not caused either by the scale of economic activities or the way that these activities have been liberalised and deregulated through national legislation and international treaties.[75] It is also implicit that firms are not responsible for these crises since they are merely creating value, as efficiently as possible, based on what consumers are legally willing and able to purchase.[76] One might argue that this ignores the productive, lobbying, and marketing activities of firms which help shape the structure of consumer choices,[77] but such questions are largely precluded from this line of reasoning by the presumption of political innocence.

It follows from these economic arguments that we, as societies, are economically dependent on the knowledge, continued existence, and profitability of firms which cause social, environmental, and other harms. These harms are, from a strictly economic perspective, not internal to the firm; they are the result of external conditions over which it has limited control, such as market failures, consumer preferences, and the limits of current technology.[78] There may be compelling reasons to reform the firm and its industry, but these changes should be gradual and premised on the continued well-being of the firm's economic foundation. It follows from this that it is in the collective interest for these firms and their lobby groups to resist 'unwise' regulations which are economically inefficient and a threat to their

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[69] https://www.scientificamerican.com/article/subverting-climate-science-in-the-classroom/ https://www.theguardian.com/environment/2022/sep/17/oil-companies-exxonmobil-chevron-shell-bp-climate-crisis . Cho et al. (2016) The frontstage and backstage of corporate sustainability reporting - evidence from the arctic national wildlife refuge bill.

[70] [*Add reference to unsustainability of large agribusiness firms*]

[71] [*add reference to financial sector lobbying against post-Financial crisis regulation*]

[72] Shapira and Zingales (2023) Is pollution value-maximizing? The case of DuPont.

[73] [*add reference to upper echelon theory*]

[74] See, for example: Porter and Kramer (2011) Creating Shared Value.

[75] [*add reference to sustainability issues not being caused by the scale of economic activities. E.g. ideas on green growth*]

[76] [*add reference which suggests that firms are innocent because they are simply responding to supply and demand*]

[77] [*add reference on the way that marketing shapes consumer preferences*]

[78] This reasoning is evident in the contempt which Enron agents showed towards the State of California's 'partial' deregulation of the energy market. They lambasted the state for its poor (de)regulation even as they took every advantage of weaknesses in the framework in order to make massive profits. For an in-depth discussion see: Van Aartsen, *A journey into causes of corporate misbehaviour*, pp. 291-294.

economic continuity.[79] It is necessary, moreover, to remind governments and the public that the knowledge and efficiency which the firm and its agents have built up over the years can be a solution to, and are not merely the origin of, various social and environmental issues.

These are, of course, precisely the arguments which businesses and lobby groups have been using for decades to resist, delay, and undermine the transition towards a sustainable society.[80] It is common to view these arguments cynically, as evidence of short-sighted and unbridled self-interest. It is, however, also consistent with economic reasoning, firmophilic tendencies, and the moral constraints of firm agents. This opens the possibility that these firms are not simply 'bad apples', but that they and their agents are *fundamentally constrained in both their economic and moral capacity to reform their operations and become (more) sustainable.* This suggests that it is not, and cannot be, effective to ask harmful firms to make the 'right' moral choices, or to threaten them with regulation and sanctions unless they act more in line with the collective interest.

In general, examples such as the behaviour of fossil fuel companies, agribusiness, and financial firms – and there are many more[81] – suggest that *we cannot reasonably expect agents with economic expertise in the upper echelons of firms in socially and environmentally harmful industries to voluntarily reform their firms so that they provide goods and services which are sufficiently sustainable*. We cannot, moreover, rely on market-based approaches to reform these firms since these are unable to yield more than an incremental and suboptimal approach to addressing social and environmental issues.

Unfortunately, it is *not only harmful firms* which are morally constrained by organisational structures, economic reasoning, and firmophilic tendencies. These constraints also apply to firms and industries which are relatively less harmful (or more sustainable). As evidence, consider first that firms with a strong sustainability performance are hardly immune to ethical shortcomings and scandals,[82] and that they also continue to lobby against more transformative and sustainable change in their industries.[83]

The situation reminds me of a Dutch television program in which a presenter interviewed several CEOs and top managers from companies with globally leading sustainability performance.[84] They were asked what they would do if one of their employees developed a 'silver bullet' technology which could solve a global issue such as climate change. Would they be willing to release the patented information into the public domain and allow their employee to work on it without generating profit for the company? None of the interviewees were willing to make this sacrifice, suggesting that the upper echelons of these firms are also influenced by firmophilic tendencies. They may have a more public-minded view of the overlap between the interests of society and their firm as compared to more harmful firms and industries, but this does not mean that they have transcended the moral deficiencies of their agency role. They, too, are generally committed to prioritise the interests of their firm over that of society.

In summary, we have found that firm agents experience firmophilic tendencies which undermine their moral capacity to reason in accordance with the collective interest, and that economic education and expertise make it more likely that they will act in accordance with these tendencies. These tendencies operate, to varying degrees, in all firms regardless of whether they pursue shareholder or societal value,

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[79] As Glasbeek describes, tax dodging firms "contend that inhibiting their tax scheming would put them at a competitive disadvantage and that this would be bad for the government and the people it serves. And of course, the same corporations lobbied law-makers to allow them to lower their tax obligations by taking advantage of tax havens in the first place" (Glasbeek, *Class Privilege*, 2017, p. 23).

[80] [*see if there is literature on the common arguments of business lobby groups*]

[81] https://www.theguardian.com/global-development/2022/jul/28/water-is-the-real-thing-but-millions-of-mexicans-are-struggling-without-it Fury after Exxon chief says public to blame for climate failures | Climate crisis | The Guardian

[82] [*add reference, for example, to Volkswagen and DuPont*]

[83] [*add reference, for example, to Volkswagen and DuPont and their lobbying*]

[84] [*add reference to Pechtold, Achterkant van het gelijk, aflevering 1*]

and regardless of whether their business models are harmful or relatively sustainable. The realisation of these tendencies is influenced by factors such as personal idiosyncrasies, organisational roles, firm governance, culture, history, regulation, and so on. Importantly, these tendencies make it possible to explain the contradictory behaviour of firms which are trying to become more sustainable even as they fight, with all means at their disposal, against the long-term sustainable transformation of their firms and industries.

Returning to economic theories of the firm, we can recall that these are designed to address market failures and maximise economic efficiency. In the case of both principal-agent and incomplete contracts theories, this entails the introduction or re-design of incentives (governance structures, contracts, etc.) so that people either make decisions in accordance with their own rational self-interest, or in accordance with the interests of investors as principals, as outlined by economic theories and models.[85] The dominance of these theories has led, for example, to a global focus in corporate governance on share price as a measure of corporate and managerial performance, an increase in shareholder rights, and the linking of executive remuneration and share prices.[86] It has also buttressed the introduction of transparency measures to address the information asymmetries of investors and other stakeholders.[87]

In general, these and other 'good governance'[88] measures do not influence the decision-making of firm agents in a way that makes them better able to balance the economic and non-economic dimensions of firm activities. Instead, their economic design is predetermined to tilt this balance in favour of economic concerns, and to make it more difficult for firm agents to reason adequately about non-firm and non-economic interests. Furthermore, these measures introduce and reinforce the use of economic rationality as an objective benchmark in the role-based reasoning of firm agents. The compound effect of these moral deficiencies is that *governance and regulatory measures based on economic theories of the firm are likely to result in more, not fewer, harmful firm and agent activities*. They are counter-productive and detrimental to the capacity of firms and their agents to act on behalf of the collective interest. These issues are unidentifiable and unsolvable if we adopt the premise that the invisible hand is sufficient to explain the existence and activities of firms.

7.3 Mathematical economic models are inappropriate for firms

We saw in Chapter 5 that economic formalism is an offshoot of mathematical formalism, and that the latter was discredited in the wake of Gödel's incompleteness theorem. We also noted that formalist approaches in economics are built on the false presumption that there is an objective, Platonist realm of pristine numbers which underpins economic and social reality, and which can only be accessed and represented through mathematical techniques. The dominance of these formalist views has resulted in the mathematics of economic models becoming prioritised over the substance of their connection to economic theories and phenomena. This has allowed mathematical standards to dictate how economic theory and phenomena should be interpreted, rather than theories and phenomena being used to determine when and how mathematics should be applied.[89] Schotter and Schwödiauer explain what this means for formal economic theories of the firm:

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[85] Hart and Zingales, 2022. Pacces, Chapter 5 in Sustainable Finance in Europe. Jacque (2020) International corporate finance value creation with currency derivatives in global capital markets, p. 7.

[86] Jensen and Meckling article. Kay (2019) The corporation. Stout 2012 (add pages, check p. 25, maybe a quote and some more details).

[87] E.g. information rights in the EU shareholder rights directive. [*add other examples?*]

[88] For background see: Lund and Pollman, 2021. The measures are generally focused on the best and right way to govern corporations.

[89] To repeat an earlier quote from Debreu: "An axiomatized theory first selects its primitive concepts and represents each one of them by a mathematical object. […] Next assumptions on the objects representing the primitive concepts are specified, and consequences are mathematically derived from them. The *economic*

> "…if one were to reread the first chapter of The Theory of Games and Economic Behavior, one would immediately see that the authors had exactly such institutional questions in mind when they started their analysis. They saw game theory as, in sum, the theory of the emergence of stable institutional arrangements or "standards of behavior" in a given physical situation or game. In other words, the theory tries to predict what stable institutional form will emerge from a given economic background and what the resulting value relationships will be. As a result, *the theory does not assume that any particular institutional arrangement exists at the outset*, as does the neoclassical theory, *but starts out by describing the tastes and technologies of the agents in an institutional "state of nature" from which it predicts what stable institutional arrangements or standards of behavior will evolve*. Von Neumann and Morgenstern are very clear on this point… social institutions must be seen as the equilibrium outcome of games of strategy whose descriptions are given by the physical capabilities of the agents in the game-the "empirical background." *They are an outcome of the theory rather than an in-put into it*." [emphasis added][90]

The remarks of Foss and Klein are also illuminating:

> Because of the strong assumptions that are made with respect to agents' cognitive powers [in economic theories of the firm], *decision situations are always unambiguous and "given." The choice of efficient economic organization is portrayed as a standard maximization problem in the case of contract design or as a choice between given "discrete, structural alternatives"* (Williamson 1996a) in the case of the choice of governance structures. There is *no learning, no need for entrepreneurial discovery and no explicit room is made for the innovation of new contractual or organizational forms*. In the above representation, strategies are thus given."[91] [emphasis added]

The quotes show that economic models are less an inductive analysis and description of firm dynamics than a deductive expression of economic imagination about rational agents. This is not necessarily problematic since all scientific practice is subjective and imperfect. It must, however, still be asked whether it makes sense to apply this particular approach to the scientific analysis of firms.

This question of judgment is seldom asked by economists because the conventional view that their discipline is objective also entails that its application is self-justifying, i.e. it is presumed that economics has been correctly applied whenever reality can be made to cohere with economic assumptions. An extension of this idea is that economics is sufficient unto itself, and that there is no need for economists to consider the myriad ways in which firms do not, cannot, or should not be made coherent in this way.[92] We already discussed the limits of economic objectivity, so will instead focus our discussion in this section on whether it makes sense to use formal models of modern economic theories of the firm to generate insights regarding firms.

A first point of concern relates to the impossibility of economic determinism. If physicists are unable to solve the relatively simple three-body problem using deterministic modelling, then there is no chance that these techniques can be reasonably applied to describe and predict the activities of any number of

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interpretation of the theorems obtained is the last step of the analysis. According to this schema *an axiomatized theory has a mathematical form that is completely separated from its economic content* (Debreu 1986, 1265)." [emphasis added] As cited in Düppe. Debreu also writes in his *Theory of Value* that "Allegiance to rigor dictates the axiomatic form of the analysis where the theory, in the strict sense, is logically entirely disconnected from its interpretations" (Debreu, *Theory of Value*, p. x).

[90] Schotter and Schwödiauer, 1980, p. 481- 482

[91] Foss and Klein 2006, p. 20.

[92] As Algan et al. write, "Opinion surveys [suggest that] economists have, in general, less regard for interdisciplinarity than their social-scientific and even business-school brethren. Economists are the only ones in this group among whom a (substantial) majority disagree or strongly disagree with the proposition that "in general, interdisciplinary knowledge is better than knowledge obtained from a single discipline." Such results are consistent with the notion that economists, with their distinctive confidence in the superiority of their own discipline, are less likely to feel the need to rely on other disciplines or even to acknowledge their existence." (Algan et al. (2015) The superiority of economists, p. 6).

firm agents. Their activities with different motivations, skills, organisational roles, backgrounds, and operating contexts are far too chaotic and multifaceted. Economics, as we have seen, is only able to simplify and model this situation through the conceit that people are radically separated, passive, price taking automatons who make economically rational decisions,[93] or, in the case of rational expectations, make decisions which are normally distributed around the outcomes of natural economic laws. This not only eliminates competition from economic models, but also severs the capacity of people to decide on the basis of non-economic forms of reasoning.

This leads to a related, second point of concern, namely that formal economic models are unable to factor in the moral deficiencies of organisational settings. Their one-dimensional focus on economic rationality means that they are unable to differentiate between the different decision-making capacities of natural persons in a market setting and those of firm agents. Any attempt to represent these differing capacities through variations in bounded rationality or levels of information will do little more than distort the underlying issues by reframing moral deficiencies as a market failure or an individual failure to be economically rational. Such 'improvements' are therefore bound to reinforce the supremacy of economics and lock us deeper into its prejudice against non-economic concerns.

A third point is the connection between economic theories of the firm and GE modelling. The important role of the former in the constellation of economic theories makes it possible for the latter to continue modelling (parts of) the entire economy under the presumption that firms are just another example of free, individual exchange. We have seen, however, that the decision-making of individuals as natural persons and firm agents is different. Evidence shows, moreover, that markets for most goods and services are dominated by large and small organisations,[94] i.e. by firm agents, rather than by natural persons, and that 80% of world trade occurs *within* firms.[95] It follows that GE models which presume that markets consist of free, contracting individuals are unable to provide a meaningful description of current or historical economic dynamics, insofar as they grossly mischaracterise the presence and influence of firms and the decision-making capacity of natural persons and firm agents. As Robé remarks:

> "The delusion that we live in a market society when we in fact live in a corporate organizational society leads to a gross mismatch between our corporate world and the liberal individualist concepts we use to interpret and address this world. Painting the corporation/firm in private and contractual terms, as a 'nexus of contracts' in particular, hides an organizational reality behind the liberal imagery of a society composed of contracting individuals."[96]

Formal economic models are not only grounded in misconceptions regarding natural economic laws and a market fundamentalist relationship between the state and economy, but also neglect the collective[97] and organisational dimensions of production, exchange, and consumption. These

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[93] "As a first approximation, efficient economic organization is supposed to be consciously chosen by well-informed, rational agents. If pressed on the issue, economists of organization may also invoke evolutionary processes that are assumed to perform a sorting between organizational forms in favor of the efficient ones (Williamson 1985). Thus, explanation is either fully "intentional" or "functional-evolutionary"" (Foss and Klein 2006, p. 21).

[94] [*Add reference that most market activities occur within and between firms*]

[95] Robé 2020, p. 271. Robé explains further that "The exchange decisions made within these organizations are not based on *market* prices. They are made *within* organizations seeking to optimize the localization of the various firm activities. Prices are *administered*. Prices internal to firms are not *market* prices: they are *administrative decisions*" (p. 25).

[96] Robé 2020, p. 272.

[97] Foss and Klein remark on the methodological individualism of economic theories of the firm that, "Aggregates play no independent role in explanation in the sense of being causal agents. The aim is to explain contractual and organizational forms in terms of individual actions. Thus, aggregate level constructs such as "trust," "embeddedness," "organizational cognition," "capabilities," etc. are not part of the *explanans* of the modern

shortcomings entail that the empirical foundation of these models proves little, if anything, about their scientific relevance or degree of scientific 'rigour'.

A fourth point is the influence of performativity and the way that economists and other scientists are entangled with the firms and other phenomena which they purport to describe. As evidence of this entanglement, it helps to first consider how large firms have adopted, on a large scale, the good governance prescriptions which are based on economic theories of the firm.[98] Adherence to these prescriptions is generally based on a 'comply or explain' approach, where firms have scope to decide whether to adopt them or to provide a reasoned about why they did not do so.[99] It is often said that firms are 'free' to decide whether to adopt these governance measures but there are several reasons to question the extent of this freedom in practice.[100]

First, these measures have been promoted by the corporate governance codes of states and national, industry, and international organisations. Second, these codes are scientifically legitimated in the sense that their prescriptions are grounded in economic science, i.e. they are designed to reduce conflicts of interest and information asymmetries. Third, economic reasoning, in both its more progressive and conservative forms, is often seen as the right way to think about business-related problems. This especially applies to the financial sector whose firms rely heavily on economic models for their lending and investment decisions, and whose decisions are likely to be influenced by whether a firm has adopted economically sound governance measures.[101] There are, in other words, solid reasons based on regulatory developments, common business practice, scientific arguments, and commercial pressures from investors and creditors for firms to adopt good governance practices.

Importantly, each of these reasons is closely connected to the scientific practice and social role of economists. They wrote the theories, helped design the codes, provided advice to companies and governments, and provided the foundation for lending and investment models. If it is true that firm activities and governance structures are an endogenous feature of market dynamics, as is premised in economic theories, then there would have been no need for these activities. An economist might argue in response that their work is necessary because economic science is improving over time, responding to ongoing developments, and developing a better understanding of supply-demand dynamics. Economic dynamics would exist regardless of their interference, and they are just trying to help our societies align with them so that we can make more efficient use of our scarce resources.

We know, however, that these arguments are flawed since they do not recognise the subjective nature of scientific practice, the market fundamentalist foundation of economic science, or the shortcomings of economic efficiency standards. In other words, they fail to recognise that there are no economic laws of gravity, and that there is nothing objective, natural, or inherently superior about the way that we have organised our exchange relations.

It follows that economists' entanglement with society is responsible for co-creating the economic dynamics which their science is trying to describe. While they may not have invented firms, scarcity, resources, or self-interested behaviour, they did invent much of the constellation of theories and ideas which we use to describe and manage them. In this regard the fingerprints of economics are everywhere: national and international trade, finance, taxation, insurance, arbitration, competition law, intellectual

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theory of the firm, and are only rarely treated as *explanandum* phenomena (but see, e.g., Kreps 1990 on culture)." (Foss and Klein 2006, p. 21).

[98] [*add reference to PhD on widespread adoption of CG codes by firms*]

[99] [*add reference to comply or explain approaches*]

[100] [*add reference on the 'freedom' of firms to adopt comply or explain approaches*]

[101] [*add reference on link between adoption of good governance measures and credit ratings*]

property rights, environmental law, labour relations, media, lobbying, and military interventions.[102] To deny the creative role of economists in these and other areas is counter-productive and unscientific. It belies the facts, breeds misconception, and impairs the search for ethical and sustainable approaches to the very real problems that we are facing globally.

The points of concern outlined above make it reasonable to ask whether it is worthwhile to use formal economic approaches to model firm dynamics. Not only are these models built on the deficient premises of modern economic theories of the firm, but their determinism and lack of differentiation regarding individual decision-making are flawed to such an extent that they are likely to crowd out better, more scientifically relevant ways to theorise about and regulate firms. Moreover, the fact that their deductive foundation has little connection to firms as a social phenomenon, and that their use is likely to promote firmophilic tendencies in firm agents, suggests that our societies are likely to benefit if we abandon their use entirely.

7.4 Reflection on the limits of economic methods for the analysis of firms

As promised in the Introduction, this Chapter did not simply restate the limits of economic methods in the context of theories of the firm. Instead, it examined the broader impact of these limits, for example on the regulation and ethical analysis of firms. Starting with economic objectivity, we identified that this idea has numerous political implications regarding the legal role and regulation of firms in society.

We saw, for example, that economics has a private disposition and is methodologically predetermined to 'find' that firms are private actors. It cannot, due to this disposition, be used to determine whether firms are, or should be, classified as public or private. We also saw that the economic view of firms as private has come to dominate legal discussions on corporate regulation, with specific consequences for the balance of power and resolution of issues between firms, individuals, and the state. This was evident, for example, in the presumption of political innocence which provides firms with a standing, 'objective' economic argument against political intervention. This argument arises because any interventions in the natural rights of firms is likely to distort the economically efficient expression of individual preferences.

Another consequence of the private disposition of economics is that the solutions of this discipline can be adopted with relative ease in legal systems with a public-private divide. This easy adoption is due to the shared roots of law and economics in liberal philosophy. It gives these disciplines a scientific affinity which is not similarly present between economics and many other sciences.[103] Overall, we can note that these shared roots, and the private disposition which they have sprouted, are consistent with our earlier finding that economics is an expression of Anglo-European culture.

Contrary to its universalist ambitions, we saw that it is impossible to develop an adequate understanding of firms from an exclusively economic perspective. A key problem is that this discipline assumes away diversity in, and internal relations between, firms and everything else. This has left it unable to see not only that people have decreased moral autonomy in firms, but also that economics itself has a negative impact on the substance of their moral reasoning. Overall, this led to the finding that we cannot expect firm agents with economic expertise to reason adequately about the relative importance of economic and non-economic concerns. We also found that the application of economic theories in the governance and decision-making of firms is likely to degrade the moral reasoning of these agents even further.

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[102] [*add reference to link between MAD and game theory/economics*] US choice to build up immense stockpiles of nuclear weapons during the Cold War as part of their strategy of Mutually Assured Destruction (MAD) was based on advice from economic theorists to use game theory and create a 'rational' stalemate between superpowers (reference). We still live under the severe, potentially world-ending threat of these decisions (reference).

[103] A similar affinity is, however, identifiable between economics and some parts of anthropology, sociology, and political science.

Lastly, we suggested that we should stop using economic models for the analysis of firms. These models offer no more than a market fundamentalist caricature of dynamics between people, firms, markets, and the state, and are unable to generate meaningful insights or reform recommendations. They help sustain, moreover, a counter-productive economic narrative which obfuscates how firms and markets work, and which ultimately makes it more difficult to make them sustainable.

8. The limits of economic individualism for the analysis of firms

Chapter 6 explained that economic objectives to pursue free markets and economic efficiency are part of a market fundamentalist utopia that sits at the heart of economic science. It showed that this utopia relies on a liberal premise that free individuals are pre-social, and we can add here that the pursuit of these objectives is contingent on turning this premise into a descriptive and prescriptive reality. In other words, we will only be free, and markets will only be efficient, when every individual is pre-social. In the case of modern economic theories of the firm, this kind of pre-social individualism is evident in the descriptive and prescriptive use of the idea that firms are an essentially economic result of liberalised, individual dynamics. This Chapter outlines how this view is evident in leading economic theories on the corporation and examines how it influences discussions on their ownership and good governance.

In terms of structure, the Chapter first outlines how principal-agent theories and the nexus of contracts model have been used to explain and model the corporation. Second, it studies the relationship between modern economics and the issue of corporate ownership, and shows how this discipline has been used to address the central corporate legal problem of separation between ownership and control. Third, it examines what modern economics has to say about the good governance of corporations. Fourth, it provides a brief analysis of the relationship between modern economics and stakeholder models in order to address the common misconception that there is a deep conflict between shareholder and stakeholder models.

8.1 Modern economics and the corporation as a nexus of contracts

First, we can recall that principal-agent theories assume that firms are a product of imperfect exchange between free bargaining individuals.[1] On this view, the corporation is a fiction and convenient nexus or focal point for individual contracts. Second, we can reiterate that the economic concept of contracts is not equivalent to the legal one. It is broader, can be explicit or implicit (legal or non-legal), and exists whenever people cooperate and the welfare of one individual is dependent on another.

Building on these ideas, we can identify that people with a contractual relationship to the corporation are often placed in various standard categories: *investors, employees, creditors, suppliers, consumers, and corporate leaders*. These categories are not discrete or absolute; an investor can also be a consumer, an employee can also be a shareholder and a supplier, and so on.

Not included, however, in this nexus of contracts are *third parties without a contract to the corporation*. The standard example of such a party is an involuntary creditor: a person who is owed compensation by the corporation because they have suffered harm from its activities,[2] for example due to the illegal release of industrial waste into a local river. While it could be argued that this person's welfare was dependent on the corporation not polluting, no 'contract' emerges because there was no cooperation or bargaining involved.[3]

Also not included are *abstract interests such as the environment, community, or the public interest*. These are not, by their very nature, capable of individual bargaining or of having a contract with the

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[1] Section 4.2.1.

[2] Hansmann and Kraakman, 1991, 'Towards Unlimited Shareholder Liability for Corporate Torts'.

[3] The standard economic response to this situation is that the involuntary creditor should be financially compensated for the full extent of their harm. This can be achieved in different ways, for example through tort law, insurance, or by suspending the application of limited liability (Hansmann and Kraakman, 1991, 'Towards Unlimited Shareholder Liability for Corporate Torts'). Add other references.

corporation. They therefore do not have a direct role in the nexus of contracts model, and feature only indirectly as a part of individual preferences.[4]

Having identified the various parties for which the corporation is a nexus of contracts, the question then arises what to do about the *pervasive conflicts of interest* which arise between them due to diverging preferences and imperfectly competitive conditions.[5] In general, the problem is that these conflicts make it difficult, if not impossible, to explain the corporation as an efficient result of contractual bargaining between these different parties. There is no corporate nexus, only market competition, if these conflicts are not somehow resolved.

The underlying issue is that diverging interests make it impossible to identify a single, common standard to resolve trade-offs, decide between opportunity costs, or rank individual preferences. This makes it impossible for the corporate nexus to maximally pursue an 'individual' self-interest. This is a problem for economic theory insofar as individual maximisation is a precondition for the attainment of economic efficiency and the maximisation of welfare. It follows that *modern economics is unable to explain the corporate nexus as an efficient outcome unless it is conceptualised as a kind of maximising individual*.

To resolve this predicament, it helps to recognise that pervasive conflicts of interest in the corporation are similar to a well-known economic allegory: *the tragedy of the commons*.[6] This allegory tells us that resources in common or public ownership (without an identifiable, individual owner) will inevitably be overused by private individuals.[7] The explanation is that individuals, as self-interested maximisers, are unconcerned with the consequences of their resource use on other parties, and will use more than their efficient share. The lesson is then that common or indeterminate ownership leads to unsustainable use and the generation of social and environmental costs in the form of externalities.

Economists have identified two general solutions to this tragedy: (1) the state makes people pay for the use of common resources, thus internalising the externality; or (2) some people are allowed to own the resource so that they are invested in its long-term viability.[8] The first option, state action, is designed to address inefficiencies and market failures by pricing them away; it disincentivises overuse by imposing a tax. The second option, privatisation, builds on traditional ideas regarding the superior stewardship incentives of individual ownership. The sentiment, going back at least to Aristotle, is that "the owners of private property bear the consequences of their use of that property and thus have every incentive to mind it well".[9]

A key difference between the tragedy of the commons and the nexus of contracts model is that the latter assumes *a priori* that firms, including corporations, are a product of imperfect individual bargaining.[10] This assumes away the potential for common ownership and means that solution (1), state action, cannot

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[4] This is why, for example, Kraakman et al. refer to "beneficiaries of the natural environment" rather than to the environment itself (Anatomy of Corporate law, p. 22-23).
[5] Fama and Jensen (1983) 'Separation of ownership and control', p. 304.
[6] This commonality has been recognised before, for example by Demsetz (1967). Tragedy of the commons was popularised by Hardin (1968). [Too polemic] The tragedy of the commons is often presented as a scientific fact and historical truth, and it retains an important role in economic education and scientific practice (reference). The work of Ostrom and others shows, however, that its content is more fictional than scientifically grounded (reference). It is far from inevitable that public ownership leads to unsustainable use of common resources, and far from guaranteed that private ownership and prices lead to sustainable resource management. In this regard it is better to view the tragedy of the commons as an expression of economic doctrine regarding individual behaviour and private ownership rather than as a scientific template for how to best manage our resources.
[7] [*add reference to tragedy of the commons*]
[8] [*add reference to standard economic solutions to tragedy of the commons*]
[9] Ciepley, 2013, p. 147.
[10] Section 4.2.1.

be used to resolve these conflicts or to explain the emergence of corporate governance structures.[11] The result is that only option (2), private ownership, can be used to resolve pervasive conflicts and provide an explanation for the existence of corporations. It follows that *the nexus of contracts model can only explain the corporation as an efficient result of individual bargaining, as anything other than a tragedy, if it assumes that it is owned by one of the contracting parties*.[12] This can be an individual, group of individuals, or category of contracting individuals with a unified interest.

In the case of non-corporate firms such as partnerships or sole traders, it is not difficult to identify an owner. It is, however, a challenge in the case of corporations due to the presence of many contracting parties and the fact that contractual relationships with the corporation are mediated by legal factors such as limited liability and separate legal personality. In general, the *absence of a clear owner* explains why the nexus of contracts model does not have a single, common standard to resolve conflicts of interest in the corporation and attain efficient outcomes.

To address this shortcoming, it has proven necessary for economists to identify a (category of) corporate owners and to provide an endogenous, economic explanation and justification for their status as owners. These owners may be identified explicitly, in that they are named directly *as owners*, or implicitly, in that their interests are given priority to resolve conflicts of interest between contracting parties.

8.2 Modern economics and corporate ownership

While the range of corporate contracting parties is extensive, the standard approach of economists has been to argue either explicitly or implicitly that shareholders are, or should be treated as, owners of the corporation and that corporations should have shareholder-oriented governance structures.[13] There are least four overlapping economic arguments in favour of this approach:

1. An argument from incentives
2. An argument from risk
3. An argument from natural selection
4. An argument from public benefit

Before discussing each in turn, we should note that it does not matter for these arguments whether shareholders are also customers, employees, or even the state. It is their status as shareholders, which does not need to be exclusive, that establishes them as corporate owners.

The first of these arguments, the *argument from incentives*, asks which of the contracting parties is most incentivised to ensure that the corporate nexus functions at maximum efficiency. Its starting point is the traditional assumption that individuals are self-interested maximisers. In the case of corporate leaders

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[11] At best, it might be argued that state action, such as corporate law and governance legislation, are designed to emulate as closely as possible the efficient result that would obtain if bargaining occurred under perfect conditions. This is indeed the standard economic explanation for the existence of these laws. They are not, in this regard, given a generative function but are conceptualised as a potential reflection of, or an impediment to, the efficient exchange activities of private parties (Easterbrook and Fischel, others).

[12] Jensen indirectly expresses this need for ownership in the following critique of stakeholder theory, saying it "should not be viewed as a legitimate contender to value maximization because it fails to provide a *complete* specification of the corporate purpose or objective function. To put the matter more concretely, whereas value maximization provides corporate managers with a single objective, stakeholder theory directs corporate managers to serve "many masters." And, to paraphrase the old adage, when there are many masters, all end up being shortchanged. Without the clarity of mission provided by a single-valued objective function, companies embracing stakeholder theory will experience managerial confusion, conflict, inefficiency, and perhaps even competitive failure." (Jensen (2001) Value Maximization, Stakeholder Theory, and the Corporate Objective Function, p. 9).

[13] Jensen and Meckling 1976, Fama and Jensen 1983. Armour and Gordon, 'Systemic Harms and Shareholder Value'.

employees, creditors, suppliers, and consumers, this entails that they are more interested in maximising their individual benefit and minimising their individual input than in securing the most efficient overall corporate performance (i.e. they are inclined to shirk).[14] This may be contrasted with shareholders who, in principle, only receive an income after other contracting parties have been paid and if there are any profits left. As noted, the claim of shareholders to this potential surplus is why they are often referred to as *residual claimants*.[15] Important for the argument from incentives is that shareholders have a collective interest to ensure that the residual claim is as large as possible (i.e. that it is maximised). In general, it is presumed that this maximisation condition will be satisfied when the corporation operates at maximum efficiency. Other contracting parties do not have a similar incentive which favours the overall performance of the corporation, meaning that they cannot be responsible owners. It follows from this argument that corporations should maximise profits (or utility) on behalf of shareholders, and that corporate agents act should on behalf of shareholders as principals.

Turning to the second, the *argument from risk* considers the risk profiles of different contracting parties. It overlaps and is often combined with the argument from incentives.[16] Its initial step is to identify that non-shareholders have a *certain benefit or income* from their corporate contract whereas shareholders as residual claimants have an *uncertain income*. Employees, creditors, corporate leaders, customers, and suppliers therefore know, in general, how much and under what conditions they are being paid for their contributions to the corporation, or what non-monetary benefits they are receiving in payment for a good or service.[17] Shareholders, by contrast, are not entitled to a specific income, good, or service. As residual claimants, they will only receive a dividend after the other parties with a certain benefit or income have been paid.

The subsequent step is then to examine the risk profiles of shareholders and non-shareholders in more detail using Knight's ideas on risk and uncertainty. To quote Chapter 4: 'ordinary' risk is measurable and quantifiable through probability, while uncertainty is a 'true' risk which cannot be measured or quantified.[18] As noted, entrepreneurs are specialised in making judgments on the basis of true risks, and variations in their skill explain why some parts of the economy are more profitable than others. Drawing on Knight's work, the idea is that contracting parties are able to buy insurance against ordinary risks such as injuries, job losses, or harm of goods during transport. These risks are unfortunate, but they are ordinary since their statistical likelihood can be estimated over a large population. In the case of non-shareholders, this means that they can insulate themselves from risks which might erode the certainty of their benefit or income from the corporate contract. Shareholders, however, cannot insure themselves to minimise the uncertainty of their residual claim since corporate profitability is subject to true risk. The above line of reasoning explains why it is common for economists to claim that shareholders bear more risk than other contracting parties such as employees and creditors.[19] This greater level of risk, and the risk-bearing or entrepreneurial function with which it is associated, is subsequently used to argue explicitly or implicitly that shareholders are, or should be, owners.[20]

The *argument from natural selection* is based on economic Darwinism and a teleological view of history and competition. It argues that large, dominant firms have, over time, outcompeted other firms because they are more economically efficient. Since the largest firms are incorporated and have a shareholder-oriented governance structure, it follows that this is, in general, the most economically efficient form for doing business. If this was not the case, then these firms would not be dominant. The argument from

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[14] [*add reference to earlier literature on shirking*]
[15] [*add reference to SHs being referred to as residual claimants*]
[16] [*see if there's a reference which combines argument from risk and argument from incentives*]
[17] [*add reference to SHs having uncertain returns relative to other parties*]
[18] Section 4.1.3.
[19] See, for example: Edmans, *Grow the pie*, p. 171.
[20] [*add reference to risk-based argument that SHs should be owners. Perhaps entrepreneurial theories?*]

competition is not common, but it features in seminal literature for modern economic theories of the firm. Williamson, for example, writes that his ideas on incomplete contracts and the emergence of economic institutions rely: "in a general, background way on the efficacy of competition to perform a sort between more and less efficient modes and to shift resources in favor of the former".[21] He explains in footnote that:

> "This intuition is akin to that expressed by Michael Spence in his conjecture that entry barrier arguments give way to contestable markets in the long run (1983. p. 988). Although the long run for Spence probably exceeds five or ten years, some of the evolutionary phenomena of interest to me also span half a century. One way of putting it is that I subscribe to weak-form rather than strong-form selection, the distinction being that "in a relative sense, the *fitter* survive, but there is no reason to suppose that they are *fittest* in any absolute sense" (Simon. 1983, p. 69; emphasis in original)."[22]

As a second example, consider the remarks of Jensen and Meckling in their 1976 'Theory of the firm' article, which popularised the nexus of contracts model:

> "The growth in the use of the corporate form as well as the growth in market value of established corporations suggests that at least, up to the present, creditors and investors have by and large not been disappointed with the results, despite the agency costs inherent in the corporate form.
>
> Agency costs are as real as any other costs. The level of agency costs depends among other things on statutory and common law and human ingenuity in devising contracts. Both the law and the sophistication of contracts relevant to the modern corporation arc the products of a historical process in which there were strong incentives for individuals to minimize agency costs. Moreover, there were alternative organizational forms available, and opportunities to invent new ones. Whatever its shortcomings, the corporation has thus far survived the market test against potential alternatives."[23]

It is implicit in these arguments from natural selection that it is good and right for shareholders to have priority over other parties since economic competition has demonstrated that corporations with a shareholder-oriented governance structure are the most efficient type of firm.[24]

The *argument from public benefit* is consistent with market fundamentalism and suggests that everyone is better off when shareholders are implicitly or explicitly treated as owners of the corporation. This argument builds on, and extends, the three previous ones. Regardless of whether it is due to superior ownership incentives, entrepreneurial judgment, or competitive prowess, the idea is that efficient, shareholder-oriented corporations are able to generate the largest amount of goods, services, innovation, jobs, wealth, and so on.[25] These benefits accrue not only to shareholders but to all members of society.[26] This line of reasoning is often supported by two ancillary arguments. The first is that many of the largest corporations are owned by institutional investors such as pension funds.[27] Since most, if not all citizens, in wealthy countries are participants in such funds, the implication is that 'we' are all shareholders and multi-dimensional beneficiaries of shareholder-oriented governance structures. The second ancillary argument is that financial returns to shareholders, distributed for example through dividends or share buybacks, are reinvested in other parts of the economy in order to boost growth, jobs, and innovation.[28]

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[21] Williamson, *Economic Institutions of Capitalism*, p. 22.
[22] Williamson, *Economic Institutions of Capitalism*, p. 23.
[23] Jensen and Meckling, 1976, Theory of the Firm, p. 357.
[24] Karpoff, 'On a stakeholder model of corporate governance', p. 15.
[25] For example, see: Karpoff, 'On a stakeholder model of corporate governance', p. 15.
[26] As Jensen puts it, "200 years' worth of work in economics and finance indicate that social welfare is maximized when all firms in an economy attempt to maximize their own total firm value" (Jensen (2001) Value Maximization, Stakeholder Theory, and the Corporate Objective Function, p. 11).
[27] Rappaport, 1997, *Creating shareholder value: A guide for managers and investors*.
[28] Edmans, *Grow the pie*, p. 177.

Aside from these four arguments in favour of shareholder ownership, it is curious to note an absence of *economic arguments in favour of corporate ownership by non-shareholders*. It seems that these parties have the wrong incentives, bear the wrong kind of risk, are insufficiently competitive, or would provide insufficient public benefit. These shortcomings are implicit in conventional arguments that non-shareholder-oriented governance is inefficient, lacks a clear goal, and makes corporate leaders less accountable for their decisions.[29] Also interesting is that arguments against shareholder ownership, to the extent that they feature in economic literature, are invariably drawn from law, history, ethics, and other non-economic disciplines.[30] This suggests that there are no viable economic arguments, based on inefficiency or market failure, against shareholder ownership.

This absence is conspicuous because it suggests that the *modern economics is predetermined to conclude that shareholders are the owners of the corporation*. To make explicit why this is the case, it helps to recall the methodological individualism of economics and the residual, rather than fixed claim of shareholders.

Methodological individualism entails that social phenomena are explained in terms of individual actions and characteristics. In the context of the nexus of contracts, this requires that the *corporate interest*, i.e. the thing that the corporate nexus is trying to maximise, is ultimately reducible to the interests of natural persons. Stated differently, it is incompatible with modern economics to argue that a corporation might have its own, organisational interest or that it might represent a broad, collective interest.[31] It follows that the only way that the corporate nexus can be made to cohere with economic reasoning is to superimpose the interest of a (class of) natural persons over the corporate interest, thus making it possible to resolve conflicts of interest in the corporation and turn it into an expression of economic efficiency.

The interests of non-shareholders are unavailable for this role because their contracts with fixed returns are the result of antagonistic bargaining between them and the corporate nexus. This overt expression of individual self-interest *against the corporation* makes it impossible to treat the corporate interest as equivalent to theirs, i.e. to treat them as corporate owners. By contrast, the self-interest of shareholders is *for the corporation* because the residual claim only gives them an income if the corporation does well economically. We can infer from this divergence in self-interest that only parties with a residual claim to the corporation can have their self-interest superimposed on the corporate nexus.

In theory, any party can be a residual claimant if they bargain themselves into an uncertain income.[32] In practice, however, only shareholders have such a 'contract'.[33] It follows that implicit or explicit ownership by shareholders is the only way that modern economics can resolve pervasive conflicts of interest in the corporation and enable its conceptualisation as a nexus of contracts. Stated differently, *shareholder ownership is a necessary condition for the use of the nexus of contracts model, and the only way that the corporation can be made to cohere with modern economic reasoning*.

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[29] https://ecgi.global/sites/default/files/working_papers/documents/karpofffinal.pdf. Bebchuk and Tallarita, 2020, p. 24.

[30] E.g. Mazzucato.

[31] This is why economists refer to corporate personhood as a 'legal fiction' (Jensen and Meckling, 1976, Theory of the Firm, p. 310).

[32] We might imagine an alternative scenario with employees as residual claimants. Then, economics might also have to argue in favour of employee-oriented governance structures to resolve conflicts in the corporate nexus.

[33] Employees, suppliers, and other parties are also dependent on corporate performance in the long-term. One might argue that this gives rise to a kind of pseudo-residual claim. The difference, however, is that these parties have a fixed income and have engaged in free, antagonistic bargaining with the corporation. This means that their self-interest cannot be easily superimposed as an ownership claim on the corporate nexus, notwithstanding their pseudo claim.

Importantly, this shows us that principal-agent theory, which is supposed to be an objective theory about the contractual relations of free bargaining individuals, is structurally biased in favour of shareholder-oriented governance structures due to its scientific foundation. To explore this bias in more detail, we next examine how the problem of separation between ownership and control, which has been central to corporate law and governance for many decades,[34] has been re-interpreted by modern economics.

8.2.1 Modern economics and the problem of separation between ownership and control

The classic expression of the problem of separation between ownership and control was outlined by Berle and Means in their 1932 *The Modern Corporation and Private Property*.[35] The authors start with a premise, typical for the US at the time, that shareholders are owners,[36] and explain how the rise of the modern, public corporation with widely dispersed share ownership has meant that shareholders are no longer able to effectively control corporate activities and exercise their ownership role.

The heart of the problem is that, from roughly the turn of the 20th century onwards, developments such as the creation of stock exchanges, the introduction of financial reporting, the mainstreaming of portfolio investing, and the invention of new communications technologies, made it possible for people to own shares without being involved in or geographically close to their investee corporations.[37] This resulted in larger corporations with more shareholders and more capital. It also increased the power of corporate leaders and decreased their accountability towards shareholders.[38]

It is significant that Berle and Means wrote their book during the Great Depression, a period of acute economic crisis and deep public concern regarding the unethical practices of 'robber barons', the leaders of giant railroad, oil, steel, finance, and other companies.[39] It was in this context that the authors criticised the unaccountable power of corporate leaders and argued that shareholders were no longer able to monitor and control their activities as effective owners. In their words:

> "The concentration of economic power separate from ownership has, in fact, created economic empires, and has delivered these empires into the hands of a new form of absolutism, relegating "owners" to the position of those who supply the means whereby the new princes may exercise their power."[40]

Importantly, Berle and Means did not argue that shareholders should be empowered so that they could better exercise their ownership responsibility. Instead, their point was that the modern corporation had broken the traditional nexus between private ownership and control, and that it could no longer fit in the framework of traditional liberal economic relations which was outlined by Adam Smith. Their arguments are worth citing at length:

> "…the organization under the system of private ownership has rested upon the self-interest of the property owner – a self-interest held in check only by competition and the conditions of supply and demand. Such self-interest has long been regarded as the best guarantee of economic efficiency. It has been assumed that, if the individual is protected in the right to both use his own property as he

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[34] Reinier H. Kraakman et al., The Anatomy of Corporate Law: A Comparative and Functional approach 1, 2 (2009).
[35] [*add reference to 1920s and robber barons*]
[36] This was the common view of lawyers and economists in the US in the 1930s, for example due to the *natural entity* model which we discussed earlier in this chapter.
[37] P. Ireland, 'Company Law and the Myth of Shareholder Ownership', *The Modern Law Review*, vol. 62, no. 1, 1999, pp. 32-57, p. 41-42.
[38] Blumberg 1971 'The politicalization of the corporation', p. 430.
[39] [*add reference to 1920s and robber barons*]
[40] Berle and Means, *The Modern Corporation and Private Property*, p. 116.

> sees fit and to receive the full fruits of its use, his desire for personal gain, for profits, can be relied upon as an effective incentive to his efficient use of any industrial property he may possess.
>
> In the quasi-public corporation, such an assumption no longer holds. As we have seen, *it is no longer the individual himself who uses his wealth*. Those in control of this wealth, and therefore in a position to secure industrial efficient and produce profits, are no longer, as owners, entitled to the bulk of such profits. Those who control the destinies of the typical modern corporation own so insignificant a fraction of the company's stock that the returns from running the corporation profitably accrue to them in only a very minor degree. *The stockholders, on the other hand, to whom the profits of the corporation go, cannot be motivated by those profits to a more efficient use of the property, since they have surrendered all disposition of it to those in control of the enterprise*. The explosion of the atom of property destroys the basis of the old assumption that the quest for profits will spur the owner of industrial property to its effective use. It consequently challenges the fundamental economic principle of individual initiative in industrial enterprise." [emphasis added][41]
>
> "…to Adam Smith, private enterprise meant an individual or few partners actively engaged and relying in large part on their own labor or their immediate direction. Today we have tens and hundreds of thousands of owners, of workers and of consumers combined in single enterprises. *These great associations are so different from the small, privately owned enterprises of the past as to make the concept of private enterprise an ineffective instrument of analysis.* It must be replaced with the concept of corporate enterprise, enterprise which is the organized activity of vast bodies of individuals, workers, consumers and suppliers of capital, under the leadership of the dictators of industry, "control"."[42]

As Means summarises in a preface to the book, written in 1967:

> "From the economic point of view, the crucial implication of this corporate revolution [i.e. following their work] was the extent to which it made obsolete the basic concepts underlying the body of traditional economic theory which was then the basis of public policy. Wealth, enterprise, initiative, the profit motive, and competition, each was shown to have become so changed in character with the revolution as to make traditional theory no longer applicable. The conclusion was reached that "New concepts must be forged and a new picture of economic relationships created.""[43]

The gist of these arguments was that *standard economic ideas about private ownership incentives are an inappropriate way to examine and regulate the activities of large corporations*. In the 1930s and beyond, this provided a scientific rationale for the idea that government has more responsibility to address corporate and economic issues than merely enabling the efficient interactions of private parties. This buttressed the implementation and persistence of New Deal policies in the US, contributed to the gradual expansion of labour unions, and helped support the use of government spending to safeguard employment levels.[44]

Interesting to highlight is that the analysis and political implications of Berle and Means' work is diametrically opposed that of modern economists on these same issues. To reveal this opposition, we will now consider the landmark modern economic analysis, the 'Separation of ownership and control' written by Fama and Jensen in 1983.

The article starts with an argument from natural selection: "Absent fiat [n.b. government intervention], the form of organization that survives in an activity is the one that delivers the product demanded by

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[41] Berle and Means, 1932, p. 9.
[42] [Need to find this quote again.]
[43] Means, 'Implications of the Corporate Revolution, in Berle and Means, *The Modern Corporation and Private Property*, p. xliii.
[44] Means, 'Implications of the Corporate Revolution, in Berle and Means, *The Modern Corporation and Private Property*, p. xliii.

customers at the lowest price while covering costs."[45] Next, Fama and Jensen introduce the nexus of contracts model:

> "An organization is the nexus of contracts, written and unwritten, among owners of factors of production and customers. These contracts or internal "rules of the game" specify the rights of each agent in the organization, performance criteria on which agents are evaluated, and the payoff functions they face. The contract structure combines with available production technologies and external legal constraints to determine the cost function for delivering an output with a particular form of organization. The form of organization that delivers the output demanded by customers at the lowest price, while covering costs, survives."[46]

Fama and Jensen subsequently explain that the entrepreneurship function of owners (i.e. their traditional ownership responsibilities) can be split into three components: *decision management*, *decision control*, and *risk-bearing*.[47] The first relates to the initiation and implementation of decisions, and in the corporation covers the usual activities of top management and executive directors. The second relates to ratification and monitoring of decisions, which is the work of supervisory board members and non-executive directors. The third relates to risks which are shouldered by entrepreneurs and shareholders as residual claimants, and the latter's special ability to exercise judgment in uncertain situations.[48]

The authors subsequently explain that "Agency problems arise because contracts are not costlessly written and enforced",[49] and that control of these costs only matters when:

> "…the *decision managers who initiate and implement important decisions are not the major residual claimants* and therefore do not bear a major share of the wealth effects of their decisions. Without effective control procedures, such decision managers are more likely to take actions that deviate from the interests of residual claimants." [emphasis added][50]

Fama and Jensen then suggest, building on their earlier argument from natural selection, that separation between ownership and control *only emerges when it is more efficient for owners to delegate* their decision management and decision monitoring activities to another party. This may be efficient, for example, when this other party has "valuable, relevant knowledge",[51] as in the case of a professional manager.

In general, Fama and Jensen's article provides a descriptive, efficiency-based explanation for the origins of shareholder-oriented governance structures. This does not, however, mean that it is neutral regarding the way that corporations should be organised. Consider, for example, the argument that corporate governance structures are a delegated product of shareholders' ownership responsibility. It clearly implies that the authority of corporate leaders is derived from the authority of shareholders, and that efficient governance structures are predicated on the efficient delegation of this authority.

In this regard it follows from Fama and Jensen's work, even though they do not use principal-agent terminology, that employees and corporate leaders work on behalf of shareholders as direct or indirect owners of the corporation, i.e. that the former are agents of the latter. It also follows that shareholder ownership interests should be respected and enabled whenever attempts are made to improve corporate efficiency, for example by addressing market failures. We will later see that this logic has become

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[45] [*Add page reference to Fama and Jensen (1983)*]
[46] [*Add page reference to Fama and Jensen (1983)*]
[47] Fama and Jensen (1983), 303-304.
[48] As discussed in; this relates to the Knightian distinction between risk and uncertainty.
[49] Fama and Jensen (1983), p. 304.
[50] Fama and Jensen (1983), p. 304.
[51] Fama and Jensen (1983), p. 308.

embedded in currently dominant approaches to good governance. For now, however, we will consider why Fama and Jensen's analysis is diametrically opposed to that of Berle and Means.

In basic terms, opposition arises because *the premise of Fama and Jensen* that the corporation is a nexus of contracts *is incompatible with the conclusion of Berle and Means* that private ownership incentives are an inappropriate way to examine large corporations. More elaborately, the nexus of contracts model is enabled by a premise that that the corporation is essentially economic and can be wholly understood with reference to economic ideas about individual exchange under imperfect conditions. This cannot be reconciled with Berle and Means' finding that economic concepts are inadequate for describing the modern corporation. The result is an *incompatibility* between the classic work of Berle and Means and the interpretations of Fama, Jensen, and other modern economists on the same problem of separation between ownership and control. We can make the consequences of this incompatibility more concrete if we reflect on its diverging implications for the role of shareholders and the state.

Regarding the role of shareholders, it is important to distinguish between Berle and Means' use of shareholder ownership terminology, which was conventional for their time, and their arguments in relation to shareholder-oriented governance. The following citation explains their position:

> "…the owners of passive property [shareholders], by surrendering control and responsibility over the active property, *have surrendered the right that the corporation should be operated in their sole interest*, *–they have released the community from the obligation to protect them to the full extent implied in the doctrine of strict property rights*. At the same time, the controlling groups [corporate leaders], by means of the extension of corporate powers, have in their own interest broken the bars of tradition which require that the corporation be operated solely for the benefit of the owners of passive property. Eliminating the sole interest of the passive owner, however, does not necessarily lay a basis for the alternative claim that the new powers should be used in the interest of the controlling groups. The latter have not presented, in acts or words any acceptable defence of the proposition that these powers should be so used. No tradition supports that position. The control groups have, rather, cleared the way for the claims of a group far wider than either the owners or the control. They have *placed the community in a position to demand that the modern corporation serve not alone the owners or the control but all society*." [emphasis added][52]

In effect, Berle and Means argue that corporations do not need to be governed in the interest of shareholders because the problem of separation between ownership and control makes it impossible for them to act in accordance with traditional, private ownership incentives. They subsequently contend that *the interests of shareholders should be subordinated to the collective interest*, and that economic arguments are not necessary to justify this subordination:

> "When a convincing system of community obligations is worked out and is generally accepted, in that moment *the passive property rights of today must yield before the larger interests of society*. Should the corporate leaders, for example, set forth a program comprising fair wages, security to employees, reasonable service to their public, and stabilization of business, all of which would divert a portion of the profits from the owners of passive property, and should the community generally accept such a scheme as a *logical and human solution* of industrial difficulties, the interests of passive property owners would have to give way." [emphasis added][53]

Importantly, the argument that shareholder interests should yield when there is a 'logical and human solution' to industrial problems does not assume that industrial problems, such as those of corporations, are essentially economic in nature. Berle and Means do not, in other words, assume that corporate issues are due to market failures, or that problems with industry call for an efficiency-based solution.

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[52] Berle and Means, p. 311-312.
[53] [*Add page reference Berle and Means*]

This stands in contrast to modern economic perspectives on good governance which are enabled by shareholder-oriented governance and can only solve corporate issues by optimising the efficiency of individual exchange. The narrow scope of action which is afforded by these approaches is a direct consequence of the modern economic presumption that corporations are essentially economic and that they can be wholly understood on the basis of methodological individualism and free, individual exchange under imperfect conditions.

Turning next to the role of the state, it helps to recall how the work of Berle and Means provided a scientific legitimation for state policies and actions to go beyond usual economic ideas on free markets and the superiority of private incentives. This may be contrasted with modern economic approaches which focus on the economically efficient use of these incentives by corporations and governments.[54] As we already discussed, the private disposition of these views means that they are predetermined to maximise the economic freedom of market actors and limit the role of the state to addressing market failures and helping attain efficient outcomes. This stands in marked contrast to the ideas of Berle and Means which provided a broad, scientific justification for New Deal policies to enact a range of socially significant changes to corporate activities.

Importantly, a limited role for the state does not entail that it has to be passive. It can actively pursue market efficiency and good governance, for example by ensuring that there is an effective rule of law, that there are reliable standards for financial and non-financial disclosure, that firms are incentivised to engage in socially responsible activities, that default rules for corporate governance are efficient, and so on. Curiously, the list of good governance improvements which a state might reasonably undertake is potentially unlimited. Imperfect markets and economic imperialism ensure that there is always some information asymmetry or transaction cost which offers a sound, economic justification for additional good governance improvements. The overall, paradoxical result is that modern economics enables a wide range of state activities on good governance even as it restricts the scope of these activities to the optimisation of individual exchange. In this regard the distinguishing factor is not whether the state is able to ‘do something’, but what kinds of state activity are enabled.

In conclusion, the incompatibility between modern economics and the work of Berle and Means means that the rise of the former has generally displaced, and not extended, the latter. It is important to note, first, that this contradicts the common, Whiggish belief among corporate governance scholars that their work is part of an intellectual tradition which goes back at least to Adam Smith and includes the work of these authors.[55] And second, that this incompatibility makes it more difficult for us to conceive of alternative corporate governance structures, or of a role for the state, which might be fairer, more sustainable, or more efficient in a non-economic sense. This is evident, as we will see in the following section, in current discussions on the right and best way to govern corporations.

8.3 Modern economics and good governance

Our previous analysis of Fama and Jensen’s work showed that modern economics is predisposed to find that shareholders are owners and that corporations should have shareholder-oriented governance structures. We also identified an implication that employees and corporate leaders are agents on behalf

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[54] [*optional to reference to modern economic use of individual incentives to regulate activity, e.g. corporate governance*]

[55] Jensen and Meckling write, for example, that “These are the costs of the "separation of ownership and control" which Adam Smith focused on in the passage quoted at the beginning of this paper and which Berle and Means (1932) popularized 157 years later” (Theory of the Firm, p. 327). See also: Tricker, *The Evolution of Corporate Governance*, 2020. Foss and Foss (2022), p. 42. Walsh and Seward (1990) On the efficiency of internal and external control mechanisms. Saggese et al. (2016) Evolution of the debate on control enhancing mechanisms, p. 418-419. La Porta et al. (1999) Corporate Ownership around the world. Ferrell, Liang and Renneboog (2016) ‘Socially responsible firms’. [*add more references*]

of shareholders, and that shareholder ownership interests should be respected and enabled whenever attempts are made to improve corporate efficiency.

8.3.1 Three dimensions of corporate efficiency

If we combine these ideas with our earlier analysis of corporate ownership, then we can discern that modern economics gives rise to *three dimensions of corporate efficiency* which can be used to optimise individual exchange and make the corporate nexus more efficient. These three dimensions are stated and explained as follows:

1. *Efficient control* ensures that corporate agents act on behalf of shareholders' ownership interest and do not pursue their own interests.
2. *Efficient ownership* ensures that shareholders are able to exercise their ownership interest as a coalesced whole, and can act together as an individual, maximising self-interest.
3. *Efficient contracting* ensures that market failures such as information asymmetries and externalities are addressed.

If each of these dimensions is perfectly optimised, then the diverging interests of contracting parties will be perfectly aligned and there will be no market failures. In economic terms, this will lead to the most efficient, fair, and sustainable corporations which we could possibly obtain.

It is this utopian ideal, derived from market fundamentalism, that modern economic approaches to good governance are trying to achieve. Importantly, this ideal has also been *implicitly adopted as the primary goal of contemporary corporate regulation and governance* by most parties in business, government, and academia, including for example corporate leaders, corporate lawyers, governance scholars, policy makers, and finance theorists.[56] This adoption is implicit because the three dimensions of corporate efficiency are commonly described as *three agency problems* which arise due to conflicts and market failures between principals and agents, and are endemic to the corporation.[57] It is the resolution of these agency problems that has garnered a common consensus.

Using this terminology, the first dimension of corporate efficiency is described as an *agency problem between shareholders and corporate leaders*.[58] Good governance measures which have been inspired by this problem include strong control rights for shareholders (appointment rights, decision rights, say on pay, etc.), more and better-quality disclosure for shareholders (detailed financial reporting, material risks, better auditing, etc.), duties of loyalty and care, an emphasis on share price as a measure of corporate and managerial performance, and the linking of share price and managerial compensation.[59]

The second dimension is commonly explained as an *agency problem between minority and majority shareholders*.[60] The idea is that minority shareholders are vulnerable to abuses of power by majority shareholders, and that this leads to a principal-agent relationship since the welfare of the former is dependent on the latter. Example governance measures to address this agency problem include equal treatment rights for minority shareholders.

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[56] J.N. Gordon and W.-G. Ringe, *The Oxford handbook of corporate law and governance* (Oxford University Press, 2018), 4. [*add more references on agency problems playing a role in business, govt and academia*]
[57] For a detailed and authoritative exposition see: Kraakman et al., The Anatomy of Corporate law. For a detailed elaboration on these agency problems, see: Goshen and Squire (2017) Principal costs - a new theory for corporate governance. European Model Company Act (2017).
[58] Jensen and Meckling, 1976, Theory of the Firm. Kraakman et al., The Anatomy of Corporate law, p. 29-30.
[59] [*Add references to Jensen and Meckling article. Kay (2019) The corporation. Stout 2012 (add pages, check p. 25, maybe a quote and some more details)*]
[60] Kraakman et al., The Anatomy of Corporate law, p. 79-89.

The third dimension is often interpreted as a series of *agency problems between non-shareholders and the corporation*.[61]A principal-agent relationship arises because the welfare of a non-shareholder party has become negatively dependent on their contract with the corporate nexus. Governance measures in this area include diversity policies, employee co-determination, and consumer protection.

Our economic analysis of good governance does not use the common terminology because it leads to an *unnecessary degree of confusion* about corporate ownership. The problem is that framing minority shareholders and non-shareholders as principals gives them a separate, limited claim to being owners. This reintroduces some of the pervasive conflicts of interests which had been resolved by shareholder ownership. One result of this *ownership confusion* is a misconception that the three dimensions of corporate efficiency can only be resolved by making trade-offs between the different 'owners'. This dilemma is visible in the following quote from Kraakman et al.:

> "The corporate governance system principally supports the interests of shareholders as a class. Nevertheless, corporate law can— and to some degree must— also address the agency conflicts jeopardizing the interests of minority shareholder and nonshareholder contractual constituencies. And herein lies the rub. To mitigate either the minority shareholder or the non-shareholder agency problems, a governance regime must necessarily constrain the power of the shareholder majority and thereby aggravate *the managerial agency problem*. Conversely, governance arrangements that reduce managerial agency costs by empowering the shareholder majority are likely to exacerbate the agency problems faced by minority shareholders and non-shareholders at the hands of controlling shareholders." [emphasis added][62]

Importantly, our analysis shows that *there is no economic need for these trade-offs*. Regarding the first agency problem, between minority and majority shareholders, we saw that addressing market failures in their relationship is necessary to enable the exercise of shareholder ownership as a coalesced whole. It follows that the efficient alignment of their interests is a general precondition for corporate efficiency, and not something which aggravates the managerial agency problem (the first dimension of efficiency). To paraphrase, the managerial agency problem cannot be efficiently resolved unless majority-minority interests are also efficiently aligned. This suggests that the first and second dimensions of corporate efficiency are complementary rather than conflictual, and that there is no 'rub' between these agency problems, at least not for reasons of economic theory.

Next, our description of the third dimension of efficiency shows that conflicts between non-shareholders as principals and the corporate nexus as an agent can be viewed more simply as market failures between contracting parties. Since these efficiencies can be resolved without using principal-agent terminology, it follows that there is no economic need for ownership conflicts or trade-offs between principals. As an aside, what may have happened with this second example of ownership confusion is that the *practical dilemma of corporate leaders* about whether to prioritise the first, second, or third dimension of corporate efficiency has been misconstrued as an economic trade-off between principals. This dilemma is, at least in economic terms, a misconception because the main question should be which of the three dimensions suffers from the greatest degree of market failure and loss of value; that dimension should receive priority.[63]

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[61] Kraakman et al., *Anatomy of Corporate Law*, p. 79.
[62] Kraakman et al., *Anatomy of Corporate Law*, p. 79.
[63] This seems to be recognised by Mayer in his article on 'The Future of the Corporation and the Economics of Purpose'. He writes that "profits are only legitimate if they are not earned at the expense of other parties and corporate purposes are only valid if they are profitable in this sense… [In general,] purposes can support both instrumental stakeholder concepts that correspond with shareholder primacy and stakeholder plurality where parties other than shareholders are primary beneficiaries. In neither case, does any party benefit at the expense of another, and therefore, the complex trade-offs that concerned Bebchuk and Tallarita about stakeholder plurality do not arise" (Mayer, 'The Future of the Corporation and the Economics of Purpose', p. 889).

In general, we can identify that agency problem approaches are unable to address conflicts of interest in the corporation without labelling them as trade-offs because there is, as we saw, nothing inherent to principal-agent theory which indicates how pervasive conflicts in the corporate nexus should be resolved. However, once we recognise that shareholder ownership is the only viable way to make corporations cohere with modern economic reasoning, then there is no economic need for confusion regarding ownership or the trade-offs identified by Kraakman et al.

Thus far, we can note from our analysis that the three dimensions of corporate efficiency are a shared, modern economic framework which is commonly used by good governance theorists and practitioners to make corporations more efficient, fair, and sustainable. The existence of this framework does not, however, mean that there is no disagreement on the right or best way to optimise these dimensions. This is evident, for example, from the various *modern economic perspectives on good governance* which have emerged since the rise of modern economics.

8.3.2 Modern economic theories on good governance

The first prominent, modern economic perspective on good governance which we consider is focused on *shareholder profit maximisation*, and was outlined by Friedman in 1970:

> "In a free-enterprise, private-property system, a corporate executive is an employee of the owners of the business. He has direct responsibility to his employers. That responsibility is to conduct the business in accordance with their desires, which generally will be to make as much money as possible while conforming to their basic rules of the society, both those embodied in law and those embodied in ethical custom…
>
> … in his capacity as a corporate executive, the manager is the agent of the individuals who own the corporation or establish the eleemosynary institution, and his primary responsibility is to them….
>
> The whole justification for permitting the corporate executive to be selected by the stockholders is that the executive is an agent serving the interests of his principal. This justification disappears when the corporate executive imposes taxes and spends the proceeds for "social" purposes. He becomes in effect a public employee, a civil servant, even though he remains in name an employee of a private enterprise. On grounds of political principle, it is intolerable that such civil servants–insofar as their actions in the name of social responsibility are real and not just window-dressing–should be selected as they are now. If they are to be civil servants, then they must be elected through a political process. If they are to impose taxes and make expenditures to foster "social" objectives, then political machinery must be set up to make the assessment of taxes and to determine through a political process the objectives to be served.
>
> This is the basic reason why the doctrine of "social responsibility" involves the acceptance of the socialist view that political mechanisms, not market mechanisms, are the appropriate way to determine the allocation of scarce resources to alternative uses."[64]

Regarding the first dimension of corporate efficiency (*efficient control*), Friedman argues that profit needs to be maximised on behalf of shareholders. Regarding the third dimension (*efficient contracting*), his view is that democratic, government action is the only legitimate way to address the externalities of corporations. As he explains, any departure from shareholder profit maximisation is an undemocratic and political use of scarce resources by corporate agents. This argument, which suggests that profit maximisation is objectively desirable and that deviations from this aim are political and inefficient, is a good example of socio-economic bifurcation in economics. The second dimension (*efficient ownership*) was not addressed by Friedman, perhaps because he was writing at an early stage of development in modern economic theories of the firm. At the time, profit maximisation on behalf of shareholders was

[64] Friedman, 1970, New York Times.

not the dominant approach to good governance, and he seems to have been more concerned with shareholder profits than with inefficiencies between minority and majority shareholders.

By the 1990s, however, Friedman's arguments for shareholder profit maximisation were both dominant[65] and the subject of mounting criticism. Most controversial was their lack of concern for non-shareholders, especially in light of numerous cases where profitable companies provided generous shareholder returns while being involved in worker exploitation, consumer deception, environmental harm, and other issues.[66] Over time, such controversies helped encourage the development of alternative modern economic perspectives on good governance.

The most prominent economic alternative to shareholder profit maximisation is commonly known as *enlightened shareholder value* (ESV).[67] It was developed in 2001 by Jensen, who also co-authored the seminal papers for principal-agent theories and modern economic approaches to the separation between ownership and control, and originally named 'Enlightened value maximization'.[68] The shareholder orientation of ESV is not explicit in his original approach but may be inferred from his other work which we already discussed.[69] In general, and over time, we can note that Jensen's approach was adopted into UK company law in 2006, endorsed by many researchers in the 2017 *European Model Companies Act*,[70] and included in the 2023 G20/OECD *Principles of Corporate Governance*.[71]As he explains it:

> "Enlightened value maximization uses much of the structure of stakeholder theory but accepts maximization of the long-run value of the firm as the criterion for making the requisite tradeoffs among its stakeholders. Enlightened stakeholder theory, while focusing attention on meeting the demands of all important corporate constituencies, specifies long-term value maximization as the firm's objective."[72]
>
> "… it is a basic principle of enlightened value maximization that *we cannot maximize the long-term market value of an organization if we ignore or mistreat any important constituency*. We cannot create value without good relations with customers, employees, financial backers, suppliers, regulators, and communities. But having said that, we can now use the value criterion for choosing among those competing interests. I say "competing" interests because no constituency can be given full satisfaction if the firm is to flourish and survive. Moreover, we can be sure—again, apart from the possibility of externalities and monopoly power—that using this value criterion will result in making society as well off as it can be.

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[65] In fact, they are still popular today. As Kaplan writes, "Professor Friedman was and is right. A world in which businesses maximise shareholder value has been immensely productive and successful over the past 50 years. Accordingly, business should continue to maximise shareholder value as long as it stays within the rules of the game. Any other goal incentivises disorder, disinvestment, government interference and, ultimately, decline" (https://impact.economist.com/sustainability/circular-economies/milton-friedmans-wisdom-endures-companies-should-be-run-for-shareholders).

[66] Cite PhD. Glasbeek.

[67] See, for example: Ferrarini, 'Redefining Corporate Purpose: Sustainability as a Game Changer' Chapter 4 Sustainable finance in Europe Corporate Governance, Financial Stability and Financial markets.

[68] Jensen (2001) Value Maximization, Stakeholder Theory, and the Corporate Objective Function. As an aside, we can note that shareholder ownership is implicit in the shareholder-oriented governance which is generally promoted by Jensen's work.

[69] Sections 4.2.1 and 8.2.1.

[70] European Model Company Act (2017).

[71] Section V on the Responsibility of the Board explains that "The board is not only accountable to the company and its shareholders but also has a duty to act in their best interests. In addition, boards are expected to take account of, and deal fairly with, stakeholder interests including those of the workforce, creditors, customers, suppliers and affected communities" (G20-OECD (2023) Principles of Corporate Governance, p. 34).

[72] Jensen (2001) Value Maximization, Stakeholder Theory, and the Corporate Objective Function, p. 9.

> As stated earlier, resolving externality and monopoly problems is the legitimate domain of the government in its rule-setting function. Those who care about resolving monopoly and externality issues will not succeed if they look to corporations to resolve these issues voluntarily. Companies that try to do so either will be eliminated by competitors who choose not to be so civic minded, or will survive only by consuming their economic rents in this manner." [emphasis in original][73]

It also helps to look at the UK's legislative model which outlines that directors, while working for the financial benefit of shareholders as owners, should 'have regard to':

> "(a) the likely consequences of any decision in the long term, (b) the interests of the company's employees, (c) the need to foster the company's business relationships with suppliers, customers and others, (d) the impact of the company's operations on the community and the environment, (e) the desirability of the company maintaining a reputation for high standards of business conduct, and (f) the need to act fairly as between members [n.b. shareholders] of the company."[74]

The consensus interpretation of the phrase 'have regard to' is that corporate leaders are required to prioritise the interests of shareholders and consider the interests of non-shareholders to the extent that this does not harm, and may contribute towards, the maximisation of shareholder value.[75]

The main difference between ESV and shareholder profit maximisation is that *the latter explicitly includes the second and third dimensions of corporate efficiency*.[76] This is evident from Jensen's note that we cannot ignore the role of non-shareholders in creating value, and the UK's requirement to have regard to fair treatment between shareholders, the interests of non-shareholders, and the non-financial impact of corporate activities. ESV does not, however, generally deviate from the Friedmanite view that corporate leaders should maximise profits on behalf of shareholders.[77]

An important consequence of ESV's continued adherence to shareholder profit maximisation is that it allows corporate leaders to engage in socially responsible activities (and address profitable aspects of the third dimension of efficiency) without falling foul of Friedman's accusation that they are engaging in politics rather than business.[78] From an ESV perspective, the profit motive provides a rational, economic 'safe space' for corporate leaders to engage in sustainability-related activities such as CSR and ESG-investing. The justification, as Jensen wrote, is that firms "cannot maximize the long-term market value of an organization if [they] ignore or mistreat any important constituency".[79] The efforts of firms to address the third dimensions of corporate efficiency are often guided by good intentions. They do, however, suffer from structural issues due to the limits of economics. We will discuss these limits before examining some other recent but influential theories of good governance.

In general, the problem is that economic justifications for sustainable firm activities, to the extent that they focus on firm and shareholder value, can only exist when social, environmental, and other problems are framed as market opportunities or as instances of market failure which can be profitably addressed. To identify these profitable opportunities, it is necessary to assume that sustainability issues are really just economic in nature and can be solved through exchange and improvements in economic efficiency. To paraphrase, *it is only possible to identify profitable business cases for sustainable firm activities once it has already been assumed that such problems are essentially economic*.

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[73] Jensen (2001) Value Maximization, Stakeholder Theory, and the Corporate Objective Function, p. 16.
[74] *Companies Act* (CA) 2006 s. 172.
[75] Davies and Rickford, 'An Introduction to the New UK Companies Act', pp. 65-66. Mayer, 'The Future of the Corporation and the Economics of Purpose', 2020. Bebchuk and Tallarita, 2020, p. 19.
[76] Section 172(f) of the UK Companies Act 2006 requires corporate leaders to have regard to "the need to act fairly between members of the company."
[77] Some authors argue that shareholder value is broader than profits alone (**reference**).
[78] Bebchuk and Tallarita, 2020, p. 16.
[79] Jensen (2001) Value Maximization, Stakeholder Theory, and the Corporate Objective Function, p. 16.

The limit of this approach is that the effectiveness of value-driven approaches to sustainability is limited by the extent to which reality is 'essentially economic'. We have seen, however, that the economy and non-economy are fictional concepts, created by socio-economic bifurcation. We can recall, moreover, that these fictions rest on an assumption that there are no internal relations between economic and non-economic phenomena. The first point entails that there is no extent to which reality, or sustainability issues, can be essentially economic. The second entails, by extension, that profit-driven approaches to sustainability issues can only ever provide suboptimal results (this reflects our earlier finding that economics is prejudiced against non-economic phenomena).[80]

A corollary to the above is that *a profitable business case is not sufficient to prove that a sustainable firm activity should be pursued*. More broadly, profitable business cases for sustainability do not make it self-evident that our societies should engage in efficient, value-driven approaches to sustainability such as ESV or ESG. The reasoning behind this point is two-fold. First, there is nothing inherent to the non-economic realm which can resist being made coherent with economic reasoning. It follows that there is no aspect of sustainability issues which, when seen through an economic lens, is 'beyond' economics and able to prevent the identification of business cases. Put differently, once we pick up an economic hammer then it is no surprise that we will see nails. The fact that we see nails does not prove that we are right to use the hammer. Second, we can recall our earlier insight that an assumption should never be allowed to justify itself. If an identification of profitability requires an assumption that a situation is essentially economic, then it follows that profitability is unable to prove that this assumption is correct. A business case is not, in other words, sufficient justification to use an economic approach for a given problem.

Given these limits, it is unsurprising that shareholder profit maximisation and ESV have been unable to provide an adequate response to escalating global crises or the various harms of corporate activities. More recently, this has incentivised economists to develop additional alternatives to good governance, such as *Shareholder Welfare Maximization* (SWM) and *Pieconomics*. In general, we can note that these alternatives give more space for corporate leaders to address the third dimension of corporate efficiency.

SWM was comprehensively outlined by economists Hart and Zingales in their 2022 article 'The New Corporate Governance'.[81] In this work, the authors argue that it has not sufficiently been recognised that *shareholder preferences are often broader than profit maximisation*, and that at least some of them are willing to sacrifice profits for better social and environmental outcomes. They provide a formal SWM model and contend that it is a better empirical match with shareholder preferences as compared to a model based solely on profit maximisation. The main difference of the SWM model relative to ESV is that its definition of shareholder interests is not primarily focused on shareholder profits but also includes non-financial aspects of corporate performance. This gives corporate leaders scope to engage in sustainable activities which balance the creation of financial and non-financial value, but only to the extent that this is consistent with shareholder preferences. In this regard it is clear that SWM is broader than ESV. It is not, however, a departure from shareholder-oriented governance or the overall idea that corporations should maximise economic efficiency.

This is evident from the authors' argument that total shareholder welfare or utility is reduced when corporate leaders act in a way which is inconsistent with shareholder preferences and leads to a greater loss of shareholder utility than it generates in terms of shareholder profits.[82] On this view, the maximisation of shareholder utility requires not only the optimisation of financial, but also non-financial corporate performance. Put differently, the old concept of shareholder 'profits' is expanded to include non-financial indicators, and corporate activities are still required to have a 'profit' orientation.

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[80] Section 5.2.2.
[81] Hart and Zingales, 'Shareholder Welfare Maximization'.
[82] [*check in article if this idea is there. It should be, was missing a footnote*]

While this expands the economic safe space for socially responsible corporate activities, it does not transform the underlying logic that these activities should be 'profitable' for shareholders. Importantly, this feature of SWM requires an expansion of economic reasoning into the non-economic realm, and in fact does so to a greater degree than ESV. The result is that *SWM is more inclined to promote economic imperialism and suboptimal approaches to sustainability*. Unfortunately, this same shortcoming is also apparent in the last good governance theory that we will consider.

The *Pieconomics* perspective was introduced by Edmans in his 2020 book, *Grow the Pie.*[83] His view is that corporations should create financial and non-financial value for all stakeholders while pursuing a clearly articulated corporate purpose. This purpose should be dedicated to the interests of a clearly identifiable group of stakeholders[84] and should make the most of the company's competitive advantage. At first glance, these arguments appear to suggest that Edmans deviates from the prevailing view that corporate leaders should maximise the profit, value, or utility of shareholders. Consider, however, that Edmans is still committed to shareholder ownership,[85] and expresses the view that shareholder value is a long-term concept and that "in the long run, almost all value becomes financial value".[86] Read in concert, the overall thrust of Pieconomics is that the long-term interest of shareholders is best served when it is *indirectly* pursued by corporations with a direct focus on growing the pie and a properly formulated corporate purpose. As Edmans explains it: "To reach the land of profit, follow the road of purpose"[87] and "Shareholder value and stakeholder value are aligned in the long-term".[88] This *indirect approach to shareholder profit*, realised through a focus on financial and non-financial value for all stakeholders, is one main difference between Pieconomics and ESV. It remains, however, committed to shareholder-oriented governance and the pursuit of economic efficiency. Moreover, its focus on the optimisation of financial and non-financial corporate performance for the 'profit' of one stakeholder group still requires an expansion of economic reasoning onto the non-economic realm. In this regard it also promotes economic imperialism and suboptimal approaches to sustainability.

In summary, we have seen that there exist various modern economic perspectives on good governance. Each provides a different way to think about efficiency and the interests of shareholders and therefore has different implications for addressing the three dimensions of corporate efficiency. We also saw that these perspectives are all grounded in shareholder ownership and shareholder-oriented governance. As noted, this is the only way that modern economics can enable the use of the nexus of contracts model, make the corporation cohere with methodological individualism, and explain it as an efficient result of

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[83] Edmans, *Grow the Pie*.

[84] This dedication to a single group of stakeholder is necessary to fulfil the individual maximisation condition of economic efficiency.

[85] "People act differently when they're owners. Tenants should take care of their landlords' property, but even an honest and conscientious tenant would look after a home even better if she owned it herself. Intrinsic motivation should drive a leader to ensure good performance. But great performance often involves very tough decisions, such as admitting a past mistake and reversing a strategy that the CEO herself came up with. Even honest leaders may not always take these difficult actions. Supplementing intrinsic motivation with a substantial amount of wealth at stake may shift performance from good to great… When the CEO is a shareholder herself, she thinks twice about spending shareholders' money." [emphasis added] Edmans, *Grow the Pie*, p. 153.

[86] Edmans, *Grow the Pie*, p. 46.

[87] Edmans, *Grow the Pie*, p. 304. https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12548-Sustainable-corporate-governance/F556360_en

[88] The full quote reads: "Shareholder value and stakeholder value are aligned in the long-term. The study implicitly assumes a "fixed pie" mentality throughout, where the only way to increase stakeholder value is to reduce shareholder value; conversely, reducing shareholder value will automatically increase stakeholder value. However, the pie is not fixed. Evidence shows that a greater focus on shareholder value (not short-term profit) leads to an increase in stakeholder value. In contrast, reducing the CEO's accountability for shareholder value can lead to her pursuing her own interests, shrinking the pie for both shareholders and stakeholders" (https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12548-Sustainable-corporate-governance/F556360_en).

free bargaining under imperfect conditions. Unfortunately, this approach has dramatically narrowed our imagination about the scope of state action and the role of shareholders in corporate governance. It has, moreover, enabled economic imperialism and endorsed the implementation of suboptimal approaches to corporate sustainability.

At this point we can also emphasise that there are inherent limits to the three dimensions of corporate efficiency. While economics may suggest that we can make these dimensions as-efficient-as-possible, thus tending towards a perfect corporation which is efficient, fair, and sustainable, there is ultimately no truth to this claim. It fails to consider the moral deficiencies of organisational structure, or the fact that firm agents are morally impaired when it comes to their non-economic decision making. In this regard it is a false utopia to imagine, as economics does, that corporate agents can take all the relevant information regarding the individual preferences of shareholders, consumers, creditors, etc., and use it to calculate a balanced outcome which also coincides with the collective interest. Furthermore, even if we could collect the 'perfect' amount of economic information, its creation and analysis would rely on the radical separation of individuals. This undermines the recognition and preservation of the internal relations which constitute not only our societies, but also individuals, firms, and their culture and values. The consequence is that modern economic approaches to the corporation will never be able to generate the ideal results which, we are assured, will obtain when we optimise the three dimensions of corporate efficiency.

The next Section considers the relation between stakeholder models and modern economic perspectives on good governance. This standalone analysis has been included because stakeholder models also play a central role in good governance discussions, and because they are regularly juxtaposed,[89] incorrectly as we will see, with the shareholder-oriented approaches of modern economics.

8.4 Modern economics and stakeholder models

Stakeholder models were not first developed by economists but by management scholars.[90] The latter did not begin with an assessment of which individuals or groups have an economic contract with the corporation, but by asking *who* has a *stake* in relation to corporate activities. Importantly, the identity of these stakeholders and the nature of their stake is open to interpretation.[91] This creative space has been used by theorists from a range of disciplines, leading to a proliferation of stakeholder models with different approaches to their stake and identity.

Some stakeholder models include abstract interests such as the environment, community, or the public interest as a stakeholder, while others focus only on natural persons.[92] Some models define a 'stake' as being affected by firm activities,[93] others view it as a dependence on the failure or success of the firm,[94] and still others view it as a purely economic relationship. In general, the absence of a universal scientific standard entails that there is no single, objective, or right way to create a definitive stakeholder model. This ambiguity is not, however, necessarily a problem. It may even be considered a feature insofar as it allows stakeholder models to function as an *inchoate concept*. I draw on my previous work to explain:

> "The persistent use of… ambiguous concepts [such as democracy, sustainability, love] suggests… that they are worthwhile for something other than their lack of definition. Sen's *Idea of Justice* offers

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[89] The OECD, for example, adopts this dichotomy in their report on *Climate Change and Corporate Governance*. https://www.oecd-ilibrary.org/governance/climate-change-and-corporate-governance_272d85c3-en

[90] [*Add reference to Freeman et al. 2010. Others? Maybe something on the history of stakeholder models*]

[91] Freeman et al. 2010.

[92] [*add general literature on stakeholder models*]

[93] The UN Office of the High Commissioner for Human Rights, for example, defines stakeholders as "any individual who may affect or be affected by an organization's activities." RtRInterpretativeGuide.pdf (ohchr.org)

[94] Freeman et al. 2010, p. xv.

> a way to understand the value of these concepts from the perspective of legitimate, competing interests.
>
> Picture the following example from Sen's work. Three children – Anna, Bob and Carla – are arguing about who should get a flute. Anna is the only child who knows how to play the flute, and claims ownership of the flute on this basis. Bob is poor and has no toys, and argues out of a sense of fairness that he should receive the flute. Carla built the flute, and claims that her labour entitles her to own it. Each of the three children has a compelling claim on the flute, a claim that can be impartially defended and which conflicts with the claims of the other children.
>
> Sen argues that the existence of legitimate, competing principles makes it impossible to develop a single, perfect, 'transcendental' approach to justice which is right for all people at all times. "There may not indeed exist any identifiable perfectly just social arrangement on which impartial agreement would emerge… [this means that] the identification of fully just social arrangements is neither necessary nor sufficient". "[In this regard], it is not defeatist for an approach to allow incompleteness of judgments, and also to accept the absence of once-and-for-all finality". This suggests that it may be wrong to criticise the public interest, democracy and other inchoate concepts for their subjectivity and resistance to definition.
>
> Instead, these inchoate concepts may be valuable because precisely because they intrinsically reflect the fact that there is no objective and permanently perfect way to organise human affairs. They recognise… that there is no such thing as a universally 'right' way to understand and structure reality and society. This characteristic enables inchoate concepts to operate as a locus for the joint expression of legitimate, competing principles, even if the balance among these principles remains contested".[95]

For the stakeholder model, its usefulness as an inchoate concept derives from the way that it *enables different ways of thinking about corporate and organisational relationships*. This includes, and does not rule out, modern economic ways of thinking about the firm. In this regard stakeholders may be, but do not have to be, individuals in an economic sense, and their stake may be, but does not have to be, an economic contract under imperfectly competitive conditions.

It follows from the above that modern economic perspectives on good governance, with shareholder-oriented governance structures, are part of an *economic subset of stakeholder models*. It also follows that the juxtaposition which is often created between shareholder and stakeholder models is a false dichotomy.[96] This view is supported by Freeman, who pioneered the development of stakeholder theory:

> "The stakeholder theory literature seems to represent an abrupt departure from the usual understanding of business as a vehicle to maximize returns to the owners of capital. This more mainstream view – call it "shareholder capitalism," or "the standard account" – has recently come under much criticism, and the "stakeholder view" is often put forward as an alternative. Our assessment of this debate is that, despite a great deal of theorizing, there is little direct conflict between the shareholder view and the stakeholder view. In fact, we argue that the stakeholder view is a more useful way of understanding modern capitalism.
>
> … Business has been variously understood as relying primarily on "markets," "business strategy or industry structure," "agency relationships," and "transaction costs." We use Milton Friedman, Michael Porter, Michael Jensen, and Oliver Williamson as icons of these ways of understanding business. We suggest [in our work] that each of these metaphors is compatible with a stakeholder interpretation, and suggest that the usual way of juxtaposing shareholders and stakeholders is, at best, disingenuous."[97]

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[95] Van Aartsen, p. 317-319.
[96] For examples of this view see: Jensen (2001) Value Maximization, Stakeholder Theory, and the Corporate Objective Function [add others].
[97] Freeman et al., p. xv-xvi.

This additional analysis does not deny that there are important differences between modern economic and other approaches to stakeholder models. These differences can have wide-ranging impacts, for example on the role of shareholders and non-shareholders, or the protection of social, environmental, and other concerns. The aim of this section is therefore only to highlight that debates in good governance should not be framed as a fundamental conflict between stakeholder and shareholder models. This is like arguing that there exists a conflict between 'colour' and 'green'. It unnecessarily polarises debate, misrepresents what is being discussed, is biased in favour of the more specific contender (shareholder models), and is unlikely to lead to fruitful avenues for scientific insight.

8.5 Reflection on the limits of economic individualism for the analysis of firms

This Chapter examined the limits of pre-social individualism as evident in modern economic ideas on corporations and their ownership and good governance. As noted, this kind of individualism is needed to realise the free market and economic efficiency objectives which are promoted by economics as a neutral and objective good for all societies.

One limit of economic individualism is that it can only model the corporation as economically efficient by conceptualising it as a kind of maximising individual. As noted, this approach requires economists to assume away the possibility of state activity in constituting the corporation. This assumption provided the starting point for modern economic analysis of the firm and was not, it should be noted, a conclusion which emerged from it. It explains why modern economic theories of the firm have a private disposition, provides a foundation for circular reasoning, and reaffirms that economics cannot be used to classify the position of firms in the public-private divide. The fact that corporations needed to be framed as pre-social, which is counterintuitive given their legal construction, suggests that the methodological needs of economics may again have taken priority over the nature of the phenomena under investigation.

The desire of economists to explain the corporation as an efficient, maximising individual was, as we have seen, pregnant with political implications. It led them to invariably conclude that shareholders own the corporation which, together with the private disposition, has had momentous implications for the balance of power within corporations, and for the balance of power between corporations, society, the state, and the environment. These implications are clear, for example, from the contrasting findings of Berle and Means, as compared to modern economics, regarding the role of shareholders and the state in relation to the corporation. The former paved the way for the New Deal and state activity on behalf of the collective interest, the latter narrowed this activity down to a focus on economic efficiency.

We also found that the modern economic preference for shareholders, and its attendant subordination of other interests, is embedded in every modern economic perspective on good corporate governance. It constitutes the underlying structure for three dimensions of corporate efficiency (efficient control, efficient ownership, efficient contracting) which all of these perspectives interpret and try to optimise in different ways. We noted, moreover, that these three dimensions underpin the resolution of agency problems which are viewed in business, government, and academia as the leading issue in contemporary regulation and governance.

Importantly for sustainability, we identified that these good governance perspectives have, over time, expanded their definitions of efficiency to create an expanding economic 'safe space' which allows corporate leaders to rationally tackle the sustainability issues which are associated with their activities. While well-intentioned, this safe space is created by positing that sustainability issues are essentially economic and that they can be justifiably addressed whenever this is profitable or creates additional financial and non-financial value for the firm. This imposes, as noted, a hard limit on the scope and potential effectiveness of economically justified approaches to sustainability. Overall, we can discern that modern economic perspectives on good governance are inclined to promote economic imperialism and suboptimal solutions for sustainability issues, while at the same time protecting the private status of firms and the privileged position of shareholders. It follows that they are neither neutral nor adequate.

As a closing remark, it has to be emphasised that there is nothing inherently wrong with methodological individualism. All scientific approaches are imperfect, and it is clear that this is a useful and reasonable approach which can and should be used by researchers in their scientific practice. Notwithstanding the above, there is something fundamentally wrong with the way that economists have used individualism to understand the existence and activities of firms. They have been guided by the logic of their methods rather than by the nature of the phenomenon under investigation, and have unreasonably adopted, as a starting point, that their methods can and must be able to provide a complete, objective account of firm dynamics. This has succeeded in shoehorning the corporation into an economic Cinderella slipper but has come at the unreasonable expense of an impaired understanding of their activities. It unnecessarily limits, moreover, the scope of actions which states, people, and firms could take to improve corporate sustainability.

9. The limits of economic theories on markets for the analysis of firms

In Chapter 6, we outlined that economic science is underpinned by a market fundamentalist model for the state, economy, and society. We also noted that it is historically and anthropologically incorrect for this model to assume that markets are pre-social. We subsequently identified that exchange practices are socially, culturally, politically, environmentally, and historically embedded, and that they have been diverse throughout human history. In this regard there is no individual atom, or economically rational representative agent, which exists in isolation of internal relations, and which can be used to objectively discern the natural laws or large-scale dynamics of an economic 'system'.

Instead, it is the case that markets are an approach which societies can use to mobilise resources within the global and local context of their history, culture, politics, ecology, and natural environment. They are one *creative path within the realm of human possibility*, and not an inevitable result of natural economic laws. Importantly, the absence of a universal standard entails that there are any number of legitimate ways to organise our exchange practices in accordance with the circumstances and diversity of our species. This does not mean that hard factors such as resource limits, population numbers, or available technologies are irrelevant, only that they do not, by themselves or in combination with economic rationality, objectively determine how we must organise our exchange practices.

Our creative capacity for market design is not, unfortunately, reflected in the scientific foundation of contemporary economics. As we have seen, it is only able to consider the extent to which markets and individual exchange are consistent with a false utopian, free market benchmark. This has left economics unable to conceive of a positive role for society, politics, culture, or other internal relations which goes beyond the promotion of economic activity, the emulation of natural economic laws, and the correction of market failures. This impoverished view of internal relations is evident in the false dichotomy which the market fundamentalist model establishes between a generative economy and an appropriative state.

If the state is inherently appropriative, then it cannot have an economically justified, generative role regarding markets or firms. The best it can do is to respect and empower private individuals and free markets, and hope that the invisible hand will lead to a socially optimal level of wealth and resources. This limited vision explains, as we have seen, why modern economic theories of the firm have a private disposition and why they are only able to see firms as essentially economic entities.

To expose the limits of this vision, and provide an alternative, this Chapter will explore why firms are not, and cannot be, pre-social. With this aim in mind it will explain how firms are created by a *generative state*. To pave the way for this explanation, it first reflects on the generative role of the state in relation to law, property, money, and markets. This is not an exhaustive account of this role but will suffice to provide a workable alternative to the economic view that firms and markets are pre-social. Ultimately, it is hoped that this exposition of the generative state will open the door for new ways of thinking about firms and markets, and their sustainable relationship to state and society.

9.1 Law and the generative state

The market fundamentalist idea of markets as pre-social is grounded, as discussed, in the liberal premise that individuals lived free in a state of nature before they signed a social contract and created social and political structures. *In economics*, this premise gave rise to socio-economic bifurcation and developed into a market fundamentalist model of society and the economy. *In law*, it was translated into the public-private divide and used to regulate the relationship between individual autonomy and state action. This shared, liberal heritage provides a useful starting point to discuss the economically generative role of the state through laws and the legal system.

Our starting point is to note that, while there is a liberal connection between these economic and legal interpretations, they are *not necessarily co-extensive*. In modern economics, for example, there is little

doubt that the economic activities of individuals and firms are economic and therefore private in nature.[1] Lawyers, by contrast, have often argued that economic activities are not wholly private, that they are at least partially public in nature, and that they can be a matter of state responsibility which transcends the rights of private individuals.[2]

In general, it helps to see that *the public-private divide can be legally interpreted so that it is identical to socio-economic bifurcation*, whereas socio-economic bifurcation cannot be economically interpreted so that it is identical with a broad, non-economic conception of the public-private divide. This difference arises because the scope of the public-private divide can be narrowed to focus on the economic activities of free individuals, whereas the scope of socio-economic bifurcation cannot be expanded to include non-economic concerns without also granting primacy to economic dynamics. This inability is an effect of the prejudice of economics, i.e. in the fact that economics can only indirectly address non-economic concerns through the pursuit of economic efficiency (for example by reducing externalities).

If the public-private divide can be interpreted so that it is equivalent to socio-economic bifurcation, and the reverse is not true, then this suggests that the economic interpretation of liberalism is a subset of the legal interpretation. Just like the shareholder model is one kind of stakeholder model, *socio-economic bifurcation is one way to think about the public-private divide*. This is consistent with our earlier finding that economics has been constructed on a political foundation and is not an objective science. In terms of the public-private divide, it reflects a political choice to focus on economic values, e.g. liberalised trade and maximum trade intensity, rather than other values.

Next, we can consider how the public-private divide is used by lawyers to address harms which are caused by economic activities. In general, there are two approaches. The first, *standard approach is to argue that harmful economic activities are public in nature*, that they are not protected by private rights, and that the state has a public interest responsibility to intervene. This approach is used, for example, in the case of human rights violations and environmental harms.[3] The second, *hybrid approach* is sometimes used in the context of harms caused by the economic activities of firms. Here, the argument is that *firms are public-private hybrids* because they have features which are both public and private, or because they have features which are not quite public or private.[4] There is no consensus on the right interpretation of this approach, but it tends towards a conclusion that firms should be subject to a special, mediated form of state responsibility.[5]

The standard and hybrid approaches can be used to justify any kind of state action in relation to the economy which is necessary to promote the public interest. This is usually understood in legal, political, and philosophical discussions to entail the protection, and perhaps the realisation, of individual freedoms.[6] These approaches are not, in other words, limited to a focus on economic efficiency or market failures. This does not, however, entail that they are sufficient to overcome or transcend the limits of economics.

The problem is that standard and hybrid approaches to the public-private divide build, as economics does, on the traditional, liberal fiction that individuals are conceptually prior to state and society.[7] In methodological terms, they assume that we can exist, as individuals, in a state of nature without state and society, and that we are not constituted as individuals by internal relations to these collective

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[1] Section 7.1.
[2] [*add reference to legal discussions on the public-private nature of firms, e.g. Ciepley*]
[3] [*add reference to use of public law to tackle human rights violations and environmental harm*]
[4] [*add reference to hybrid approaches*] Need to double check, but Berle 1954 is probably an example of this.
[5] [*add reference to hybrid approaches and check content*]
[6] This corresponds roughly to the positive and negative concepts of freedom as outlined, for example, by Berlin (1962).
[7] Section 6.2.1.

phenomena. This limits the scope of state action so that it cannot integrate the full scope of internal relations between people, collective phenomena, and their environment.

This limitation is evident in legal, political, and philosophical discussions on the legitimate balance between state power and individual freedom. Such discussions have a long history, tracing back at least as far as ancient Greek and Roman philosophy.[8] It is, however, enough for us to focus on the influential modern distinction between *negative and positive liberty*.[9] The negative conception is often associated with Hobbes and views freedom as the absence of external constraint.[10] The positive conception was first linked to Spinoza and relates to the fulfilment or realisation of an individual's nature or essence.[11] The latter form of liberty provides more scope for state action since it allows the state not only to protect, but also to contribute towards the realisation of individual freedom. This is significant insofar as it has enabled the development of modern welfare states with far-reaching powers over individual activities. This may be contrasted with the minimal, night-watchman view of the state which is derived from negative liberty.[12]

Relevant for us is that *both negative and positive liberty assume that the freedom of individuals is defined, at least partially, by the absence of internal relations.* In the case of negative liberty, this takes the form of an individual who is not subject to external influence or constraint. In the case of positive liberty, it takes the form of an individual essence which exists, at least in part, beyond the influence of state and society. Either way, it is not recognised, or not fully recognised, that people are constituted by their internal relations to collective phenomena and their environment. Instead, it is assumed *that individuals and individual freedoms are at least partially pre-social and, by extension, also pre-legal*;[13] this is a legal counterpart to the economic idea that markets are pre-social.

Importantly, the pre-social view of individuals makes it possible to shield people from abuses of state power. This is, in my opinion, a laudable achievement which should not be set aside lightly or treated as a 'mere' fiction.[14] It must, however, also be recognised that this view is politically biased and does not offer a perfect or objective perspective on human relations. It suffers, moreover, from descriptive and methodological flaws since it has no basis in history and is unable to integrate an as-complete-as-possible picture of our internal relations.

One shortcoming of these flaws is that *internal relations may be interpreted as a potential or actual threat to individual freedom and autonomy* instead of being recognised as something which constitutes and defines a person. As Crawford outlines:

> "Understood literally, *autonomy [i.e. freedom] means giving a law to oneself. The opposite of autonomy thus understood is heteronomy: being ruled by something alien to oneself*. In a culture predicated on this opposition (autonomy good, heteronomy bad) … *everything located beyond your*

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[8] See, for example: De Dijn, *Vrijheid* (2022). Frede, *History of Free Will*.
[9] Berlin (1962).
[10] For a discussion see: Skinner (2002), Houghlin (2010), p. 171-177.
[11] In Skinner's words, "what underlies these theories of positive liberty is the *belief that human nature has an essence*, and that *we are free if and only if we succeed in realising that essence in our lives*… if and only if we actually follow the most fulfilling way of life shall we overcome the constraints and obstacles to our realisation of our full potential, and thereby realise our ideal of ourselves. The living of such a life alone frees us from such constraints and, by making us fully ourselves, makes us fully free. Liberty consists in following that way of life in which, all passion spent, we finally achieve harmony with our nature" [emphasis added] (Skinner, 2002, p. 242-243).
[12] For a modern example, see: Nozick.
[13] As Crawford notes, "At the foundation of our political anthropology is a creature who comes into existence in a moment of free deliberation… that occurs in a present unconditioned by the past. The freedom of the liberal self is the freedom of newness and isolation." (Crawford, p. 119).
[14] For a similar critique and appreciation see: Lukes, *Individualism*, p. 122.

> *head is regarded as a potential source of heteronomy, and therefore a threat to the self*" [emphasis added][15]

In Crawford's terms, our internal relations to the state, society and environment are 'beyond our heads' and are therefore a potential source of heteronomy, i.e. a threat to individual freedom. This leads to *a conception of freedom which is inherently antagonistic towards a comprehensive understanding of internal relations*. It follows that the public-private divide, which is grounded in the protection and realisation of individual freedoms, is unable to interact with and compensate for the full range of internal relations which have been assumed away by economics. This is why standard and hybrid approaches to the public-private divide are unable to sufficiently address the limits of economic science.

Another consequence of the pre-social view of individuals is that *it is impossible to provide an adequate, descriptive outline of the generative role of the state in relation to laws and the legal system without such an outline also being a threat to individual freedom*. We therefore need an alternative approach, which is not grounded in liberal metaphors or the public-private divide, to explain the economically generative role of the state in relation to laws and the legal system.

Our starting point is to substitute the idea of individual freedom with an alternative way to think about the relationship between people and the state. Fortunately, we can build on the work of Crawford to develop such an alternative. In *The World Beyond Your Head*, the author argues that it is more useful to think in terms of human agency than individual freedom. To defend this position, he explains that people exist as an *embodied self* which is not a 'free' atom or disembodied intellect but is situated in the world, lives and acts in that world, and learns about it through experience.[16] In his words:

> "We think through the body. The fundamental contribution of [the embodied cognition] school of psychological research is that it puts the mind back in the world, where it belongs, after several centuries of being locked within our heads. The boundary of our cognitive processes cannot be cleanly drawn at the outer surface of our skulls, or indeed of our bodies more generally. They are, in a sense, distributed in the world we live in."[17]

The idea that we can exist as individuals without internal relations to collective phenomena or our environment is consistent with a view of human cognition that is 'locked within our heads' and draws a hard, fictional boundary between the mind of an individual and its surroundings. We can identify, moreover, that this view of cognition is necessary to enable the liberal fiction that there were individuals first, and that the state and society were created by signing a social contract. It is noteworthy, in this regard, that liberal ideas about the state of nature not only have historical implications, but also rely on a particular conception of how we, as humans, interact and relate to the world around us. In fact, we can only think in terms of being individually 'free' or 'unfree' if we assume that our minds are, at least partially, separate from our body and the world around us.[18]

One way to move past these shortcomings is to think, as Crawford does, in terms of personal agency. He defines *agency as "the experience of seeing a direct effect of your actions in the world, and knowing that these actions are genuinely your own*."[19] In his view: "genuine agency arises not in the context of mere choices freely made (as in shopping) but rather, somewhat paradoxically, in the context of submission to things that have their own intractable ways, whether the thing be a musical instrument, a garden, or the building of a bridge."[20]

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[15] Crawford, The World Beyond your head, p. 24.
[16] Crawford, The World Beyond your head, p. 50.
[17] Crawford, The World Beyond your head, p. 51.
[18] This *mind-body dualism*, and the separation which it entails, are also known as the 'Cartesian wound' which resulted from the famous statement that "I think, therefore I am" (Add reference).
[19] Crawford, The World Beyond your head, p. 24.
[20] Crawford, The World Beyond your head, p. 24.

We can buttress these insights by drawing on the work of Loughlin in the area of public law. In an iconoclastic work, *Foundations of Public Law*, he explains that it is incorrect to view public law, the law of state power and responsibility, as something which is a threat to individual liberty.[21] Instead, he argues that individual liberty (freedom) is constituted by, internally related to, the power of the state as embodied in in public law. In his words:

> "It is a *mistake to treat power and liberty as referring to pre-political conditions*, such that the institutional formation of public law is to be treated either as imposing constraints on pre-existing liberty or as bolstering and strengthening pre-existing power: power and liberty are created through the operation of the practices of public law. Just as *the rules of grammar are not restrictions on speech but are possibility-conferring rules* that enable us to speak with greater precision, so too should the rules and practices of public law be seen *not as restrictions on power or liberty but as rules that are constitutive of the meaning of these terms*. Constitutive rules thus possess the characteristic of being *simultaneously enabling and restricting*." [emphasis added][22]

> "Freedom, like power, cannot be treated as some pre-existing condition: *freedom is a status that is realised only within the state*. Consequently, the sovereign's commands (ie positive law) cannot be conceived as imposing restrictions on some pre-existing freedom; such commands might equally be viewed as conditions for the realisation of freedom. The discourse of political right, operating to enhance the power of the public domain, strives to realise an equal liberty for all through an institutional arrangement that imposes a structure which constrains and disciplines individuals. The discourse of political right is simultaneously enabling and constraining." [emphasis added][23]

Setting aside Loughlin's terminological use of freedom and liberty (due to the limits of their liberal heritage), we can see that his idea of 'public law as grammar' is consistent with Crawford's arguments on agency and tools. It is our collective submission to language as a tool, with its concomitant intractable nature in the form of grammar, which makes it possible to exercise different kinds of human agency. In fact, if language did not include any limits on our communicative 'freedom' to use any kind of sound and symbols in any way we wanted, i.e. if there was no grammar, then there would be chaos as opposed to something which we could collectively recognise or understand as language. In this regard it is evident that language has a 'possibility-conferring' potential and that it helps to enable different kinds of human agency (such as writing and reading). It is, moreover, understandable from this perspective why public law is not a merely a threat to individual freedom but enables different kinds of human agency.

Using the insights of Crawford and Loughlin, we are ready to outline the relationship between people and the generative state in a way which transcends the public-private divide. First, we can emphasise that the state, as the apex authority in society, embodies a peoples' collective interest, albeit imperfectly and under changing conditions. Second, we can note that the state's governance, its formal distribution of power, roles, and responsibilities, can be organised in different ways (monarchy, democracy, different ministries, etc.). Third, we can identify that every society, as a collective entity, has some kind of more-or-less functional governance structure in place to make collective decisions. The scope of these decisions includes the adoption of conventions, which function as intractable tools to shape the kinds of agency which are available in a given society. Law, property, money, markets, and firms are examples of such conventions. Fourth, it is clear that different societies have different conventions, that these conventions may interact, and that their interactions may be unpredictable, desirable, harmful, and so on. It follows that each society, with its own history, culture, environment, etc. will exhibit its own *profile of human agency*. This profile changes over time. It is an emergent result of historical developments, personal idiosyncrasies, social interactions, environmental conditions, cultural activity,

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[21] Loughlin (2010), *Foundations of Public Law*.
[22] Loughlin (2010), *Foundations of Public Law*, p. 178.
[23] Wilkinson et al. (2018), *Questioning the Foundations of Public Law*, p. 25. (it's a quote from Loughlin)

state activity, etc. and is meant to capture how the people of a given society experience the direct effect of their actions in the world.

Summarising the above, *we can think about the relationship between people and the state as one of responsibility in relation to a society's profile of human agency*. Using this approach, we can debate whether the current composition of agency profiles in a society is desirable, how it can be changed, how it was in the past, how it may need to be reformed for the future, and so on. Importantly, this approach also allows us, when thinking about such questions, to include an as-complete-as-possible picture of internal relations between people, collective phenomena, and the environment. An additional benefit is that this approach makes it possible to consider the agency profiles of different societies without *a priori* judging them according to the standards of one culture or another. This is arguably a more constructive and fine-grained approach than the idea of individual freedom which only asks, based on untrue history and false dichotomies, whether state activities are consistent with our 'natural' freedoms, and whether we are 'free' or 'unfree'.

A critic may argue that this approach is misguided and will lead to a totalitarian increase in state power. We should note, however, that it provides a comparatively neutral way of describing different societies, and that it is descriptively superior insofar as it allows us to account for internal relations. We should also note that liberal values can be protected by translating them into concrete kinds of societal agency, and by arguing that they should be maintained or even strengthened as we move into the future. It is not, in this regard, a betrayal of liberal values to think about society in these terms instead of using the public-private divide. In my view, it is even conceivable that thinking in terms of human agency rather than individual freedom will make it easier for us to live according to the values which underpin our liberal sentiments. Examples will be provided as we progress through our discussion of the generative state.

At this point, we are ready to develop a tentative outline of the legally generative role of the state. *Laws are written conventions which the generative state, as the highest authority in society, uses to enable and constrain different kinds of human agency*. The legal system then refers to institutions and actors which are responsible for creating, implementing, monitoring, interpreting, enforcing, and withdrawing these laws.

To elaborate further we can recognise, first, that *the state has an ultimate responsibility for all agencies in society*. This includes not only those which are explicitly enabled or constrained, but also those which emerge, for example, from societal developments or from unexpected interactions between different conventions. The state has this responsibility because it embodies the collective interest. While it may not always live up to our expectations of this role, there is no other actor in society which can bear this ultimate responsibility and act sufficiently on it. This does not, of course, mean that the state cannot delegate parts of its responsibility to other actors in society, or that other actors cannot be involved in the state's decision making. Ultimately, the state is a social construct which can be organised in different ways and embodies a society's currently dominant, creative ideas on human relations; it is not a pre-determined, natural law-governed monolith.

Second, *there is no simple, deterministic relationship between the content of written conventions (laws) and their outcomes in terms of human agency*. People are also intractable, and the state does not have absolute power to determine how society unfolds. It is possible, for example, that ill-conceived laws, ineffective enforcement, new interpretations, interactions between conventions, or social developments such as novel technologies or cultural ideas lead to the desirable or undesirable creation and destruction of new and existing kinds of human agency. It is necessary, in this regard, to adopt an *unbounded, or at least underdetermined,* view of the relationship between law and human agency, and to consider how laws operate over time and in their full context. A corollary to this point, in recognition of changing social and environmental circumstances, is that there is no objective, perfect, or permanent way that the

state can or should organise its laws. It follows again that the state responsibility for human agency is creative and open-ended.

Third, the above outline of the legally generative role of the state does not consider whether laws are legitimate, whether they are obtained democratically, whether they are enforced, etc. This *descriptive neutrality is important* to avoid an assumption that the moral, cultural, political, legal, or other practices of one society or another are 'naturally' superior or more rational. It can therefore be used to discuss the laws and legal systems of various societies without assuming *a priori* that one has a better kind of laws and legal system than another. At the same time, this neutrality does not prevent us from evaluating the laws and legal systems of different societies in terms of the different kinds of human agency which they enable, along with the different values and behaviours they endorse. It goes without saying that such evaluations cannot be neutral or objective. They do not, however, have to be critical; they can also be used to identify opportunities for states to collaborate in the mutual promotion of certain kinds of human agency (e.g. to support ecosystems, international research, or space exploration).

Building on the above definition of the legally generative state, we can note that *the adoption of laws and a legal system leads to the development of a legal realm*, a fictional space in which natural persons and things are imperfectly represented through a socially constructed, ontological status as legal entities. This status may be a privileged, as in the case of legal persons with strong human rights protections, or inferior, as with chattel slaves. In general, the space of this fictional realm includes things which we sense and perceive as real, like apples or soil, but it can also, through the use of legal constructs, include things such as corporations or human rights which are 'unreal' in the sense that we cannot go outside and touch them directly.

The distinction between real and imaginary, while significant for human experience, is irrelevant from the perspective of the legal realm since both are equally 'real' within this fictional space. Also important is that legal constructs, even those that are imaginary, can have real effects on human agency and the world around us. This is readily apparent from the impact of corporations, intellectual property rights, and so on.

In this regard we can note that, once a legal construct is enabled and given ontological status within the legal system, once it is 'granted entry' to society and is able to affect its profile of human agency, then it is no longer possible to argue that such a construct is a mere figment of imagination. Consider, for example, the British East India Company. Once it was socially constructed by an Act of Parliament, this fiction started to influence human agency, for example through role-based reasoning and fractured autonomy, and therefore had a real impact.[24] It is not, moreover, possible to understand or identify this impact by looking only at the (aggregate) decisions and actions of individual Company agents. In this regard it is not wrong to say that the British East India Company, though it started off as a legal fiction, has had a real impact on human history.

In terms of our discussion on firms, it can be guessed at this point that *people's activities in firms are one kind of human agency which is enabled by the legally generative state*. Our discussion thus far has not, however, been sufficient to outline this agency in detail. For this purpose, we first need to examine the generative role of the state in relation to property, money, and markets.

9.2 Property and the generative state

Building on the previous section, we can suggest that *property is a convention which states can use as an intractable tool to shape human agency in accordance with the collective interest*. Before we explore this convention in detail, it helps to first contextualise the discussion and review how ideas on the nature

[24] This is like the economic survival condition which, once imposed by the adoption of currency, becomes real from the perspective of those experiencing it.

and origins of property have developed in Anglo-European thought over time. For this purpose we first examine traditional property theories such as those of Grotius, Hobbes, Locke, and Blackstone. Second, we examine how these theories developed into the modern view of property as a 'bundle of rights'. This view is evident in both law and economics, and we will discuss its development in both disciplines. Third and last, we place these Anglo-European theories in an anthropological context and imagine what property might look like in the context of a generative state.

9.2.1 Traditional property theories

We can start with Grotius who argued in the first decades of the 1600s that property was created by an agreement among individuals, i.e. as a convention[25] and social construct. His idea was that "God had not given all things to this individual or to that, but to the entire human race."[26] From this original position as collective owners, he suggested that it was lawful for people to possess and use this common property to the extent that they had a need for it.[27] He did not view this possession and use as a version of private property since the rights of these collective owners over a thing would be over once they consumed it (e.g. ate an apple) or no longer held it in their direct possession. Grotius subsequently argued that, over time, people moved away from this original, primitive condition and wanted more refined ways of life. For this purpose, they invented agriculture and trade, which led to a greater degree of specialisation and, in combination with increases in population, an increase in scarcity.[28] These unfolding developments made it necessary to introduce private property, i.e. to exclude people from some part of the commons, in order to preserve social harmony and maintain specialisation. Grotius argues that this was achieved by agreement, through a social contract, and that people agreed to dissolve their status as common owners at an actual meeting which he assumed had taken place in a distant past.[29] This agreement mattered because, in his view, it is not plausible that one person could claim 'this is mine' and that this claim would be recognised and enforced without consent from other people.

Hobbes, for his part, argued in *Leviathan* (1651) that property rights are the creation of a sovereign state and that the state, whether organised democratically or monarchically, has ultimate power over them:

> "The distribution of the materials of this nourishment, is the constitution of *mine*, and *thine*, and *his;* that is to say, in one word *propriety;* and belongeth in all kinds of commonwealth to the sovereign power. For where there is no commonwealth, there is (as hath been already shown) a perpetual war of every man against his neighbour; and therefore every thing is his that getteth it, and keepeth it by force; which is neither propriety, nor community; but uncertainty… Seeing therefore the introduction of *propriety* is an effect of commonwealth; which can do nothing but by the person that represents it, it is the act only of the sovereign; and consisteth in the laws, which none can make that have not the sovereign power."[30]

There are, in other words, no property rights without the state. Given the above, we can see that Grotius and Hobbes both viewed *property as a convention*, even though the former saw them as created by individual agreement and the latter believed that they were the result of sovereign activity. While the interpretations of these authors were original, their conclusions were not insofar as they were aligned with older prominent views, such as those of St. Augustine and Thomas Aquinas, who argued some 1200 and 400 years earlier that property rights are a human creation, and not the result of a 'divine' or

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[25] Schlatter uses this term to describe the traditional view of property (1951), *Private Property: The history of an idea*.
[26] Grotius, as cited in Salter (2001), p. 539.
[27] Salter (2010), p. 9-10.
[28] Salter (2010), p. 10
[29] Salter (2010), p. 11
[30] Hobbes (1651) Leviathan, p. 164.

'natural' law.[31] It follows from all these *convention views* that states or central authorities, however organised, are responsible for ensuring that property rights are consistent with the collective interest.

To contrast these traditional, convention views, we can examine Locke who introduced in the 1690s the idea of *property as a natural right*. In his view, the right to *property existed in the pre-social state of nature*,[32] and appeals could be made to natural law to restrict the power of states and society in relation to individual property:

> "Though the Earth, and all inferior Creatures be common to all Men, yet every Man has a Property in his own Person. This no Body has any Right to but himself. The Labour of his Body and the Work of his Hands, we may say, are properly his. Whatsoever then he removes out of the State that Nature hath provided, and left it in, he hath mixed his Labour with, and joined to it something that is his own, and thereby makes it his Property. It being by him removed from the common state nature placed it in, it hath by this labour something annexed to it, that excludes the common right of other man."[33]

It follows from this view that property rights are not socially constructed but are an inherent feature of individual, natural rights. They are, moreover, created by individual labour. To put Locke's departure from the convention view into context, it helps to note that a key motivation of his work was to defend the ideas of Grotius and Hobbes against their critics.[34]

These critics, most prominently Sir Robert Filmer, argued in favour of a divine theory of government (and property). In their view, natural law and state of nature-based reasoning could not explain why individuals, who are presumed equal, could agree to unequal divisions of property.[35] Instead, they found it more plausible to consider that God had given the world to Adam, the first man, in the form of private property, and that Adam, over time, disseminated his ownership rights to his heirs, and that these rights eventually ended up with monarchs who ruled by divine right.[36] It followed that monarchs alone had

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[31] As Dougherty explains about the ideas of St. Augustine, "private ownership of goods is not sanctioned by the divine law in the original creation, but, rather, is directed by human law, though that direction is undertaken at the behest of God. Claims to personal possession of the land, then, derive their justification not from any original grant from the Creator but only because such claims are recognized by the temporal ruler… for Augustine, the rightful claim to private property is always circumscribed by the law and, thus, when contested, will have to be adjudicated by the civil authority (in his time, by the emperor). That is to say, individual or private rights are not understood as "natural" rights, for they do not inhere in individuals absent their recognition by the law. The principle governing such possession is that all possessions are subject ultimately to the common good and that the law governing all citizens and that law, in turn, is itself predicated on the divine law. Thus, there can be no understanding of a claimed good or right that transcends the political order simply; private property is, thus, in the words of one scholar, "neither absolute nor inviolable but relative and conditional" (Dougherty (2003), p. 481-483).

[32] Robé explains that, "In Locke's grand theory… private property existed *prior* to the creation of political authority. Of course, this is contradictory to the modern notion of property, which is a right against others, which only makes sense in a social setting. But the perception at the time was that property was a *direct* relationship to the object of property, created in a 'state of nature' and that the purpose of government was to protect these *natural* property rights which were fused with liberty" (Robé, *Property, Power and Politics*, p. 61).

[33] Locke, Second Treatise of Government, as cited in Alexander and Penalver (2012), p. 39.

[34] Schlatter (1951), *Private Property: The history of an idea*, p. 152.

[35] Schlatter (1951), *Private Property: The history of an idea*, p. 152-153.

[36] "As Alexander and Penalver explain: "One of Filmer's arguments was that God had given to Adam title to the entire world, which Adam then bequeathed to certain of his descendants exclusively, and they to certain of theirs, and so on. Modern monarchs, he argued, derived their authority from (among other sources) this line of property grants. As part of this argument, Filmer asserted that it was impossible to justify a system of private property on the foundation of the more egalitarian assumption that God had given the world, not just to Adam individually, but to the entire human race in common. Locke's argument in the fifth chapter of the second treatise constitutes, among other things, his attempt to refute Filmer's antiegalitarian claims (2012), p. 36.

the right to determine how to organise private property, and that there was no 'natural law', based on egalitarian reasoning, which might give people some legal protection against sovereign intervention.

Locke had great success in undermining these divine theories with his natural rights theory of property, and his ideas gained in popularity over time.[37] To an extent, this popularity can be explained by the way that his theory was used by 18th and 19th century North American colonists to resist the property claims of indigenous peoples and financial speculators.[38] Against the former it was argued that colonial-style agriculture, by mixing land and labour, led to a claim over land whereas a hunter-gatherer lifestyle did not. And against the latter it was argued that financial contributions from afar were not sufficient to invoke a property right, since they lacked the requisite input from labour. It was in this context of colonial expansion that the natural rights theory of property rose to prominence:

> "So long as middle-class thinkers were the undisputed expositors of truth, the natural right of property was a standard and accepted theory. Locke proclaimed it for the English; the Declaration of the Rights of Man made it the official theory of the French; Jefferson omitted property from the partial list of natural rights in the Declaration of independence, but it was included in a number of State Bills of Rights, notably those of Virginia and Massachusetts. Finally, it was the accepted theory of classical, or middle-class, economic theory: '*The property which every man has in his own labour*,' Adam Smith wrote, '*as it is the original foundation of all property, so it is the most sacred and inviolable*." [emphasis added][39]

While Locke's theories gave settlers and small farmers a strong, property rights-based claim in defense of taking land, it does not follow from his work that the property rights of these colonists were unlimited or absolute. Instead, Locke wrote that every person, by joining society and entering into the social contract, agreed to make their property subject to "the determination of the majority."[40] On this point he can be distinguished from some of his influential intellectual successors, such as Blackstone, Epstein, and Nozick, who came to believe that such rights are absolute.[41]

Blackstone, for example, "considered property to be one of three "absolute right[s], inherent in every Englishman."" So absolute were the rights or property, according to Blackstone, that the law would not permit the smallest infringement of them, even for the good of the entire community."[42] It is then no surprise that he explained the right of property as "that sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe."[43]

Blackstone held a strong view of property, but it was by no means a fringe position. His 1765 *Commentaries on the Law of England* was the leading text on English Common Law when the US declared independence, and it had a fundamental influence on the US legal system. It is significant, moreover, that it was the limitations of Blackstone's approach to property, as embodied in this system, which would later make it necessary for US scholars to think of better alternatives to the natural right

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[37] Schlatter (1951), *Private Property: The history of an idea*, p. 152.
[38] Alexander and Penalver (2012), p. 51-52.
[39] Schlatter (1951), *Private Property: The history of an idea*, p. 160-161.
[40] Locke, Second Treatise of Government, as cited in Alexander and Penalver (2012), p. 43.
[41] Alexander and Penalver (2012), p. 52-53. The authors write that, "Although their theories differ in a number of respects, Nozick and Epstein both do away with Locke's theistic, natural law framework with its affirmative obligations of self-preservation and assistance to others. Instead, they favor a strictly negative community in which people merely owe one another duties of noninterference. Thus, they dramatically modify Locke's starting point of God's grant of the world to everyone in common, with its overlapping original common rights, supplanting it with a world in which all resources are originally unowned" (p. 53).
[42] Vandevelde (1980) The New Property of the Nineteenth Century - the Development of the Modern Concept of Property, p. 332.
[43] As cited in Schlatter (1951), *Private Property: The history of an idea*, p. 164.

theory. These alternatives would ultimately develop into the 'bundle of rights' view of property which is dominant today.

For scholars in the 19th and early 20th century, the problem with Blackstone's property theory was that it was increasingly out of touch with legal practice. One issue is that it adopted a physicalist approach, where the "nature of each thing determined its treatment at law."[44] This led to a distinction between immovable things, such as land, which were named 'real' property and movable things, such as furniture and food, which were designated personal property. The problem, as Johnson explains it, was that:

> "By the end of the nineteenth century, Blackstone's conception of property had become outdated. Interests in land were no longer the principal objects described by the law of property. The physicalist notion could not express all sorts of new property interests that were coming into being, especially intangible property such as business goodwill, trademarks, trade secrets, and shares of corporations—things that nobody could see or touch."

This does not mean that Blackstone's framework did not address intangible property. It did, insofar as it subdivided real property into corporeal and incorporeal hereditaments; the former could be detected by the senses, the latter existed only in "in contemplation".[45] Instead, the problem was that his theory of property was inconsistent with the categories of his framework. As Vandevelde notes regarding this contradiction, "Blackstone's conception of property as dominion over things was maintained only at the expense of intellectual integrity."[46]

A second issue relates to the absolutism of Blackstone's definition. Here, practice showed that property rights are not, in fact, unlimited, and that there have always existed a range of restrictions, for example to prevent harm to neighbours or other third parties.[47] The limits of Blackstone's ideas were especially evident in the run up to, and at the time of, the Great Depression. The problems of this period, which manifested in poverty, great inequality, and abuses by robber barons, provided motivation for some groups of scholars, known as legal realists and legal pragmatists, "to develop a notion of property that exposed the social and political character of private property."[48]

The most influential of these initiatives, penned by Hohfeld in a 1913 article, suggested that "property does not consist of things, but rather of fundamental legal relations between people."[49] According to Hohfeld these fundamental relations could, in turn, be subdivided into two groups of four legal (jural) opposites and legal (jural) correlatives (see footnote).[50] These eight relationships then functioned as a lowest common denominator "in terms of which all legal problems could be stated."[51] Important to emphasise vis-à-vis our earlier analysis is that Hohfeld's analysis was grounded in relationships as pairs,

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[44] Johnson (2007) Reflections on the bundle of rights, p. 249.
[45] Blackstone, as cited in Vandevelde, p. 331.
[46] Vandevelde (1980) The New Property of the Nineteenth Century - the Development of the Modern Concept of Property, p. 332.
[47] As Coase writes, "The rights of a land-owner are not unlimited…. This does not come about simply because of Government regulation. It would be equally true under the common law. In fact it would be true under any system of law. A system in which the rights of individuals were unlimited would be one in which there were no rights to acquire" (1960), p. 877. See also: Merrill and Smith (2001), p. 361. Honoré (1961), p. 254.
[48] Johnson (2007) Reflections on the bundle of rights, p. 251.
[49] Johnson (2007) Reflections on the bundle of rights, p. 251.
[50] The relationships are as follows (image from Hohfeld (1920) *Fundamental Legal Conceptions As Applied In Judicial Reasoning And Other Legal Essays*, p. 5):

Jural Opposites	right	privilege	power	immunity
	no-right	duty	disability	liability
Jural Correlatives	right	privilege	power	immunity
	duty	no-right	liability	disability

[51] Hohfeld (1920) *Fundamental Legal Conceptions As Applied In Judicial Reasoning And Other Legal Essays*, p. 6.

i.e. between two parties.[52] It did not see these relations as a web of multifaceted, internal relations between people, the environment, or collective phenomena.

One consequence of Hohfeld's relational view is that it obviated the need for Blackstone's physicalist approach. As Vandevelde writes, "Hohfeld banished the need for things from property law."[53] It also departed from the natural rights view of property insofar as it "exposed that the legal rules surrounding property are not a matter of neutral deductive reasoning that followed from the fact of ownership itself, but from a policy determination forced by a conflict between competing interests."[54] In this regard it was more consistent with the traditional convention view.

Hohfeld's work was influential in scholarship and practice, and his ideas were adopted by the American Law Institute in their 1936 Restatement of Property.[55] At the time it led, like the writing of Berle and Means, to a way of thinking about property which allowed, relative to the ideas of Blackstone, for more state activity in relation to the economy.[56] As an example, it was used by the Civil Rights movement to fight against discriminatory exclusion policies regarding the use of property.[57]

Over time, Hohfeld's theories developed into the dominant, but not uncontested,[58] modern view in both law and economics that *property is a bundle of rights*. Unfortunately, there is no clearly identifiable seminal text for this view. It is, however, known that the bundle metaphor was used at least[59] as far back as 1922 by Corbin, who wrote that "'property' has ceased to describe any *res*, or object of sense at all, and has become merely a bundle of legal relations-rights, powers, privileges, immunities,"[60] and that it was in common use by 1960.[61] In the absence of a seminal text, we can rely on the 1960 articles of Honoré and Coase, respectively named 'Ownership' and 'The Problem of Social Cost', since these are treated as exemplars in discussions on the topic.[62]

9.2.2 Property as a bundle of rights

We can start with Honoré's 'Ownership' because it has been highly influential among legal scholars, and because it provides more detail on the nature of property than Coase's work. Its aim was to give "an account of the standard *incidents of ownership*: i.e. those legal rights, duties, and other incidents which apply, in the ordinary case, to the person who has the greatest interest in a thing admitted by a *mature legal system*" [emphasis added].[63] These incidents, also named entitlements, constitute the

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[52] Hohfeld (1920) *Fundamental Legal Conceptions As Applied In Judicial Reasoning And Other Legal Essays*, p. 10.
[53] Vandevelde (1980) The New Property of the Nineteenth Century - the Development of the Modern Concept of Property, p. 360-361.
[54] Johnson (2007) Reflections on the bundle of rights, p. 252.
[55] Merrill and Smith (2001), 'What happened to Property in Law and Economics?', p. 364. Johnson (2007) Reflections on the bundle of rights, p. 252.
[56] "A concept of property that allowed absolute control by a private individual did not allow for what many saw as essential governmental regulation. Therefore it was pragmatic to conceive of property ownership as a bundle of rights that was infinitely malleable and adaptable, unhindered by formalistic restraints or narrow conceptions. It could change with the times to accommodate limitations or impose obligations by the government to advance important social policies." (Johnson (2007) Reflections on the bundle of rights, p. 255). See also: Merrill and Smith (2001), 'What happened to property in law and economics?', p. 365.
[57] Johnson (2007) Reflections on the bundle of rights, p. 255-6.
[58] Robé (2022). Merrill and Smith (2001).
[59] Apparently the legal anthropologist Maine relied on the bundle of rights metaphor for property in his 1861 work, *Ancient Law* (Turner, 2017, p. 27-28).
[60] As cited in Vandevelde (1980) The New Property of the Nineteenth Century - the Development of the Modern Concept of Property, p. 361.
[61] Honoré (1961), p. 231.
[62] See, for example: Econ Journal Watch (2011) Property - a bundle of rights. Merrill and Smith (2001).
[63] Honoré (1961) n.b. guest editorial, p. 227.

bundle of rights[64] and include: the right to possess, right to use, right to manage, right to the income, right to capital, right to security, power of transmissibility, absence of term, prohibition of harmful use, liability to execution, and a residuary character.

Honoré does not argue that all these incidents need to be present in order to establish property ownership. He recognises, moreover, that different legal systems can and do take different approaches. In this regard his article can be viewed as providing a menu of incidents of ownership "that are characteristic of most, if not all, systems of property".[65] This means that property is, as Alexander and Penalver identify, "something like one of Ludwig Wittgenstein's "family resemblance concepts.""[66]

Honoré's menu-based approach is similar to the one adopted by Coase in 'The Problem of Social Cost'. As expressed by the latter, "We may speak of a person owning land and using it as a factor of production but what the land-owner in fact possesses is the right to carry out a circumscribed list of actions."[67] In terms of details, Coase's theory of property is very thin. Its influence should, however, be understood in concert with a proposition in his article, known as the 'Coase theorem', which has proven highly influential in economics.

The Coase theorem argues that, if there are no transaction costs, then it does not matter for economic efficiency if a property right or entitlement is granted to party A or B. To demonstrate, imagine a factory which is producing pollution and affects its neighbours. The harm caused by the pollution is valued at $600, and it costs $400 to install a pollution filter in the factory. If we assume that the neighbours have a right not to be polluted, then the factory will install the filter so that it can continue its operations without needing to pay money to the neighbours. And if we assume that the factory has a right to pollute, then the neighbours will pay the factory owners to install the filter because this is less than the $600 which they would suffer in terms of harm. Either way, the filter is installed because it costs $200 less than the harm of the pollution. If the filter had cost $800 instead, then in the first case the factory would have paid the neighbours so it did not have to install a filter, and in the second the neighbours would not have found it worthwhile to pay the factory to install the filter. According to this logic, it does not matter who has an initial right or entitlement since, under perfect conditions, the outcome is anyways that an economically efficient result will be obtained. The allocation of the entitlement does, of course, still matter for issues of justice and wealth distribution since it influences who pays for the filter.[68]

Coase recognised that the absence of transaction costs "is, of course, a very unrealistic assumption."[69] He therefore explained that, when conditions are not perfect, efficient exchanges will only occur "when the increase in the value of production consequent upon the rearrangement is greater than the costs which would be involved in bringing it about."[70] He also indicates that, under imperfect conditions, "the

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[64] To be more precise, Honoré specified that "it is fashionable to speak of ownership as if it were just a bundle of rights, in which case at least two items in the list would have to be omitted" (1961, p. 231).
[65] Alexander and Penalver (2012), p. 4.
[66] Alexander and Penalver (2012), p. 4.
[67] Coase (1960), p. 876-877.
[68] Block and North are highly critical of Coase for failing to consider justice and the psychological impacts of different allocations of property rights (Block (1977) Coase and Demsetz on Private Property Rights. North (2002) Undermining property rights - Coase and Becker). Their comments miss the mark, however, since Coase recognised from the outset that his theorem was focused only on economic efficiency, to the exclusion of other values. As he writes, "If market transactions were costless, all that matters (questions of equity apart) is that the rights of the various parties should be well-defined and the results of legal actions easy to forecast" (Coase (1960), p. 853).
[69] Coase (1960), p. 850.
[70] Coase (1960), p. 850.

initial delimitation of legal rights does have an effect on the efficiency with which the economic system operates. One arrangement of rights may bring about a greater value of production than any other."[71]

Coase's article says little about the origins of property rights and takes it as a given that the exchange of rights occurs in the context of an existing distribution of rights.[72] He does, however, note that the government can "conscript or seize" property,[73] and in his later work explains that "the rights which individuals possess, with their duties and privileges, will be, to a large extent, what the law determines. As a result, the legal system will have a profound effect on the working of the economic system and may in certain respects be said to control it."[74] This suggests, in my view, that Coase held a convention view of property rights in combination with his bundle of rights approach. On this last point he may be distinguished from his economic successors, such as Demsetz, who adopted a natural rights view.

This is evident, for example, from Demsetz's 1967 'Towards a Theory of Property Rights'. He starts with a statement that "When a transaction is concluded in the marketplace, two bundles of property rights are exchanged. A bundle of rights often attaches to a physical commodity or service, but it is the value of the rights that determines the value of what is exchanged."[75] He next adopts a utilitarian view of property, and defines it such that:

> "*property rights convey the right to benefit or harm oneself or others*. Harming a competitor by producing superior products may be permitted, while shooting him may not. A man may be permitted to benefit himself by shooting an intruder but be prohibited from selling below a price floor. It is clear, then, that *property rights specify how persons may be benefited and harmed, and, therefore, who must pay whom to modify the actions taken by persons*. The recognition of this leads easily to the close *relationship between property rights and externalities*." [emphasis added][76]

Demsetz recognises, like Coase, that conditions in the real world are not perfect, and that this imposes costs on various parties in the form of externalities. Adopting a broad perspective on value, he explains that externalities may be financial and non-financial, and that they may be costs or benefits. Next, he suggests that *property rights emerged to internalise externalities*, i.e. to minimise costs and benefits which are unaccounted for during exchange.[77] In his view, the allocation of property rights is the result of an unconscious process of evolutionary change and natural selection in a context of supply and demand:

> "I *do not mean to assert or to deny that the adjustments in property rights which take place need be the result of a conscious endeavor to cope with new externality problem*s. These adjustments have arisen in Western societies largely as a result of gradual changes in social mores and in common law precedents. At each step of this adjustment process, it is unlikely that externalities per se were consciously related to the issue being resolved. These legal and moral experiments may be hit-and-miss procedures to some extent but in a society that weights the achievement of efficiency heavily, their *viability in the long run will depend on how well they modify behavior to accommodate to the externalities associated with important changes in technology or market values*." [emphasis added][78]

If, as Demsetz argues, the long-term survival of property rights is a function of their ability to internalise externalities, then *property rights may be viewed as a product of the imperfections which they are trying to address*. This suggests that property rights function as a natural feedback loop to promote an efficient

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[71] Coase (1960), p. 850-851.
[72] Coase (1960), p. 851.
[73] [*add page reference Coase (1960)*]
[74] Coase (1995), p. 11.
[75] Demsetz (1967), p. 347.
[76] Demsetz (1967) Toward a theory of property rights, p. 347.
[77] "[T]he emergence of new property rights takes place in response to the desires of the interacting persons for adjustment to new benefit-cost possibilities" (Demsetz (1967), p. 350).
[78] Demsetz (1967), p. 350.

distribution of harms and benefits during individual exchange. Put differently, we might say that property rights emerged to help our societies tend, as closely as possible, towards the perfect conditions of the neoclassical model.

The ideas of Demsetz on property have proven highly influential in economics. As Foss and Foss note:

> "In general, the PRE [Property Rights Economics] is usually informed by a basic efficiency perspective, such that the definition, exchange, and enforcement of property rights are seen as reflecting economic efficiency… [Demsetz's argument about externalities] is often generalized in the PRE literature: Observed contracts, organizational forms, and institutions will tend to reflect the maximization of value creation, given the constraints that individuals face."[79]

Demsetz, too, recognises in a 2002 article that externalities are not the only economic reason for the existence of property.[80] He suggests, as an example, and not unlike Grotius, that the productive benefits of specialisation may also encourage the emergence of property rights. The main idea from his work is therefore that *the bundle of property rights is an endogenous result of individual exchange whose existence and content can be explained in terms of market imperfections*.[81] This underpins the work of influential law and economists such as Posner, Calabresi and Melamed, new institutional economists such as Williamson, Barzel, and Acemoglu, agency theorists such as Jensen and Meckling, formal model builders such as Bush and Mayer, and many more.[82]

We should note, however, that there is an apparent paradox in Demsetz's work. It arises because of a conflict between his definition of trade ("When a transaction is concluded in the marketplace, two bundles of property rights are exchanged"[83]) and his argument that imperfect trade is a precondition for the emergence of property rights. If trade consists of an exchange of rights, and property rights are the product of trade, then how did the 'first' trade occur? Which came first, the chicken or the egg?

The solution to this paradox is to assume, as Demsetz seems to have done, *that individuals can buy and sell property even in the absence of legally enforceable property rights*.[84] This suggests that property is, in the first instance, pre-social and pre-legal,[85] which is consistent with the natural rights theory of property and our earlier analysis of the scientific foundation of economics.

This implicit assumption, that property is a natural right, sheds light on a common criticism of property rights economics, namely that it draws a false equivalence between property rights and possession (or control). Hodgson, for example, remarks that:

> "the concept of property is often inadequately defined in economics. In particular, property is often conflated with possession, meaning control of a resource… Property, it is alleged, is part of our natural condition. Without doubt, feelings of possession are deep-rooted… But the claim that possession has an instinctive and evolutionary basis (Stake 2004) should not lead us to the false conclusion that property and possession are the same. The term 'property' should be reserved for

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[79] Foss and Foss (2022), p. 40.
[80] Demsetz (2002).
[81] According to Hodgson, "the standard economics of property rights strives to understand property as a spontaneous institution, which does not necessarily involve the state" (2015, p. 3).
[82] [*Add list of references: Posner, Calabresi and Melamed, new institutional economists such as Williamson, Barzel, and Acemoglu, agency theorists such as Jensen and Meckling, formal model builders such as Bush and Mayer*]
[83] Demsetz (1967), p. 347.
[84] Foss and Foss (2022), p.
[85] As Foss and Foss put it, "there will be property rights even in total anarchy" (Foss and Foss (2022), p. 39). This seems to build on a general view that individuals have a natural, evolutionarily endowed impulse to seize control over resources (Hodgson, 2015).

> cases of institutionalized possession with legal mechanisms of adjudication and enforcement. Property involves acknowledged rights granted by legitimate legal authority."[86]

Also helpful for understanding this criticism is an implicit distinction between 'economic rights' and 'legal rights'.[87] This distinction echoes our earlier discussion on economic vs. legal contracts. It is often used by economists in concert with the view that:

> "legal rights, that is, institutionally defined and enforced rights, *serve to enforce economic rights*. The underlying logic is that legal arrangements will be structured to reflect efficiency considerations, specifically, legal rights serve to improve the delineation and enforcement (and therefore tradeability) of economic rights, that is, control." [emphasis added][88]

In general, the idea of 'economic rights' is consistent with a natural rights view, based on possession and control, while 'legal rights' are grounded in legal theories which do not consider that possession and control are a sufficient condition for property rights.

For critics such as Merrill and Smith, the problem with this distinction is that "all this property-talk among legal economists is not about any distinctive type of right".[89] There is, in other words, only a superficial connection between the substance of economic rights and the idea of right as a legal concept. This leads Hodgson to remark that economic rights are deceptive: "using the word 'right' to describe something that is not a right but a matter of *de facto* control is misleading: it obscures the adopted legal meaning of rights in modern legal and economic systems."[90]

Part of the problem, in terms of lost meaning, is that economic property rights are unable to distinguish between *rights in rem* and *rights in personam*. Rights in rem "*attach to persons* insofar as they have a *particular relationship to some thing* and confer on those persons the *right to exclude a large and indefinite class of other persons* ("the world") from the thing" [emphasis added].[91] These rights make it possible for a person to exclude, with support from the legal system, the rest of the world from interacting with their property. This is different from rights in personam which "attach to persons as persons and obtain against one or a small number of other identified persons".[92] A standard example is a contract between two people and which can only be legally enforced between them.

The inability to distinguish between rights in rem and rights in personam explains why economic property rights are unable to distinguish between different kinds of legal right. In fairness to economists, however, and as has already been noted by critics of economic property rights,[93] this issue was already present in the 1920s work of Hohfeld, who suggested that his framework of legal relationships could be used to describe *all* legal problems. This problem was, in other words, inherited from the bundle of rights view, and is arguably as much a legal issue as it is an economic one.

Another way to understand the loss of the distinction between rights in rem and rights in personam is through a lens of *methodological individualism*.[94] As noted, Hohfeld's work was concerned with pairs of legal relationships between individuals. His idea of individual pairs was, however, disintegrated in favour of isolated individualism by Honoré, Coase, Demsetz and other bundle of rights theorists. For the legal tradition, this is evident from Honoré's article which describes his aim to provide a "basic

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[86] Hodgson (2015), p. 2-3.
[87] As was adopted, for example, by Barzel 1997 (as noted by Foss and Foss (2022), p. 40). See also Hodgson (2015), p. 4-5.
[88] Foss and Foss (2022), p. 40.
[89] Merrill and Smith (2001), p. 358.
[90] Hodgson (2015), p. 5.
[91] Merrill and Smith (2001), 'What happened to property in law and economics?', p. 360.
[92] Merrill and Smith (2001), 'What happened to property in law and economics?', p. 360.
[93] Merrill and Smith (2001).
[94] Penner and Smith (2014), *Philosophical Foundations of Property Law*, p. xvi.

model [for property ownership, namely] *a single human* being owning, in the full liberal sense, a single material thing" [emphasis added].[95] For the economic tradition, this isolated individualism is implicit in the view that property is a pre-social and pre-legal, natural right held by people as individuals.

As an aside, we can note that methodological individualism is the reason that the bundle of rights view is unable to distinguish between rights in rem and rights in personam. If a lone, separated individual is the basic model for thinking about property, then there is no logical sense in which property can be constituted by internal relations between people and their environment.

9.2.3 Property and the generative state

Prepared with the above outline of historical and dominant views in theories of property, we are ready to think again about the generative role of the state in relation to property. We can start by reiterating that property is a convention and intractable tool which the state uses to shape human agency in accordance with the collective interest. This convention view shares features of, but is not the same as, the traditional convention views we have seen thus far.

A key feature of our convention view that it is grounded in the idea that *we need to think about property in terms of internal relations*, and not in terms of methodological individualism as used by economics and the bundle of rights view. Importantly, our approach is consistent with the anthropological finding that "property is socially conditioned in all societies – its value may remain constant, increase or decrease depending on the social relations inherent in it."[96]

Another relevant point from anthropology is that *while property is a "human universal"*[97]*, the idea of private property is not*. As Turner explains, "the exclusivity of (individual) private property is not a central aspect of the understanding of property in most societies or cultures."[98] The focus on private property in Anglo-European discussions should therefore be seen as a cultural outlier, and not as a universal template for the role of property in human societies. It follows, first, that the idea of individual private property cannot be used as a foundation or basic model for property in general. And second, that the emergence of property cannot be the result, as property rights economists have suggested, of an evolutionary imperative towards individual property.[99] To argue that societies without private property are 'less evolved', primitive, or, as Honoré might have put it, 'legally immature', is to assume the natural superiority of Western concepts and to make a Whiggish judgment about other cultures.[100]

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[95] Honoré (1961), p. 255.
[96] Turner (2017), p. 26.
[97] Turner (2017), p. 27.
[98] Turner (2017), p. 26.
[99] Gintis, for example, outlines a formal model based on the idea that "the endowment effect can be modeled as respect for private property in the absence of legal institutions ensuring third-party contract enforcement. In this sense, "natural" private property has been observed in many species, in the form of recognition of territorial incumbency" (Gintis (2007), 'The evolution of private property'). Stake, to provide another example, suggests that "basic components of property preceded formal institutions; fundamental principles of property are encoded in the human brain. There are obvious reasons to believe that a system for allocating rights in things could, at least in part, be hard wired into animal brains. A scarcity of resources creates competition for them, and some forms of competition result in harm to the competitors. Rivals can reduce the costs of competition by adopting strategies for determining the outcome of fights without physical damage…. Thus, a body is more likely to survive if its brain is equipped with rules of property incorporating ESSs for reducing the costs of allocating resources among competitors. Property is part of human biology."
[100] This was a structural problem with early anthropological literature on property, which seems to have entered economic analysis of property rights. As Turner explains for anthropology, "In this early literature, property was considered the driving force behind social evolution and the steady progression from the earlier stages of human development, during which humans were presumed to have lived without any concept of property whatsoever, to notions of communal sharing to private ownership. This theoretical assumption has never been supported by the

A third feature of our convention view of property is that it recognises, again from anthropology, that there is an important relationship between property and the idea that certain things can be sacred. The work of Graeber and Wengrow in *The Dawn of Everything* is pivotal in this regard. It deserves quoting at length:

> "Even among those forager groups, famous for their assertive egalitarianism, [Woodburn notes], there was one exception to the rule that no adult should ever presume to give direct orders to another, and that came in *the sphere of ritual, of the sacred*. In Hadza religion and the religion of many Pygmy groups, initiation into male (and sometimes female) cults forms the basis of exclusive claims to ownership, usually of ritual privileges, that stand in absolute contrast to the minimization of exclusive property rights in everyday, secular life. These *various forms of ritual and intellectual property, Woodburn observed, are generally protected by secrecy, by deception and often by the threat of violence*." [emphasis added][101]
>
> "Now, *these sacred items are, in many cases, the only important and exclusive forms of property that exist in societies where personal autonomy is taken to be a paramount value*, or what we may simply call 'free societies'. It's not just relations of command that are strictly confined to sacred contexts, or even occasions when humans impersonate human spirits; so too is absolute – or what we would today refer to as 'private' – property. In such societies, there turns out to be *a profound formal similarity between the notion of private property and the notion of the sacred. Both are, essentially, structures of exclusion*." [emphasis added][102]
>
> "Much of this is implicit – if never clearly stated or developed – in Émile Durkheim's classic definition of 'the sacred' as that which is 'set apart': removed from the world, and placed on a pedestal, at some times literally and at other times figuratively, because of its imperceptible connection with a higher force or being. Durkheim argued that the clearest expression of the sacred was the Polynesian term *tabu*, meaning 'not to be touched'. But when we speak of absolute, private property, are we not talking about something very similar – almost identical in fact, in its underlying logic and social effects?"[103]
>
> "To recognize the close parallels between private property and notions of the sacred is also to recognize what is so historically odd about European social thought. Which is that – quite unlike free societies – we take this absolute, sacred quality in private property as a paradigm for *all* human rights and freedoms."[104]
>
> "What makes the Roman Law conception of property – the basis of almost all legal systems today – unique is that the responsibility to care and share is reduced to a minimum, or even eliminated entirely… The defining feature of true legal property, then, is that one has the option of *not* taking care of it, or even destroying it at will."[105]
>
> "It is not unusual for ethnographers working with indigenous Amazonian societies to discover that almost everything around them has an owner, or could potentially be owned, from lakes and mountains to cultivars, liana groves and animals. As ethnographers also note, *such ownership always carries a double meaning of domination and care*. To be without an owner is to be exposed, unprotected. In what anthropologists refer to as totemic systems… the responsibility of care takes on a particularly extreme form. Each human clan is said to 'own' a certain species of animal – thus making them the 'Bear clan', 'Elk clan', 'Eagle clan' and so forth – but what this means is precisely that members of that clan cannot hunt, kill, harm or otherwise consume animals of that species. In

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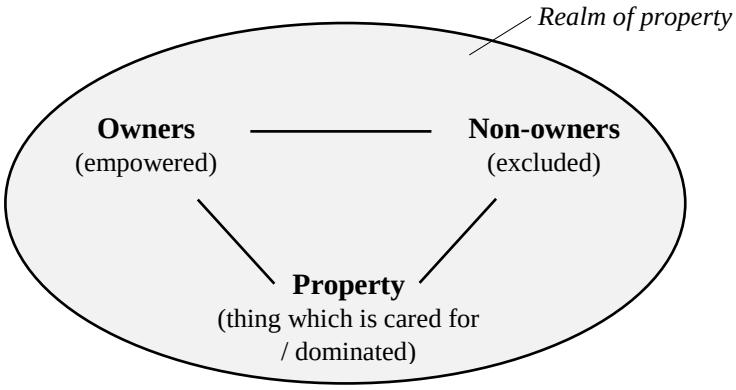
empirical evidence, which suggests that in any and all societies over time and space notions of property did exist" (Turner (2017), p. 28).

[101] Graeber and Wengrow (2022), p. 158.
[102] Graeber and Wengrow (2022), p. 158-159.
[103] Graeber and Wengrow (2022), p. 159.
[104] Graeber and Wengrow (2022), p. 159.
[105] Graeber and Wengrow (2022), p. 161.

> fact, they are expected to take part in rituals that promote its existence and make it flourish." [emphasis added][106]

From the above we can distil that *property is imbued with sacred status*, and that this *sacredness leads to the exclusion* of non-owners. We can also identify that *property owners are empowered to have authority over property*, and that *the reasons for this empowerment vary along a spectrum of care and domination*. Building on these ideas, we can develop the following model for a convention theory of property which is grounded in internal relations between owners, non-owners, and a thing:

Figure X: An internal relations model of property



In general, *property is created through a socially recognised act of delineation which 'sets apart' a real or imaginary thing from everything else, designates its owners and non-owners, and gives it a sacred, ontological status within the realm of property*. This realm encompasses a class of state-enforced fictions, in the form of a triumvirate of internal relations, and it follows that acts of delineation amount to the addition of another fiction to this class. Since the realm of property is a figment of human imagination, we can identify that its overall boundary, and the boundaries of all fictions within it, are inherently a matter of interpretation. Things do not, in other words, have an 'objective' boundary as property, although we can also recognise that the boundaries of some properties are more ambiguous and uncertain than others. As an aside, we can note that the 'setting apart' of property has an intrinsic tendency to sever internal relations between property and "the world" at large.

To clarify the relationship between the realm of property and the realm of law, we can reiterate that *both are realms of convention which societies can adopt to shape their profiles of human agency*. These and other realms of convention (e.g. money, markets) may interact constructively or destructively, can be arranged so that they are largely coextensive, or may even be deliberately insulated from one another. This makes it possible for nuisance rules to prevent some harmful uses of property (interaction between legal and property realms), for an owner to be permitted to pollute without concern for others (property realm insulated from the legal realm), and for prohibitions on the sale of property (property realm insulated from money). While these realms can interact in undesirable, unintended, and unpredictable ways, there is nothing inherent to them which might prevent their interaction, or which indicates how they 'must' be organised in relation to each other. A final point is that, since we can imagine that societies have property without the use of written conventions or a legal system, *it is not necessary for the legal realm and the realm of property to exist together*.[107] Such coexistence does, of course, occur

[106] Graeber and Wengrow (2022), p. 160-161.
[107] Interestingly, this suggests that property can be pre-legal, even if it cannot be pre-social as is assumed by the methodological individualism of economics.

in societies where property rights are legally constituted or enforced by the legal system, as in liberal democracies.

Some readers may find it strange to consider that the property in secular societies can also be given a sacred status. It should be recognised, however, that liberal discussions on property were, as we saw with Grotius and Hobbes, premised on a creative act of God which gave property to humans. This shows, and there is much evidence to this effect, that secularism is an inheritance, extension, and reinterpretation of, rather than a total departure from, older religious traditions.[108]

For the internal relations model, there is *no need for owners, non-owners, or property to be 'real' things*. This is consistent with Graeber and Wengrow's remark that "Quite often, sacra have both material *and* immaterial elements".[109] It also dovetails with our earlier discussion on how the legal realm is populated by 'imaginary' legal entities such as corporations and intellectual property rights.

It follows that *anything conceivable can be an owner, non-owner, or a thing*, including people, groups, communities, tangible objects, organisations, legal entities, all humans, and so forth.[110] *The exception is the state*. It can be an owner, but not a non-owner or a thing since it has a unique position as the 'apex' collective phenomena and is responsible for the realm of property as a whole. Put differently, the state has the highest level of authority, which is why it can be an owner, but it cannot be excluded or delineated, which is why it cannot be a non-owner or a thing. The same chain of reasoning explains why it is not possible for the state to 'share' ownership with another party as literal equals.

The *overarching authority and responsibility of the state* relates to all aspects of the realm of property, including the ways that property is created, the substance and enforcement of property relations, and the resolution of conflicting claims to property. Some aspects of this authority and responsibility can be delegated to other actors,[111] and can be organised in various ways within and without state institutions, but responsibility for the realm as a whole can only rest with the state given its apex position.

The idea that *the state has responsibility for the ways that property is created* does not mean that it is the only actor which can create property. Instead, it is better to say that the state has ultimate control over the kinds of property-creating acts which are recognised and enforced, legally or otherwise, within a society. As examples, consider someone who picks wildflowers and thinks they are an owner, or an inventor who develops a new idea and wants to have it protected. The flower picker and inventor only have property ownership if their activities are recognised by the state as acceptable sources of property relations, and if they are state-enforced as such. If the state made it illegal to pick wildflowers, or if it did not empower ownership over ideas, then neither of these activities would give rise to property. In general, then, we can say that the actions of different actors in society are able to create property, but they are only able to do so within the rules of convention that are established or allowed for by the state in the realm of property. Importantly, this makes it possible for people such as the flower picker and inventor to experience the direct effect of their actions, in the form of making something and calling it their own, and thus to experience genuine agency within the 'unfreedom' of a socially constructed context.

Turning to the substance of property relations, we can first note that the *category of non-owners can vary widely along a positive continuum*. It can range from one, so that only one person is excluded, or can be almost infinite so that everyone in the universe is excluded but for a single owner. It cannot,

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[108] Example of free will. State of nature. Book from that guy on history of religion as an idea.
[109] Graeber and Wengrow (2022), p. 160.
[110] It is possible for humans to be classified as things, as shown by the deplorable case of slavery.
[111] This is consistent with, but allows for more differentiation than, Robé's argument that "Property is a decentralization of the authority to make the rules in connection with the use of the object of property" (Robé, *Property, Power and Politics*, p. 75).

however, be zero since this fails to establish the triumvirate of internal relations which we have defined as necessary for property.

Second, we can identify that *there may be hierarchies or subdivisions within groups of owners and non-owners*, so that they are empowered or excluded to different degrees. In this regard there is nothing inherent to the realm of property which requires that all owners or non-owners of a thing are or should be treated equally, for example as private actors, within their respective groups. This differentiation within owner and non-owner groups makes it possible, for example, to treat production sites in a heavily populated area, or near a biodiversity hotspot, differently from production sites which are not situated near such vulnerable areas. It also makes it possible for people in a local community to receive a privileged degree of empowerment, or a lesser degree of exclusion, as compared to members of society who live further away. As a final example, we should note that this differentiation even permits people, factories, etc. in similar circumstances to be treated differently if this is in the collective interest. While this can lead, if there are inadequate safeguards, to unfair policies against individuals and groups, it also opens the door to creative, local experimentation with property arrangements.

Third, we can identify, without attempting to provide a full taxonomy, that *the empowerment of owners may be weak or strong*. As an ideal type, *strong ownership empowerment* entails that the state delegates its full authority over the substance of property relations to an owner. The practical result is that there are no active limits to the powers which an owner has for the care, or domination, of their property. There are, however, latent limits insofar as the state can always disempower the owner, wholly or in part, by recalling all or some of its delegated authority. As an example, we can think of the absolutist approach to property that was advocated by Blackstone. While he may not have put it in these terms, we can take his idea that the state has no power over individual property and reconceptualise it as an argument that it is in the collective interest for the state to delegate its authority over the substance of property rights to owners, and for the state to never recall this authority at any point. The practical result of this latter formulation is the same as his absolutist approach to property.

Unlike its strong counterpart, *weak ownership empowerment* cannot be formulated as one ideal type since there are many different ways to empower owners without granting them full authority over the substance of property relations. If we draw on Honoré's list of entitlements, we can imagine that an owner has a right to use, but not to possess, or that they are allowed to manage and use a property, but are not allowed to generate income from it or sell it to a third party, and so on. There is no need for our analysis of firms to explore these different options in detail. Instead, it is enough to note that each variation of ownership empowerment has an influence on human decisions and experiences, and therefore helps to shape the profile of human agency in society in a different way.

Fourth, a related insight is that *the exclusion of non-owners may also be weak or strong*. The strong form of exclusion is conditional on the presence of strong ownership empowerment. It only occurs, as an ideal type, when owners have been granted full authority over the substance of property relations. From this conditionality we can infer that there is, in general, an inversely proportional relationship between the degree of ownership empowerment and the degree of non-owner exclusion. More empowerment results in more exclusion, with the exception of the state which cannot be excluded. Similarly to what we identified above, weak non-owner exclusion cannot be formulated as an ideal type since there are many different ways that non-owners can be excluded from a property. We can note, however, that some degree of exclusion *must* exist for there to be property since it would otherwise not be possible for an owner to be empowered. Again, we can note that variations in the exclusion of non-owners have an influence on the profiles of human agency in society.

Fifth, the model shows that *property owners can be empowered to relate to their property in different ways*, ranging from a relationship of care, as in the totemic system, to one of domination, as in the absolutist approach to property. Important to emphasise is that there is nothing inherent to the realm of property, or to things as property, which indicates what kind of empowerment an owner should have in

relation to their property. Instead, it should be understood that *relations of empowerment are the performative result of beliefs about property*, as held by owners and society. More concretely, owners (and their agents) have beliefs about property that are drawn from the well of ideas in society, and which influence how they act and decide from their empowered position. These actions and decisions are socially embedded and influenced by contextual factors such as personal features, business reputation, liability risks, state policies, and so forth. In this regard we can say that relations of empowerment are an emergent result of interplay between societal beliefs, personal idiosyncrasies, history, and the context of particular decisions. This explains why owners with similar property and property rights may behave quite differently towards their property (e.g. one person may improve it for the benefit of their community while another abuses it for sport). An important consequence of this view on relations of empowerment is that, while we can recognise that different theories of property give rise to different beliefs and incentives for action and decisions over property, we should not think of their effects in terms of simple determinism. Instead, it is better to recognise that the effect of theories of property is underdetermined, in that we can only map out and estimate, but not simply predict, how a particular theory of property and the arrangement of its internal relations will influence the actions and decisions of owners, non-owners and property in a given context.

A final insight which emerges from the performative aspect of the internal relations model is that *the generative state's responsibility for the realm of property also encompasses the ideas and beliefs about property that are prevalent within society.* This responsibility can be, but does not have to be, dictatorial in nature. It is just as easy to imagine a state which promotes debate and independent thought on the nature of property, or one which encourages its creative and socially desirable use, as it is to imagine a totalitarian government which promotes ideas in favour of concentrated state power or oligarchic rule.

Sixth, we can discuss the *enforcement of property relations and the resolution of conflicting claims to property*. In general, there are any number of options which states and societies can use, more or less effectively, to enforce property relations and resolve disputes. Government representatives, citizens, private organisations, religious orders, etc. can all be empowered, within or without the legal system, to enforce and resolve claims to property. So while the state, due to its apex status, has ultimate responsibility for enforcing property relations and taking care of conflicting claims, this responsibility can be organised and delegated in many different ways to shape the profile of human agency in society.

In summary, we can write that the generative state can adopt property – consisting of a triumvirate of internal relations between owners, non-owners, and property – as a convention and intractable tool to shape the profile of human agency in society in accordance with the collective interest. One feature of this relativist approach is that it allows us to think broadly about the use of property in different societies without assuming *a priori* that one approach is better than another. At the same time, this approach allows us to compare the property arrangements of different societies in terms of human agency, and to subsequently consider whether these arrangements are desirable or not.

9.3 Money and the generative state

Theories on the nature and origin of money are one of the most important, interesting, and controversial areas of contemporary economic debate.[112] In general, these theories frame how we think about the role of prices in the economy, how we value different kinds of economic activities, and how we think about the creation of wealth. They are controversial because the two leading theories lead to fundamentally opposed views on the economy and the role of the state, and because the choice between them has the potential to challenge and transform the scientific foundation of economics.

[112] Kelton. Wray. Ingham [*add reference to Criticisms of MMT*].

The long-standing, orthodox theory is that money is a *commodity and medium of exchange* which was invented by individuals to facilitate trade in a primitive barter economy. This theory was already present in Aristotle's writing,[113] adopted by Locke,[114] relied on by Smith in the *Wealth of Nations*,[115] developed further during the marginalist revolution,[116] and is now taught as the basic theory of money in economics textbooks.[117] As we will see, this theory is consistent with market fundamentalism, and inconsistent with a generative view of the state.

The competing theory is that money is a *convention and unit of account* which was developed by central authorities, such as temples and states, as a tool to facilitate governance and administration.[118] This theory can be traced back at least to the early 20th century,[119] and has recently been popularised by economists Richard Wray and Stephanie Kelton under the name Modern Money Theory. It is this theory which we will later use to outline the role of the generative state in relation to money.

We will start our discussion by outlining the *commodity theory of money* and explaining its important role in the scientific foundation of economics. Next, we will introduce the *convention theory of money* and explain why it challenges this foundation. We will lastly reflect on the generative role of the state and discuss how this role challenges market fundamentalism.

9.3.1 The commodity theory of money

The commodity theory argues that money emerged a long time ago to facilitate exchange in a *primitive barter economy*. In this economy, goods and services are exchanged directly for one another without the use of money as an intermediary. There are high transaction costs because individuals are not always able to trade their goods and services in corresponding amounts. Thus it might occur that a shoemaker, wanting to purchase bread, finds that the baker already owns enough shoes and is unwilling to complete an exchange.[120] This is, of course, an inconvenience to traders and an impediment to economic activity.

The subsequent idea is that exchanging parties solved this problem by using certain commodities, such as precious metals, as a *medium of exchange* rather than exchanging goods directly.[121] The special feature of these commodities, which made them suitable for use as money, is that they are durable, divisible, portable, and are readily accepted for exchange by many parties. Their money value was determined, for example, by the quality and weight of their metallic content.[122]

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[113] Meikle (1994) Aristotle on money.

[114] As Alexander and Penalver explain: "After the first acts of appropriation in the state of nature, the next significant development in Locke's narrative is the emergence of money. Money enters the picture as a mechanism by which owners avoid violating the spoilation condition. Allowing perishables to spoil while in one's possession violates the natural rights of others to enjoy the fruits of the earth, but Locke says that an appropriator can voluntarily "exchange his sheep for shells, or wool for a sparkling pebble or diamond, and keep those by him all his life" without violating anyone else's rights (II, 46). "And thus came in the use of money," Locke explains, "and that by mutual consent men would take in exchange for [money] the truly useful, but perishable supports of life"" (Alexander and Penalver (2012) p. 41).

[115] Smith pdf p. 41-49. Wealth of Nations Book 1, Chapter IV, 'Of the origin and use of money'.

[116] C. Menger, "On the origins of money", *Economic Journal*, Vol. 2, 1892, pp. 239-255.

[117] See, for example: Krugman and Wells, *Economics*, 2015, p. 854. Colander, 2017, p. 106. Samuelson and Nordhaus, 2009, p. 458. Parkin et al., *Economics*, 2017, p. 558. Stiglitz, *Economics*, 2011, p. 616

[118] Battilossi et al., *Handbook of the History of Money and Currency*, p. 4. For an excellent history see: Ingham, 2004, *The Nature of Money*, p. 38-58.

[119] Knapp, George Friedrich (1924), *The State Theory of Money*.

[120] The parties are missing what is called the 'double coincidence of wants' (Case et al., *Principles of Economics*, 2017, p. 542. Krugman and Wells, *Economics*, 2015, p. 854).

[121] Mishkin, 2019, *The Economics of Money, Banking, and Financial Markets*, Global Edition, p. 100-101, p. 103.

[122] Samuelson and Nordhaus, 2009, p. 458. Battilossi et al., *Handbook of the History of Money and Currency*, p. 4. Gleeson, 2019, *The Legal Concept of Money*, p. 10.

Over time, central authorities in places such as Ancient Greece minted precious metals into coins with specific denominations. This helped provide a standard weight of precious metal for transactions and facilitated their use as a *unit of account*. A related development is that it became interesting for individuals to accumulate precious metals (and coins) and use them as a *store of value*.

It was against this backdrop that banks emerged to help individuals store their money in a safe place, and to facilitate liquidity in the economy by connecting lenders and borrowers.[123] It was inconvenient and risky to transport precious metals in large quantities, so banks started to issue letters of credit to their depositors. These allowed the bearer of the letter to redeem a certain weight in precious metal from the vaults of bank branches in different cities.[124] When commissioned by a reputable bank and held by reputable customers, it became possible for individuals to exchange these letters directly, provided they were depersonalised, as a form of paper money.

Bankers soon realised that their depositors rarely, if ever, came to collect all of their savings from the bank at any one time.[125] This suggested that they could issue, through lending, many more letters of credit than the money value of precious metal in their vaults. The main operational concern for such lending, from an accounting perspective, was whether the bank could cover the balance of daily/weekly/monthly gold withdrawals and deposits, and not whether it could match all outstanding liabilities. This opened the doors for *fractional reserve banking*, in which banks would hold in reserve, for example, only 20% of the total money value that had been distributed through their letters of credit.

Fractional reserve banking helped fuel an expansion in economic activities but also contributed towards financial instability. Different banks had different proportions of precious metal in reserve, and different risk appetites and creditworthiness. The system was fairly stable when times were good, but scandals, bank runs, and economic downturns created a systemic risk of financial contagion since only a fraction of the money in circulation was actually backed by precious metal.[126] It was in response to these risks and failures that governments stepped in and created central banks with responsibility for monetary policy. Eventually, governments adopted fiat currencies which are unbacked by precious metal but were accepted for exchange because they are trusted and mutually recognised as the national unit of account and taxation.[127] An important benefit of this latter development is that the availability of currency would no longer be tied to the availability of precious metals.

The above is a general account of how money emerged in primitive barter economies as a specialised commodity to reduce transaction costs, and how it developed, through coinage and the rise of the financial sector, into modern fiat currencies which are subject to monetary policy by central banks.[128] There are variations in the details depending on the source,[129] but there are two underlying consistencies in this orthodox theory which occur repeatedly, and which we will focus on: (1) *barter was first, then money, and then credit*, and (2) *money first emerged as a commodity and medium of exchange*.[130]

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[123] Case et al., *Principles of Economics*, 2017, p. 546.
[124] Krugman and Wells, *Economics*, 2015, p. 857.
[125] Case et al., *Principles of Economics*, 2017, p. 546.
[126] Case et al., *Principles of Economics*, 2017, p. 546-548.
[127] Case et al., *Principles of Economics*, 2017, p. 544. Krugman and Wells, *Economics*, 2015, p. 857. Mankiw, *Principles of Economics*, 2018, p. 606.
[128] The shift to fiat currencies has had little influence on "the fundamental assumptions of modern orthodox economic thinking [which] remain grounded in this [commodity] theory of the origins and functions of money" (Ingham, 2004, *The Nature of Money*, p. 16).
[129] Technically, there are two orthodox explanations of the commodity view of money. The first treats money as an actual commodity, the second as "a symbol of a 'representative' commodity or 'basket' of commodities" (Ingham, 2004, *The Nature of Money*, p. 18). In any case, both explanations are committed to the standard account of the origins of money as a commodity and medium of exchange (Ingham, 2004, p. 18-19).
[130] For a discussion and history, see: Ingham, 2004, *The Nature of Money*, Introduction and Chapter 1.

Together, these consistencies support the liberal economic idea that exchange practices and markets are pre-social, and that the state does not play a formative role in economic and monetary affairs.[131] They enable socio-economic bifurcation and make it possible to imagine an economy which is governed by natural laws and can be fully examined on the basis of methodological individualism.[132] They suggest, moreover, that individual exchange and economic activity are responsible for creating wealth. This sustains the market fundamentalist distinction between a generative economy and an appropriative state.

The commodity theory of money also plays an important role in the scientific foundation of neoclassical and modern economics. It opens the door to believing that prices are a purely economic phenomenon which exists as a Platonist realm of pristine numbers and can be objectively examined to reveal an underlying economic reality. The commodity theory therefore enables the idea of economics as an objective science, and the view that methodological individualism, marginalist analysis, and GE models are able to provide a (relatively) accurate picture of economic dynamics.

It follows that the *commodity theory functions as a keystone in the scientific foundation of orthodox economics*. It is almost certain that it cannot be replaced by an alternative without also abandoning socio-economic bifurcation and the self-conception of economics as an objective science. Such an alternative would, moreover, require a departure from market fundamentalism and undermine the legitimacy of marginalist techniques which are central to neoclassical and modern economics. In my view, these consequences explain why the alternative, convention theory of money has received such a hostile reception from the economic mainstream; it is a multi-level existential threat to their scientific practice.

Given these hostilities, it is important to emphasise that the two consistencies which we identified above are propositions whose accuracy can be tested through historical analysis. In this regard we can ask: *is it true that money first emerged as a commodity in a primitive barter economy*? This question has been investigated by historians, anthropologists, and archaeologists, only to find that the commodity theory "is both logically and historically inconsistent".[133] There is no evidence for a primitive barter economy where individuals invented money in order to reduce transaction costs. This story belongs to the same category of fictions and allegories as the state of nature and the social contract. The alternative view must therefore be considered as a potential replacement.

9.3.2 The convention theory of money

The convention theory draws on historical, archaeological, and anthropological findings to provide an account of the nature and origins of money. It runs contrary to the two consistencies in the orthodox theory and shows, first, that *credit arrangements were prior to barter and market exchange*, and second, that *money was created as a unit of account before it was used as a medium of exchange*.[134] Together, these points establish that money was developed as a convention before it was traded as a commodity by individuals. It is interesting to explore this history in some detail.

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[131] This is arguably the main point of this explanation for the origins of money (Graeber, *Debt*, p. 24-27).
[132] This is reflected, for example, in the work of Fried et al. who state that: "Market prices provide a natural set of weights" (Fried et al. 2008, p. 9).
[133] Battilossi et al., *Handbook of the History of Money and Currency*, p. 4. See also: K. Hart and H. Ortiz, 'The anthropology of money and finance: between ethnography and world history', *Annual Review of Anthropology*, vol. 43, 2014, pp. 465-482.
[134] See, for example: Ingham, 2004, *The Nature of Money*.

The origins of money can be traced back to the accounting practices of Sumerian temples and palaces some five-thousand years ago in Ancient Mesopotamia.[135] This is more than two-thousand years before the use of coins in Ancient Greece.[136] As a general description of this period, Hudson explains that:

> "Neolithic and Bronze Age economies operated mainly on credit. Because of the time gap between planting and harvesting, few payments were made at the time of purchase. When Babylonians went to the local alehouse, *they did not pay by carrying grain around in their pockets. They ran up a tab to be settled at harvest time on the threshing floor*. The ale women who ran these "pubs" would then pay most of this grain to the palace for consignments advanced to them during the crop year. These payments were financial in character, not on-the-spot barter-type exchange. As a means of payment, the early use of monetized grain and silver was mainly to settle such debts. This monetization was not physical; it was administrative and fiscal. The paradigmatic payments involved the palace or temples, which regulated the weights, measures, and purity standards necessary for money to be accepted. *Their accountants developed money as an administrative tool for forward planning and resource allocation*, and for transactions with the rest of the economy to collect land rent and assign values to consignments, which were paid in silver at the end of each seafaring or caravan cycle." [emphasis added][137]

It was in this context that Sumerian temples and Palaces:

> "…employed staffs of weavers and other craft personnel, who were fed by crops grown either on palace or temple land or that of sharecroppers paying grain-rent or fees to these institutions and supplied with wool from temple and palace herds managed by entrepreneurs or owned outside of these institutions.
>
> Building public infrastructure required feeding and supplying corvée labor and craftsmen with food, tools, and beer, as well as provisioning celebratory festivals. In order to calculate budgets for forward planning and tally surpluses or shortfalls, these flows had to be measured and accounts presented to the palace for managing cropland and herds, brewing and selling beer, baking bread, and producing handicrafts for use within these institutions and for local or long-distance trade.
>
> … The scale on which the large institutions operated required forward planning to schedule and track the flow of food and raw materials through their fields and workshops. The first need was to assign standardized values to key commodities. This problem was solved by creating a grid of administered prices, set in round numbers for ease of computation and account-keeping. Grain was designated as a *unit of account* to calculate values and co-measure labor time and land yields for resource allocation involving the agricultural and handicraft sphere, as well as the means of payment.
>
> The second need of these large institutions was to organize *means of payment* for taxes and fees to their officials, and for financing trade ventures. Silver served as the money-of-account and also as the means of payment for trade and mercantile enterprise. A bimonetary system was created for paying the palace and temples and for valuing disparate commodities and functions, by setting the shekel-weight of silver (8 grams) as equal to a *gur* "quart" of grain or 300 sila."[138]

The designation of grain and silver as dual units of account and the use of fixed exchange prices between these and other goods were important administrative innovations. They helped ancient accountants integrate the resource flows of different items into a single summary:

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[135] M. Hudson, 'Origins of Money and Interest: Palatial Credit, Not Barter' in Battilossi et al. (eds.), *Handbook of the History of Money and Currency*, p. 46.
[136] C.P. Elliot, 'The Role of Money in the Economies of Ancient Greece and Rome', in Battilossi et al. (eds.), *Handbook of the History of Money and Currency*, p. 69.
[137] M. Hudson, 'Origins of Money and Interest: Palatial Credit, Not Barter' in Battilossi et al. (eds.), *Handbook of the History of Money and Currency*, p. 45-46.
[138] M. Hudson, 'Origins of Money and Interest: Palatial Credit, Not Barter' in Battilossi et al. (eds.), *Handbook of the History of Money and Currency*, p. 46-47.

> "… the challenge to ancient accountants: to record not merely "a single transfer, but the combination of a multitude of transfers into a summary. When information piles up and is not synthesized, it becomes useless: a good bureaucrat needs to be able to compress data. The summary account requires that the scribe combine information from various records." Mesopotamia's palaces and temples solved this problem by designating grain and silver as reference points to co-measure the wide range of transactions within their own institutions and with the rest of the economy for grain, textiles, beer, boat transport and the performance of ritual services."[139]

Incomes from harvest, trade and other activities were often cyclical and subject to uncertainty. These vicissitudes were smoothed over by extensions of credit from temples and palaces, granted in the form of grain, textiles, silver, or other goods, and later repaid with interest as an equivalent of grain and silver, in accordance with centrally fixed prices.

> "To provide a standard of value and serve as the means of payment, grain and silver had to be measured or weighed in standardized units. To facilitate calculation for internal resource allocation within the large institutions, these units were based on the administrative calendar that temples created in order to allocate resources on a regular monthly basis.
>
> That in turn required replacing lunar months of varying length with standardized 30-day months (Englund 1988). Each monthly unit of grain was measured in volumetric gur units divided into 60ths, apparently for consumption as rations to the workforce twice daily during each administrative month. Lambert (1960) describes how Babylonian accounts translated food rations into labor time for each category of labor – males, females and children. This sexagesimal system of fractional divisions enabled the large institutions to calculate the rations needed to produce textiles or bricks, build public structures or dig canals during any given period of time. Weights for silver and other metals followed suit, by dividing the mina into 60 shekels.
>
> This silver and grain money served as the price coefficient by which the temples and palaces valued the products of their work force and the handicrafts they consigned to merchants. The interest rate on commercial advances denominated in silver was set in the simplest sexagesimal way: 1/60th per month, doubling the principal in 5 years (60 months). This standardized rate was adopted by the economy at large."[140]

The fact that Sumerian prices were centrally fixed, with grain and silver decreed as the unit of account, contradicts the standard history of money as a medium of individual exchange and a commodity with intrinsic value. Instead, as explained by Battilossi et al., money emerged as a:

> "…a mechanism of *governance through which stakeholders standing at the hub of a community (i.e., rulers) mobilized resources to produce "collective endeavors"* (infrastructures, defense) based on labor services and in-kind contributions. In return, they released tokens or receipts marked in standard units with real fiscal value, as they were based on obligations to contribute to the collectivity through tribute, rents, fees, tithes, or penalties. By *issuing liabilities to buy goods and services and by credibly committing to redeem them in discharge of obligations, ancient rulers developed the power to spend and tax*. At the same time, as the value of those liabilities was recognized by everybody owing regular tribute to the same ruler (their common creditor), they became transferable, provided valuable cash services, and allowed stranger parties to complete transactions. Money was basically a *product of fiscal engineering.*" [emphasis added][141]

The above shows that *money first emerged as a unit of account*, i.e. as an administrative convention. In fact, it was only after money was established in this way that it could become interesting for individuals to use it as a medium of exchange or store of value. The historical record therefore does not support the

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[139] M. Hudson, 'Origins of Money and Interest: Palatial Credit, Not Barter' in Battilossi et al. (eds.), *Handbook of the History of Money and Currency*, p. 48.
[140] M. Hudson, 'Origins of Money and Interest: Palatial Credit, Not Barter' in Battilossi et al. (eds.), *Handbook of the History of Money and Currency*, p. 48-49.
[141] Battilossi et al., *Handbook of the History of Money and Currency*, p. 4-5.

orthodox view that money emerged as a specialised commodity to reduce transaction costs in a primitive barter economy.

This point is fundamentally important. If money was created by states (governments, temples, etc.) as a tool to organise resources, then central authorities do not have a merely appropriative role in relation to the market economy. Instead, *states have a generative role which is internally related to the exchange practices of individuals*. This role entails that individual exchange using money cannot occur until an appropriate accounting framework has been put in place by central authorities.[142] *Market exchange practices are therefore dependent on, and not prior to, the generative role of the state*. This reaffirms our earlier finding that markets are not and have never been pre-social.

The creation of money as a unit of account is only part of the generative role of the state. Also important is the *diffusion of debts and liabilities (taxes, fines, credit) throughout the population which are payable in the unit of account*. If people need money to pay taxes and repay loans to the state, then this creates a societal demand for state currency.[143] Absent this demand, it is not clear why anyone would accept or use it. The fact that money can be used to make any and all payments to the state, and that the population is indebted and needs to make such payments, is a crucial part of what animates a currency and makes it possible to use money as a tool to circulate resources throughout society. A corollary to this point is that *the primary purpose of taxes is to animate currency, and not to generate revenues*.[144]

A second corollary is that money can only be circulated in the economy or used to pay taxes and other obligations *after it has been spent or lent into existence by the state*.[145] This indicates that all money in circulation originated as state debt.[146] The fact that I have a positive balance in my bank account, and can exchange it for goods and services, is only possible because European states and central banks are indebted and have outstanding liabilities.

This leads to two important points. The first is that *states cannot run out of money*, because they create it. The second is that *state debts are not an irresponsible state practice but are rather a necessary precondition for the circulation of money and the existence of exchange*. This does not, however, mean that states can or should accumulate an infinite debt. As Kelton explains, there are limits on government spending which are imposed by resource availability and the risk of inflation:

> "Just because there are no *financial* constraints on the federal budget doesn't mean there aren't real limits to what the government can (and should) do. Every economy has its own internal speed limit, regulated by the availability of our *real productive resources* – the state of technology and the quantity and quality of its land, workers, factories, machines, and other materials. If the government tries to spend too much into an economy that's already running at full speed, inflation will accelerate. There are limits. However, the limits are not in our government's ability to spend money, or in the deficit, but in inflationary pressures and resources within the real economy."[147]

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[142] L.R. Wray, 'The Origins of Money and the Development of the Modern Financial System', *Working Paper*, No. 86, Levy Economics Institute of Bard College, Annandale-on-Hudson, NY, p. 16.
[143] Kelton, *The Deficit Myth*, p. 25.
[144] As Wray explains: "…the main purpose of the tax system is to "drive" the currency. One of the reasons people will accept the sovereign's currency is that taxes need to be paid in that currency. From inception, no one would take currency unless it was needed to make payments. Taxes and other obligations create a demand for the currency used to make obligatory payments. From this perspective, the true purpose of taxes is *not* to provide "money revenue" that government can spend. Rather, taxes create a demand for the government's own currency so that the government can spend (or lend) the currency" (Wray, Modern Money Theory, 2015, p. 5).
[145] Wray, *Modern Money Theory*, p. 15-18. Kelton, Deficit Myth, p. 22-31. Keen, *The New Economics*, p. 37.
[146] This statement holds insofar as central bank and non-state institutions such as private banks are also granted special permissions from the state to issue state debt.
[147] Kelton, Deficit Myth, p. 4. See also Wray, *Modern Money Theory*, p. 104-106.

To understand this situation, Kelton draws a helpful distinction between *states as currency issuers*, and the *rest of society as currency users*. Currency issuers cannot run out of money and can spend without having a budget surplus or borrowing money. However, they are subject to structural concerns such as resource availability, inflation, and the acceptability of their currency. By contrast, currency users are limited in their expenses by the amount on their bank accounts and whatever else they can borrow. They are, to adapt our earlier terminology, subject to a financial survival condition. Given the distinction between currency users and issuers, it is a *fundamental mistake to draw a parallel between state finances and those of individuals, households, or businesses*. It is necessary, in this regard, not to view the state as just another kind of economic actor.

Also important is to note that *the state power to create money, and responsibility for monetary integrity, can be organised in different ways*. In contemporary economies it is often the case that responsibility for money creation and integrity has been legally devolved to other parties such as central banks and commercial banks. The former are obliged to pay for state spending, and the latter are permitted to create money in the unit of account as a multiple of the reserves which they hold at the central bank.[148] There are notable departures from this approach, so it is important not to focus on this particular case. Canada, New Zealand, Australia, Sweden, Hong Kong, and the UK, for example, do not require commercial banks to hold reserves with a central bank. And in the case of the EU, the European Central Bank is not authorised to pay for the spending of European States.[149]

It is also important to recognise that *not all states have an equal capacity to create money*. Some states, often with low credibility and a history of financial difficulties, peg their national currency to a foreign currency (they guarantee that it can be exchanged for a specific amount against the dollar), and have surrendered their monetary sovereignty. Their capacity to create money, and their monetary integrity, is constrained by their ability to obtain foreign currency. In the case of European States, the fact that the European Central Bank is prohibited from spending on their behalf entails that they are placed in the position of currency users. Joining the Euro has meant that they cannot spend money into existence, and that they must generate funds through taxation and borrowing in order to fund their activities. This has imposed severe limits on their budget capacity and ability to engage in monetary policy.[150]

In summary, the convention theory of money demonstrates that the two consistencies at the heart of the commodity theory are incorrect. Resources were first mobilised through credit arrangements, in the form of state debts and individual liabilities, rather than through barter. And money was created as a unit of account, decreed by central authorities; it did not emerge as a specialised commodity to facilitate barter between individuals. Building on the above, we can outline the generative state's relationship to money.

9.3.3 Money and the generative state

Money is a convention which the generative state can adopt to administer the mobilisation of resources, goods, and services in accordance with the collective interest.[151] This administration includes the side effects of this mobilisation, for example in terms of waste or cultural effects. This convention can be organised and interpreted in different ways, each of which has an influence on the profile of human agency in society.

In general, we can say that the state is internally related to all monetary activities and is ultimately responsible for all aspects of the monetary system. It can, and should, make any and all changes which

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[148] [*add reference, can probably use Wray*]
[149] [*add reference, can probably use Wray*]
[150] For a detailed discussion of this issue see: Wray, *Modern Money Theory*, p. 132, 176, 272.
[151] The collective interest is an inchoate concept which cannot be determined objectively or universally; it can only be discovered through more or less effective forms of political negotiation.

are appropriate for the pursuit of collective interest goals, including but not limited to fixing prices, prohibiting certain kinds of exchange, or removing debts from the economy. State monetary activities, such as spending and taxation, should be designed to animate and guide resource flows, and should not primarily aim at the creation of a financial surplus for state budgets.[152] In terms of governance, the state can delegate part of its monetary responsibility to different actors in society, such as central banks, private banks, or local communities. So while it is ultimately responsible, it again does not have to be exclusively responsible.

Using Crawford's terminology, we can say that *the state's adoption of money as a convention, and our collective submission to money as an intractable tool,*[153] *makes it possible for people in our societies to experience economic agency*. Importantly, this agency has made it possible for many people, such as entrepreneurs and investors, to see the direct effects of their actions and ideas in the world, and to see these actions as genuinely their own. At the same time, our submission to money as a tool, and our way of thinking about this submission, has also created socially undesirable kinds of agency. In this regard we can view things such as boring work, labour exploitation, and environmental harms, as a negative side effect of the kinds of economic agencies that have resulted from our submission to money and from our way of thinking about this submission in terms of economic science.

Next, we can identify that *thinking in terms of human agency can help inform the way that we think about the use of money as a tool for the administration of resources*. We can ask, for example, whether it makes sense for the monetary system to guide resources towards kinds of human agency which are unsustainable or harmful. Subsequently, we can use the law or rules on property to enable or constrain these kinds of human agency and ensure that money and resources end up with people who perform the kinds of human agency that are consistent with the collective interest. It is, of course, *a question for each society which human agencies are enabled and constrained, and where to put the balance between personal and collective interests.*

The above analysis of the generative state's monetary role has important implications for the market fundamentalist model. Crucially, it shows that *the state does not appropriate financial wealth from a generative economy*. Since the state is a currency issuer, and not a currency user, it is not limited by the same financial survival condition which applies to individuals and firms. This has several noteworthy consequences.

One is that *states can always afford to mobilise people and resources within their area of administrative control*. One possible way to use this monetary space is to offer a job guarantee with decent work and a comfortable, living wage for anyone who is looking for it.[154] This approach provides a powerful tool to fight labour exploitation and can be used to end involuntary unemployment. It can, moreover, be used to attract labour and resources towards work which is needed to protect ecosystems, build flood defences, fight droughts and fires, insulate homes, educate people on the effects of biodiversity loss and climate change, and so on. We should emphasise, in this regard, that it is a policy choice for our societies to leave people unemployed, or to employ so many people in 'money-making' professions such as law, banking, economics, and marketing.

A second is that *the state is not financially dependent on the tax revenues or investments of liberalised, wealthy individuals and firms in order to mobilise resources*. The state does not, in other words, need to prioritise and protect the interests and profitability of investors and businesses in a free market context

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[152] An error based on this common misconception is evident, for example, in the decision of New Zealand to reverse its generational ban on smoking due to its negative impact on state income (New Zealand scraps world-first smoking 'generation ban' to fund tax cuts | New Zealand | The Guardian).

[153] Aspects of this intractability include the fiction of commensurability (discussed later in this subsection), the imposition of the economic survival condition, the need for monetary integrity, and the inevitability of taxation.

[154] [*add reference, can probably use Wray*]

if it wants to stimulate economic activities. It can, moreover, pursue non-economic objectives without fear that this will cause money to 'leave' the economy. This fear is irrational because money is not a commodity but an administrative product of the state. To nuance this point we should note that foreign investors and businesses may contribute resources, expertise, and technology from abroad; these may be withdrawn following an unwelcome change in state economic and monetary policy. The fact that money does not leave does not mean that there are no other concerns or consequences.

A third consequence is that *individual exchange does not create money, but only redistributes it*. While exchange can create profits and a more positive bank balance from the perspective of an individual currency user, it does not lead to a larger amount of money in the overall system. There is no increase at system level because money is created as state debt (or as debt held by banks), and because the total value of money at the system level is zero (the financial assets and liabilities of currency issuers and currency users cancel out) or, more likely, is negative (due to interest rates imposed by currency issuers).

A related insight is that *profitable businesses and sectors do not create financial wealth*. Instead, their profitability is sourced and redistributed from the financial wealth of other parts of the economy. It follows that *profits are a fundamental driver of financial inequality*. This is not always problematic, for example if profits are accompanied by an increase in state debt or are paid by parties who can afford it. Profits may, however, also lead to the impoverishment of other parties, and may sustain business models which are contrary to the collective interest. This potential for harm entails that the generative state also has a responsibility to ensure that profit distributions and business models do not lead to results which are contrary to the collective interest.

Fourth, it is *incorrect to draw a literal equivalence between financial and non-financial wealth*. Money is a convention and not a commodity with intrinsic value. It is a governance tool, and we should not conflate the administrative system which it provides with the items which it is trying to organise. This is like confusing a bookkeeping entry for 'water' with water itself. This error has important implications for the market fundamentalist, utopian blueprint that was advocated by Adam Smith. To see why, we can first recall Smith's argument that the maximum pursuit of liberalised, individual self-interest will lead to the largest aggregate amount of wealth and the most prosperous societies. Since individuals are currency users, it may be economically assumed that they will maximise the financial (and non-financial value) of their exchanges. If money is a commodity, as Smith believed, then this will lead to the largest amount of aggregate financial and non-financial wealth. Second, we can reiterate that money is a convention, and that overall social financial wealth is zero or, more likely, negative. It follows that *an optimisation function which includes both financial and non-financial value will be unable to maximise non-financial value at the societal level*. The issue arises when you try to aggregate the individual optimisation functions; the social result is distorted by the zero or negative total value of money. This results in an error, equivalent to adding water and 'water' for the total value of a single accounting summary. This reaffirms that Smith's utopian vision is incorrect and will not lead to the greatest wealth of nations in terms of social prosperity.

The monetary role of the generative state also sheds light on *the limits of economic objectivity*. To start, we can recall that money was first created as a unit of account. If we rephrase this idea using terminology from philosophy of science, then we might say that money introduces a *fiction of commensurability* between things which are essentially different.[155] As Hudson explained, this fiction has made it possible for accountants to condense the resource flows of non-identical items into a single summary. This fiction explains, moreover, why it is possible to use money to exchange things which are rather different, such as goods, labour, information, and land. These insights are relevant for economic objectivity since they show that *the formation of prices occurs along the dimension of this fiction of commensurability*.

[155] Graeber makes a similar point while referring to money as a 'universal equivalent' (Graeber (2017) It is value that brings universes into being, p. 224).

Put differently, prices exist because central authorities have created an administrative, one-dimensional *monetary realm* where incommensurable things may be given a numerical value. The value of these labels may vary between apparently similar things, may be designated by states or economic actors, or may emerge out of a negotiation between different parties. Whatever the method used to determine this value, it remains the case none of them is natural and that the monetary realm is a product of convention. It follows that *prices are not natural phenomena*; they cannot exist as an objective, mathematical realm for the purpose of Platonist analysis.

This does not mean that we cannot learn from administrative entries about prices and resources, or that we cannot use insights from this realm to guide our resource management. It does, however, mean that *prices are unable to teach us any objective truths about the nature of economic dynamics throughout the universe*. If prices are not able to exist as an objective phenomenon but are the result of a convention established by central authorities, then this reaffirms our finding that exchange practices and markets cannot be pre-social. It shows, moreover, that these economic activities only exist because the state has enabled the conditions for them to exist.

9.4 Markets and the generative state

The state adoption of money as a convention leads to *the creation of a monetary realm*, as we similarly identified for law and property. It is through the lens of this realm that we can understand the nature of markets and their relationship to the generative state. In general, we can note that the monetary realm is a socially constructed, fictional space where potential opportunities for exchange are created due to interactions between people, social conventions, the state, and the environment. Despite the fictional status of this realm, the opportunities which it provides are able to have a real impact on the mobilisation of resources and the profile of human agency in society. We discuss each in turn.

9.4.1 Markets and the mobilisation of resources

To see how this works, we can imagine a society with an existing distribution of resources – including property, time, skills, and at least some unclaimed things in the environment – but which does not have money, and whose leaders want to engage in a *collective project* to build a new place of worship and have a festival for its completion. The leaders are busy and have nominated an agent to organise this project on their behalf. Some of the resources which the agent needs are in the hands of the central authorities, but they also need members of society to contribute their time and resources so the project can be completed. It is not, however, self-evident that everyone will be willing to contribute. This can happen for any number of good and bad reasons, including political disagreements about the place of worship being built, people wanting to spend their time in other ways which are more worthwhile or entertaining, or maybe the agent has a poor reputation, and so on. To try and solve this *coordination problem*, there are any number of options that the leaders and agent can use to support the completion of their project: public appeals to the collective good, reputational rewards, religious decrees, threats of violence, the use of sacred seals so the agent can act with the leaders' authority, and so forth.

Next, consider the same situation but with a monetary framework in place. There are official price lists and some money, in the form of debt and credit, has been distributed among the population. Most, if not all of the population, is obliged to pay taxes. In this case, the agent can be given a monetary budget, created by the state, to help complete the project. They can use this budget to pay members of society for their contributions, with taxes and the value of the monetary reward ensuring that everyone has an incentive to accept these payments. One important feature of these *monetary reward incentives* is that they can be varied, however imperfectly, according to the relative contributions of different members of society. A second is that they are fungible and that members of society can, in principle and according to their needs and wishes, exchange them for anything of matching value, as determined in relation to the price lists. In general, we can note that monetary reward incentives exist in addition to those of the

previous scenario, and that their *primary aim is to address the coordination problem and encourage members of society to contribute towards the collective interest*.

An important side effect of money is that, when it is spent by the state on collective projects such as the above, *it always mobilises more resources than required for the collective project*. This mobilisation can occur in two ways. First, people can spend their reward money to buy items from the state, according to the price lists, in which case money is returned to the state and cancels out the state debt that was used to create it (it is 'annihilated'). Second, people can trade the money for resources which are held by other people, in which case the money continues to circulate and mobilise additional resources until the monetary reward value is exchanged with, or taxed by, the state (it 'circulates' until it is annihilated). As before, other people are willing to accept money for their resources because they know that they can use it to pay taxes and buy things from the state.

The additional resource mobilisation that accompanies state spending underpins the money multiplier effect that was already identified by economists such as Keynes.[156] We should emphasise however, that economist explanations of the multiplier effect focus on the additional times that money is used, as a 'real' commodity, while we are more concerned with the extra resources which money, as a convention, is able to mobilise.[157] In general, the scale of the additional resource mobilisation is constrained by spending patterns, resource availability, and tax arrangements. These constraints are the responsibility of the state; they are necessary to ensure monetary integrity and limit the unsustainable and undesirable mobilisation of resources.

An important feature of the second kind of mobilisation, between people rather than via the state, is that *people can deviate from official prices*. This can occur for bad reasons, such as coercion or threats, but also for any number of good reasons. People may prefer not to travel to the state marketplace, and to sell something to their neighbours for a lower-than-official price. Or perhaps their goods are vulnerable to damage, and they prefer to sell them locally rather than travel long distances. An item may be scarce this season, the price lists may be out of date, and a trader may prefer to sell their product for a higher, unofficial price. Or they may be able to trade it for more valuable goods with the members of another society. Whatever the reason, it is clear that *the state only has an imperfect power to determine prices*; this is part of money's intractability when it is used as a tool to shape human agency.

The above scenarios show how money operates as a governance tool. It provides incentives which make it easier for resources, as distributed among the population and their environment, to circulate in society and be directed towards the collective interest. The effectiveness of these incentives depends on two factors: (1) the presence of taxation; and (2) the agency which people experience when they earn and spend their monetary rewards. The first is necessary to ensure monetary integrity and a societal demand for money, as discussed in the previous section. The second ensures that people feel genuinely rewarded for their contribution to the collective project and are motivated to contribute. Both factors are *needed to enable the use of money as a governance tool*; they work like the proverbial carrot and stick. If the only purpose of money would be to pay taxes, then it would not be meaningfully different from a state order to hand over resources, and if the only purpose of money would be to grant an experience of reward, then money would have no integrity and could not function as a system. It follows that *taxes and an experience of reward ('reward agency') are two sides of the same coin; both are necessary to ensure that monetary incentives are able to address the coordination problem in the collective interest.*

Looking again at the monetary realm, we can elaborate that it is a fictional, socially constructed space where the stick and carrot of taxes and monetary reward agencies are generated. It functions much like a game with points and provides people with a general incentive to: (1) increase their rewards; (2) search

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[156] [*add reference to Keynes and money multiplier effect*]
[157] [*add reference to Keynes and money multiplier effect and check content*]

for ways to spend their rewards; (3) decrease the amount of reward which they need to spend on taxes. It is through the lens of these incentives that people can 'look' out into the world and identify a range of *potential reward opportunities* and can then try to make an agreement for trade, for exchange, with other participants in the game. This way of looking at the world is socially constructed and *conditional on the fiction of commensurability* that was introduced by the state's adoption of money as a specific unit of account. It is in relation to this one-dimensional 'ruler', a universal-but-personal standard, that people make judgments about potential reward opportunities.

Trade occurs when there is an *overlap in the potential reward opportunities* of exchanging parties, and when the parties *choose to act on this overlap*. In the process, the potential reward opportunity is *ontologically crystallised* and turned into an actual reward; it is turned from something which *could be*, into something which *is*. Provided that the crystallisation does not occur primarily through coercion, then it is possible for all parties to the exchange to experience a positive and genuine sense of agency during the trade. Building on the above, we can identify that *markets are the interface between the monetary realm and human agency; they are where the incentives of potential reward opportunities are crystallised, and where resources are mobilised and turned into an experience of reward*.

It is useful to expand on the idea of potential reward opportunities. Since they are potential, and do not become 'real' until they are crystallised, we can identify *there are always more reward opportunities than there are actual trades*. This is necessarily the case since we would otherwise not have a choice, or be able to experience agency, between different ways to earn and spend our money. Importantly, this capacity to choose entails that there is no simple deterministic relationship between the value of a potential reward opportunity and the likelihood that it is acted on by trading parties.[158] As Lawson explains:

> "Human agency and social structure… presuppose each other. Neither can be reduced to, identified with, or explained completely in terms of the other, for each requires the other. Now the significant point here is that because social structure is human-agent dependent it is only ever manifest in human activity. Thus, given the open nature of human action – the fact that each person could always have acted otherwise – it follows that social structure can *only* ever be present in an open system. In consequence, any economic laws must be interpreted as tendencies that are manifested as strict event regularities [i.e. deterministically] only very rarely, usually in conditions when they are consciously brought about (such as the occurrence of some annual holidays)"[159]

The potentiality of reward opportunities means that, while we may identify relationships which look causal, like 'natural economic laws', under a narrow set of conditions, there are no such laws for the economic 'system' as a whole which can turn it into a series of deterministic or predictable events.

There are more reasons for the absence of overarching natural economic laws. The first reason is that *potential exchange opportunities are personal*; every person sees a unique and 'subjective' range of potential rewards. So while we can say that the lens of the monetary realm and people's ideas on value are socially constructed, it does not follow that every person looking through this lens sees the same thing. In fact, what people see has no independent existence outside of human thought. This precludes the possibility that there is anything inherent to the fictional, monetary realm which independently or objectively determines what happens in society.

A second is that *potential exchange opportunities are ephemeral*. People, society, and the environment are subject to continuous change; it is only in a narrow sense, and in limited timeframe, that we can imagine that there is a stable set of potential exchange opportunities from which we can infer the existence of natural economic laws.

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[158] Lawson, *Economics and Reality*, p. 32.
[159] [*Add page reference to Lawson, Economics and Reality*]

A third is that the *potential reward value of exchange opportunities is emergent, complex, and chaotic.* Reward values are the result of individual moods and perceptions, social values and culture, the design and interaction of social conventions, the activities of other people, the availability of resources, and the dynamics of monetary circulation, and so forth. These dynamics are, like the three-body problem, too complex for deterministic modelling. There is no objective, reliable way that we can use to identify the full range of potential reward opportunities and calculate which ones will be crystallised and turned into an actual trade.

Fourth, *we cannot assume that people will maximise their total monetary reward*, or financial value, since not everyone responds to monetary incentives in equal measure. Moreover, there are other things in life, aside from money and claims over resources, which people also experience as rewarding, and undoubtedly did experience as rewarding before money was adopted as a social convention. In any case, the fact that the monetary realm is socially constructed demonstrates that *people do not have a natural propensity to truck, barter, and exchange*. Again, this precludes the existence of natural economic laws.

9.4.2 Markets and human agency

If we turn to the relationship between *markets and human agency, we can identify that the latter can be manipulated (e.g. created, altered, destroyed) by the incentives of potential exchange opportunities*. In general, the strength of exchange incentives is influenced by a host of contextual and individual factors. It matters, for example, whether the people in a society are full exposed to the financial survival condition, or if they are protected by a welfare system. It also matters how people are educated to think about their work, and what the prevailing cultural ideas are about the highest social values and ideals. The latter can have, similar to the situation with property, a performative effect on people's imagination for identifying potential exchange opportunities and can influence their behaviour while trading.

Aside from such contextual factors and performativity, we can also identify that *the impact of monetary incentives on human agency is, to a significant degree, patterned by social conventions such as law and property*. This is evident from questions such as: Who is permitted to own property? What are the reasons for ownership empowerment? What kinds of property exist? Can they be bought and sold? What kinds of exchange are taxed? What is the level of taxation? Where am I permitted to build a factory? How much pollution can I emit? Does the state enforce its environmental and labour laws? Each of these questions has an impact on human agency and the existence, social legitimacy, and scale of monetary incentives. To understand this impact in more detail, we can discuss the relationship between law, property, and money.

To start, we can identify that *property is a precondition for money because the delineation, exclusion, and empowerment which it involves are necessary so that a thing can be commodified and exchanged*.[160] Given that property is a human universal, found in every society, and that law and money are not, we can reasonably assume that property was the first of these three conventions to be adopted. To discern the order between law and money, we can examine the history of writing in Ancient Sumeria.

Sumerians were not the first to use written symbols, but they seem to have been the first to develop lexigraphic writing which attaches writing to speech.[161] The earliest examples, from Uruk and dated to somewhere between 3500-3100BC,[162] emerged in the form of clay tablets.[163] The vast majority of these tablets were records and inventories, used for administrative and accounting purposes, but some were educational and carried "lexical lists, sometimes organized like a dictionary in terms of how the words

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[160] [*add reference on the need for property as a precondition for commodification. Perhaps Polanyi? Graeber?*]
[161] Archaeologists have traced the first written symbols, in the form of geometric and complex tokens, back to 9000BC and 4000BC respectively (Powell, 2009).
[162] Powell, 2009, p. 60.
[163] Crawford (2013), *The Sumerian World*, p. 97-101.

were written, but more often thematically structured like a thesaurus, some lists focusing on aspects of the social world (such as lists of professions) and others on the natural world (such as lists of trees)."[164] From 2800BC onwards, these writings were joined by 'display inscriptions' which relied, to a greater extent, on the use of cuneiform script to represent language.[165] Examples include documents for the sale of land, contracts, hymns, narratives, commemorations of leaders' deeds, and literary texts. The earliest concerned the sale of land to particular individuals and, interestingly for our discussion on property and sacredness, were typically "deposited in temples, the inscribed object sometimes being displayed for divine eyes only."[166] The earliest list of government reforms, the Urukagina, dates to around 2500BC, and sought to tackle excessive administrative fees, labour exploitation, and corruption.[167] The first law code, which predates that of Hammurabi, was established circa 2100BC at Ur Nammu, and contained edicts such as: "If a slave woman curses someone acting with the authority of her mistress, they shall scour her mouth with one sila of salt."[168] In relation to money, the historical record shows that temple administrations were already using lists of fixed prices, at the latest, by 2500BC.[169]

It is unclear from the above dates whether law or money first emerged as a convention. We should note, however, that our broad definition of law ('written conventions which the generative state uses to enable and constrain different kinds of human agency') is able to encompass accounting rules, legal documents, administrative edicts, rules for personal conduct, and so forth. It therefore includes both the pricing lists of the templates, contracts, and documents for the sale of land. It therefore seems and, in any case, follows from our definition that *law is a necessary precondition for the adoption of money*.

If property and law are preconditions for the adoption of money as a social convention, then we can infer that the agency profile of monetary rewards can be viewed, at least in part, as co-determined by these social conventions. It follows that property and law are important policy areas which the state can use to ensure that the societal profile of human agency, as moulded by the influence of money, is consistent with the collective interest. This is a significant departure from economics which suggests, as we have seen, that markets are pre-social, and that interventions in property, law, and individual affairs should be limited, as far as possible, to the pursuit of economic efficiency.

We can recognise, moreover, that *the existence of the monetary realm and monetary reward incentives contribute towards the creation, alteration, and discouragement of different kinds of human agency in society*. At first approximation, we can suggest that these changes in agency are beneficial since they address the coordination problem, encourage people to commit resources towards the collective interest, and, by granting reward agency, are able to contribute towards human fulfillment. These contributions are praiseworthy and, in my view, sufficient to justify the use of money (and markets) in society as a governance tool. We must, however, pay attention to the intractable nature of money as a social convention, and ensure that its influence on human agency is consistent with the collective interest.

For this purpose, we can identify that *the adoption of money, since it mobilises additional resources, also leads to the creation of additional agencies relative to a given situation without money*. These new agencies may be supported and influenced by the state but can also emerge organically because people

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[164] Crawford (2013), *The Sumerian World*, p. 99.
[165] Crawford (2013), *The Sumerian World*, p. 99-100.
[166] Crawford (2013), *The Sumerian World*, p. 100.
[167] Crawford (2013), *The Sumerian World*, p. 282.
[168] Roth (1995) Mesopotamian Legal Traditions and the Laws of Hammurabi, p. 29.
[169] "Sumerian archives reveal that the weight of metal (in particular silver) was chosen by temple administrations as the primary standard to measure the value of materials, land, and labour, no later than the middle third millennium BC. Sumerian temples established value equivalencies based on the weight of metal, so, for example, in Ur III texts 1 shekel of silver = 1 *gur* of barley. Either the weight of silver or volume of barley could have been used to measure the value of any commodity, though prices in the weight of silver were the far more frequent" (Crawford (2013), *The Sumerian World*, p. 509).

are able to trade money and resources amongst each other without direct state involvement. Whether this is desirable is open for debate and depends on a case-by-case basis; it can lead just as easily to the development of international trade, new music and arts, as to illegal and socially harmful activities such as smuggling and the production of crystal meth. In general, the state is responsible for ensuring that all of these agencies are consistent with the collective interest.

Also important to emphasise is that *the adoption of money introduces a tendency for people to see the pursuit of monetary reward value as an end in itself*. This reflects the economic survival condition and the false equivalence which money creates between financial and non-financial value. It should be stressed that *this tendency to see money as an end in itself is not the same as people trying to maximise their wealth*; the latter is an extreme, arguably pathological example of this tendency.

The idea of money as an end in itself has, of course, long been discussed as a source of questionable ethics.[170] A small part of the problem, according to our analysis, is that the pursuit of money can lead, organically, to the creation of undesirable agencies which can be socially harmful. While unfortunate, this is an intractable part of the use of money as a governance tool and cannot be avoided entirely. The larger problem, building on our earlier analysis, is that the total value of money at the societal level is zero or negative. *It therefore does not provide a meaningful, social contribution for people to pursue, or maximise, monetary reward value except to the extent that it is able to mobilise resources in a way which is consistent with the collective interest*.

The mere fact that there is more monetary reward value, more bookkeeping and claims over resources, is not an inherent good in itself. The same is true for sports; the number of points which are scored in a game means nothing without also taking into account the rules and how the game is played. If points were all that mattered, then the best sport would simply be the one which scores the most points, and sports bodies everywhere would try to rewrite the rules so that their players could score ever more points. This is obviously not true and makes little sense. This emphasis on points is, however, an implicit part of the commodity view of money which draws an equivalence between financial and non-financial value and suggests that scoring points can or should be viewed as the aim of the economic game.

In fairness to economics we should also recognise that, from the perspective of people engaging in a sport, it *does* make sense to try and score as many points as possible since this is allows them to win, or at least to compare their relative performance to other athletes. This perspective is, in effect, what economics has adopted when trying to explain economic dynamics in terms of methodological individualism, i.e. from the viewpoint of an individual currency user who is subject to the financial survival condition. It the process, it has mistakenly come to see the 'rules of the game', which are established by convention, as a natural and inevitable constraint on the economic arrangements of our societies. The player is powerless to change the rules; all they can do is compete. This powerlessness is reflected in the way that competition is venerated in economics, and in market fundamentalism which assumes that self-interested, economic competition between individuals is the only 'true' and objective foundation of society.

An unfortunate side effect of this commitment to the idea of economics as a game, i.e. to competition and point scoring, is that it encourages people to engage in morally deficient behaviour and affirms the idea that it is good to pursue money as an end in itself. Davies puts it well when he writes:

> "The very act of circumscribing activities within a competitive arena, subject to specific rules of competition, is an invitation to abandon ethical questions of how one 'ought' to behave or how

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[170] Meikle (1994) 'Aristotle on money', *Phronesis*, Vol. 39, No. 1, pp. 26-44. Regarding the accumulation of wealth, Hobbes writes that "a man that by asperity of nature, will strive to retain those things which to himself are superfluous, and to other necessary; and for the stubbornness of his passions, cannot be corrected, is to be left, or cast out of society, as cumbersome thereunto." (Leviathan, my physical copy, p. 101).

> society 'ought' to be, in favour of strategic efforts to defeat opponents and maximize one's score. 'Fair play' may still be recognized, but only in a secondary sense, as implied by the term 'moral victory', which is anything but an *actual* victory."[171]

Modern economics encourages the idea that money-making is an inherently good activity and invites people and firms to measure their success in these terms as an 'actual' victory rather than a moral one.[172] The result is that *economics promotes, rather than tempers, the creation of agencies which mobilise additional resources for the mere sake of monetary reward value*. At the same time, it displaces other, collective ways of thinking about resource use which transcend the limits and game-like logic of the monetary realm.

It follows from the above that *states and societies cannot rely on economics to address the troublesome side effects of money as an intractable tool and social convention*. What this means is that profitability, or the ability to 'make money', is not a sufficient justification for agencies to exist. Instead, the only relevant question is whether these agencies use societal resources in a way which is consistent with the collective interest. This includes ensuring that people feel genuinely rewarded for their work and contributions to society, and does not mean that everything has to serve the interests of the state while providing little to people in terms of personal enjoyment and fulfillment. It does, however, mean that people's experience of reward agency, their incomes and spending patterns, should not unreasonably limit a society's ability to manage its resources in an ethical and sustainable way.[173]

Another aspect of money's intractability, related to human agency, is the *universalism that accompanies the monetary realm and the fiction of commensurability on which it is founded*. This universalism has at least two dimensions. The first is the idea that very different things can be evaluated using the same standard, thus glossing over their essential differences. As an example, we can consider the way that renewable and non-renewable resources are *both* priced within the monetary realm, and that consumers can choose between them in a way which discounts their relative sustainability. Another example relates to business decisions to hire more people, or to replace them with machines; the prices of these two options says little about the inherent differences of people and machinery, or the broader societal impact of this choice. In general, it is not clear that currency users are, due to the moral impairment of the economic survival condition, in a strong position to transcend the shortcomings of this first dimension of universalism. It follows that *individual preferences, as reflected in market activities, are not a reliable or sufficient guide for state policies in relation to the economy*.

The second dimension of universalism is that the identification of potential reward opportunities is not limited to resources within the sphere of power and influence of a state. Put differently, the *monetary realm makes it possible for people to identify reward opportunities beyond the borders of their society*. An obvious example is long-distance trade, whereby people evaluate the resources of another society through the lens of monetary reward value that has been established by their own society. Interestingly, it is not necessary for such trade that both societies have adopted money as a convention. Instead, it is sufficient if one society has a monetary realm through which the resources of *both* societies can be judged. In fact, one society's monetary realm is sufficient for the identification of reward opportunities throughout the universe, or at least as far as humans are able to travel and extend their imaginations.

The *universal identification of potential reward opportunities* has at least two intractable features in addition to its general influence on human agency. The first is that its *reward opportunities may operate beyond the scope of direct state power and control*. This is unlike the realms of property and law whose

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[171] Davies, *The Limits of Neoliberalism*, p. 63.

[172] Reference to PhD thesis. See also: theory of efficient breach (Klass, 'Efficient Breach' in Klass, Letsas and Saprai (eds.), *The Philosophical Foundations Of Contract Law*, pp. 362-387, Oxford: Oxford University Press 2014).

[173] This is consistent with the doughnut view of the economy that has been famously promoted by Kate Raworth.

fictional scope is dependent on state enforcement. The result is that the monetary realm, through its influence on human agency, has a systematic or 'gravitational' pull on resources outside of a society. It attracts the resources of other societies as well as unclaimed or unprotected resources in the natural environment.

The second intractable feature of universal identification is that *the money of different societies, their units of account, are always commensurable and cannot be conceptually isolated*. In this regard it is not only financial and non-financial value which are made commensurable by the introduction of money, but also different 'kinds' of financial value and their respective monetary realms. It follows, in concert with the gravitational pull of each society's monetary realm, that the monetary dynamics of different societies are intertwined whenever it is possible, legally or not, for people and resources to travel between them. In general, the degree of interdependence in the monetary dynamics of different societies depends on the scale of their inter-societal trade since this influences the degree of overlap between potential reward opportunities and the human agencies which they enable.

In summary, markets are the interface between the monetary realm and human agency. They are visible when potential exchange opportunities, created by the monetary realm, are ontologically crystallised during trade between different parties. In general, the generative state has a responsibility to ensure that a society's profile of human agency, as influenced by these opportunities and their crystallisation, is consistent with the collective interest. This responsibility covers not only the mobilisation of resources for collective interest projects, but also those additional resources which are mobilised by the use of money, and which are necessary to ensure that people experience a genuine sense of reward agency for their contributions to society. The generative state is also responsible for the intractable consequences of money, such as the inter-societal flow of people and resources which occurs due to the universalism of monetary reward incentives.

Adding to the above, we can emphasise that there are practical limits to the state's direct power over markets because money makes it possible for people to mobilise resources without state involvement and beyond its borders. In this regard the state's responsibility over markets is more like tending an unruly garden than designing a machine. It needs to manage, however imperfectly, an 'ecosystem' of potential exchange opportunities which arises from social and environmental interactions within a framework of property, law, and money, and needs to respond dynamically to changes which emerge in this ecosystem over time. Importantly, the responses of the generative state do not have to be consistent with the impossible, 'objective' demands of market fundamentalism, natural economic laws, or pre-social ideas of freedom. Instead, we only need to consider more practical questions about how they will influence our society's profile of human agency and whether they are consistent with the long-term, sustainable, and ethical management of our society's resources.

9.5 Firms and the generative state

The overall aim of this section has been to challenge the economic idea that markets and firms are pre-political, and that the state is primarily appropriative, by outlining an alternative vision for a generative state which is internally related to firms and economic activities. To develop this outline, we have thus far examined how the generative state is related to law, property, money, and markets. Having done so, we are ready to explore the relationship between firms and the generative state. Our starting point is to recall our earlier definition of firms as 'a nexus for the organised provision of goods and services'.[174]

Next, we can expand on the idea that firms are socially constructed on the basis of conventions adopted by the generative state. This can happen in one of three ways. They may be *directly created*, as happened with the British East India Company which was created by an Act of Parliament. They may be *directly*

[174] Chapter 1.

enabled, for example as when states adopt company law statutes and allow people to create their own firms. Or they may be *indirectly enabled*, which happens when firms emerge organically within the broader framework of conventions that were already adopted by the generative state but not designed with the explicit aim to create or enable firms. As an example of the latter, we can think of the large company groups that were created in the 19th century US on the basis of legal rules for trusts.[175] There are no other ways for firms to exist other than via these three routes. In general, we can note that a state has some degree of choice, within the limits of intractability, whether it creates or enables firms, if at all, on the basis of its adopted conventions. This choice may have practical consequences, for example on the number of firms created, or the legal certainty of their existence, but it has no bearing on whether firms are socially constructed.

It follows from the above that *firms are not, and cannot be, pre-social* since we cannot conceive of their existence without the conventions of the generative state. This has important implications for the long-standing debate on whether corporations can be created by contract. As we have seen, academics were already debating in the 1930s whether corporations are a private 'natural entity' which is created by individual contracting, as against the concession view that they a public creation of the state. And the debate continues today between supporters and opponents of contractual views of the corporation.[176] From the perspective of our analysis, there is no need for this disagreement. In principle, *it does not matter whether or not corporations are created by contract since they are, in every case, created or enabled by the generative state*.

Our analysis also challenges an assumption which is common to both sides of the debate on the public-private status of corporations, namely that non-corporate firms such as partnerships and sole traders are private actors.[177] A first problem, endemic to these debates, is that *the term 'private' is rarely, if ever, defined*.[178] This results in structural opacity about what, exactly, constitutes privateness or publicness, and limits their fruitfulness and progression. A second, deeper problem emerges when we realise, based on our analysis of the public-private divide, that the idea of firms as private actors is equivalent to a claim that they are a product of individual initiative in the state of nature. In other words, *the idea that firms are private amounts to an assertion that firms are pre-social*. This is problematic, first, since it cannot properly account for internal relations, and second, because it is therefore incompatible with the idea of a generative state. In terms of our analysis, it follows not only that we should stop using the public-private divide as a conceptual tool for the relationship between individuals, firms, state, and society, but also that *we should stop referring to firms as private or public actors*.

One consequence of transcending the public-private divide is that *there is no underlying premise that the generative state needs to treat firms equally as private actors*. In fact, the state should depart from, or even refuse to introduce, equal treatment principles whenever this can reasonably ensure that human agency, resource flows, and monetary integrity are consistent with the collective interest. A corollary to this point is that state activities and interventions can be addressed to one firm, all firms, every firm in a city, all firms in a sector, and everything in between if this is deemed necessary by the state. This is important since it provides an *expanded conceptual foundation which the state can use to develop regulatory distinctions* between dissimilar market actors such as sole traders, letterbox companies, subsidiaries, and parent companies, or between similar market actors in dissimilar industries such as corporations in finance or manufacturing.

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[175] [*add references to 19th century US use of trusts to create company groups*]

[176] [*add various references*] Supporters include Easterbrook and Fischel (add reference); Davoudi et al. (add reference). Opponents include Ciepley (2013), Ireland (add reference), Robé (add reference), Hansmann and Kraakman (2000) 'Essential role of organizational law'.

[177] [*optional reference to literature that describes firms, especially non-corporations, as private. Probably also the Dutch and German legal codes?*]

[178] [*add reference to PhD thesis*]

Such regulatory distinctions are not, of course, new. They already exist in the special regulation of the financial sector, for chemicals production, for farming and fishing, and so forth. It should be recognised, however, that *industry regulation has from the 1980s onwards been generally designed to be consistent with modern economics.*[179] This is evident, for example, in regulatory efforts to cut red tape, promote competition and competitiveness, increase consumer choice, optimise individual decisions, and address externalities.[180] In terms of regulatory effectiveness, the problem with this approach is that it suffers from the private disposition of economics and assumes, in its foundation, that all firms and individuals should be treated equally as private actors. The result is that *industry regulation often lacks the flexibility to draw more than a minimal, suboptimal distinction between different kinds of firms and market actors*. And when a regulatory initiative does try to make these distinctions, it has to fight against conventional wisdom which claims that it is contrary to economic efficiency and individual freedom.[181]

Overall, it is a significant departure from traditional and contemporary theories of the firm to abandon the public-private divide and the idea that firms can be private or public. It may, however, be a scientific improvement insofar as it allows us to examine and regulate firms without yielding to the political bias of liberalism. We will see, moreover, that a generative state perspective on firms is able to provide a more comprehensive way to ensure that human agency in firms, and their use of resources and money, is consistent with the collective interest. Notwithstanding these benefits, we can anticipate that some may argue that the public-private divide should be preserved despite its flaws. First, because it offers an essential safeguard against unreasonable uses of state power, and second, since it maintains an important role for individual initiative in economic affairs.

In response to the first point, we can agree that concerns about the dangers of state power are legitimate, and that they need to be addressed. It is not, however, self-evident that the public-private divide is the best or only way to do so. After all, there are any number of creative ways that human agencies can be organised to regulate the use of state power. Furthermore, we have seen that the public-private divide has a powerful, impairing effect on the state since it requires its activities to be consistent with a fictional metaphor of individual freedom in a state of nature. This impairment has certain benefits against abuses of power, but it also comes at a significant cost. We have seen, for example, that it has resulted in the suboptimal treatment of sustainability issues as evident in the limits of economics. It has created ample space, moreover, for harmful concentrations of wealth and power in private hands.[182] We can therefore argue in response that continued adherence to the public-private divide, also due to its erosion of internal relations, is more likely to exacerbate than abate sustainability crises such as biodiversity loss, climate change, and inequality. The public-private divide is not worth this steep price, especially since there are other ways to organise the relationship between the state and society.

In response to the second point, we can emphasise that the generative state, as an analytical lens, does not require the state to micromanage all activities in society. Nor does a generative view of the state imply that there is no need for individual initiative by people working in firms. Instead, what it shows is that initiative in firms cannot occur without a context which is socially constructed and provided by

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[179] Kearney and Merrill (1998) 'The Great Transformation of Regulation Law'. Baldwin, Cave, and Lodge (2012), *Understanding Regulation: Theory, Strategy, and Practice*. Ogus (2004) *Regulation: Legal Form and Economic Theory*. Important exceptions include the EU Ecodesign Directive and its Common Agricultural Policy.

[180] Examples from the European context include the Competition Policy, regulatory fitness and performance programme (REFIT), Non-Financial Reporting Directive, Taxonomy, Emissions Trading Scheme, and REACH regulation. The economic design of these collective interest measures is often explicit, for example in the case of REACH which was "adopted to improve the protection of human health and the environment from the risks that can be posed by chemicals, while enhancing the competitiveness of the EU chemicals industry" (https://echa.europa.eu/regulations/reach/understanding-reach).

[181] [*optional reference: Can I find an example of this? Maybe the Director's Duties one. Did the Ecodesign directive face a lot of resistance?*]

[182] [*add reference to harmful concentrations of wealth and power in private hands; check book shelf at home*]

the state. Metaphorically, we can say that the state creates a musical instrument which people can play and use. In these terms, it makes as much sense to say that the generative state is a threat to individual initiative, as to say that a musician is not creative because their instrument was made by someone else.

Having said that, we also need to recognise that the generative state has an ultimate responsibility for the profile of human agency and resource use in society. While this responsibility can be viewed and implemented in different ways, it is also true that it can leave more, or less, scope for individual initiative through the use of firms. To return to our metaphor, it is quite possible that the state creates a boring or complicated instrument which no-one wants to play. This would, however, defeat the purpose of firms and is likely, without a good alternative, to create serious problems in the mobilisation of people and resources. In this regard it is *consistent with the collective interest for the state to ensure that people can exercise initiative and experience genuine agency during their firm-related activities*. This shows that, even in the absence of a public-private divide, there are good reasons for the generative state to act in accordance with liberal values such as individual autonomy. The difference, however, is that these values are not viewed by the generative state as an objective truth or utopian ideal.

A last point in relation to the public-private divide is that *its absence does not entail that firms should not receive protection from unfair, unreasonable, illegitimate, or unnecessary state activities*. Rather, the argument is that such protection should not be grounded in the reified treatment of an allegorical fiction which suggests that there is a private sphere of individual freedom which grants people and firms a 'natural' level of protection against the state. It should be stressed, moreover, that *state action in relation to firms does not always and everywhere have to be negative and fear inspiring*. In fact, it is quite possible to imagine that firms and the generative state can develop relationships which are positive and symbiotic. For example, the state can use a job guarantee to create a flexible pool of workers who can be used to temporarily replace sick or pregnant workers without requiring firms to pay. This helps the firm *and* reduces the economic tension which firms experience when their workers are absent, even for legitimate reasons. Another example is that the state can provide, without cost, teams of support employees for starting firms so that they can establish their routines and survive past the difficult early phase. The state could, moreover, provide a source of funding for firms which is more concerned, at least in the first instance, with their influence on human agency and resource use than their capacity to turn a profit. This provides much more scope for experimentation with different business models and organisational forms than the public-private divide. As a final example, the generative state can use protectionist measures to ensure that firms with a circular business model are able to survive long-term and do not need to out-compete unsustainable firms with lower costs. These examples are just the tip of the iceberg, and many more can be imagined. After all, once we recognise the generative role of the state, then we can imagine any number of relationships between the state and firms without first needing to counter-productively ask whether it is consistent with individual freedom, how the state will pay for it, and how it will influence free market dynamics.

Another benefit of the generative state is that it allows us to identify that *the commercial drive of firms is not natural but is socially constructed due to the adoption of money as a convention, and the status of firms as currency users*. Furthermore, it allows us to recognise that firmophilic tendencies (the moral impairments that we previously identified)[183] are side effects of money as a convention and governance tool; they are an immanent feature of human agency in commercial firms. These tendencies emerge because *it is difficult for currency users, who are subject to a financial survival condition, to properly weigh the relative weight of financial and non-financial value*. Their experience tells them that the two are both real and interchangeable. This makes it challenging for them to discern that the total financial wealth of society is zero or negative, and that only non-financial value provides a direct contribution to social prosperity. Also relevant is that, even if a currency user realises that money is a social construct,

[183] Section **Error! Reference source not found.**: economic primacy, economic imperialism, and the subordination of non-economic concerns.

and that its total societal value is zero (or negative), there is still nothing which they can do to escape the practical consequences of their financial survival condition. Even if I know that money is not real, I still need to buy food and pay taxes. It follows that people and, by extension, *firms are structurally unable to make socially optimal decisions between financial and non-financial value because they always need to compromise against the concrete demands of their financial survival condition.*

This reaffirms our finding that theories on good governance, such as Shareholder Welfare Maximisation and Pieconomics, are incorrect when they suggest that we can make firms sustainable by addressing market failures and optimising the three dimensions of corporate efficiency. These theories do not compensate for the financial survival condition or the structural inability of firms and other market participants to make socially optimal decisions. They do not recognise, moreover, that a balanced focus on financial and non-financial value tends to counter-productively reinforce the social suboptimality of seeing money as an end in itself. More generally, the commitment of these good governance theories to methodological individualism means that they are *unable to see that, because of moral impairment, there is no aspect of individual commercial decision-making, in firms or otherwise, which can be both liberalised and optimised so that it leads to socially optimal outcomes*.

This does not, however, mean that firms or commercial activities should be automatically forbidden or discouraged by the generative state. On the contrary, it should be highlighted that *people and firms are not to blame for their moral impairment; it is not their 'fault' that they make decisions in relation to the monetary realm and the financial survival condition*. It is therefore no contradiction to recognise, on the one hand, that human agency in firms is morally impaired, and, on the other hand, to appreciate the contribution that firms can make to the provision of goods and services. Firms may not be perfect, but neither are we, so we should not dismiss them on that basis. In this regard it is better to recognise that *moral impairment in firms is an intractable aspect of their commercial existence*. It is one of many factors which the state needs to consider when acting in the collective interest.

Another insight from our analysis of the generative state is that *the state does not depend on the financial value which is 'generated' by firms*. It is a currency issuer and does not need to appropriate their money to pay for its expenses. Instead, appropriation (i.e. taxation) is primarily relevant in terms of its societal effects on human agency, resource flows, and monetary integrity. It follows, first, that *the profitability and finances of firms are relevant for the state, but not because they are a source of funding*. And second, that *there is no state or social need for firms to 'make money'*. Profitability does not, in itself, provide a useful contribution to society because money is not created, but only redistributed, during market exchange. In the end, what firms do, how they do it, how their people are treated, and how their resources are managed, is fundamentally more important than their financial performance in terms of P/E, Tobin's q, or EBITDA. The latter are only interesting in terms of their relationship to the former and are not a societal end in themselves.

In general, financial performance metrics are a potential point of intervention which the generative state can use to ensure that firm activities are consistent with the collective interest. To see how this might work, we will now discuss the generative state's relationship to different dimensions of the firm.

9.5.1 Dimensions of the firm

Our analysis has shown that firms are socially constructed on the basis of conventions such as property, law, and money. We have seen, moreover, that the generative state makes it possible for people to enjoy an experience of agency in firms, and to mobilise resources both for collective projects and for personal rewards. In general, the conventions of the generative state are a necessary, but not sufficient condition for firm activities. It is, of course, self-evident that the people involved in firms, and the environment in which the firm operates, are also required. In this regard we can say that firms are a joint product of the state, people, and their environment.

These three factors participate in and create an *ongoing 'flow' of exchange dynamics which animates people and resources both in- and outside of the territory of the state*. The generative state is responsible for the human agency and resource use of this flow, acts within its moving currents, and needs to alter its course as and when this is necessary for the collective interest. There is no perfect or objective way for the state to do this, in the same way that there is no perfect or objective way for a river to flow through the landscape. It can therefore be expected that state activities will always be imperfect, will always lead to unexpected results, and will always need small- and large-scale adjustments.

To fulfil its responsibility, the generative state can, in principle, *interact with any and all dimensions of firm activities, and make any and all kinds of modifications which may be necessary*. These interactions can relate to part of a firm's operations, the whole firm, all firms in a sector, all firms in society, and so on. In general, it is a matter for each state and society to determine how the collective interest is defined, how the necessity of state interactions with firms is justified, and what constraints on state power are implemented, if any, to shield people and firms from harmful, unreasonable, or unnecessary state action. It follows that *the firms of different societies can have different dimensions*, and that their activities may be calibrated in different ways. These calibrations can have intractable consequences, often relating to the continued existence of monetary rewards which are beyond the scope of state power.[184]

Next, we can define that *a dimension of the firm is any actual or potential feature of firm activity which the generative state can modify to shape its profile of human agency and resource use*. These features are actual or potential since the state also needs to consider what happens when it adds new dimensions or decides to modify or remove existing ones. As an example of a new dimension, we can think of adding a stakeholder representative body to the governance structure of corporations.[185] As for the removal of a dimension, we can imagine that some kinds of employment contract might be made illegal in sectors where they lead to undesirable kinds of human agency, such as labour exploitation.

To understand the relationship between dimensions of the firm and the firm itself, we can recall from our earlier definition that firms are a commercial *nexus*. To see what this means we can imagine, first, a landscape of internal relations which is coextensive with the world that we experience. Second, we can imagine that internal relations are more heavily concentrated in some parts of this mental landscape relative to others, for example in bigger cities where there are more people, or in places where intensive social activities occur (such as firms, but also theatres, churches, parliaments, etc.). Like gravity, which is present everywhere but is stronger around bodies with large masses, internal relations are also present everywhere but are strongest in areas of dense social activity. It follows that the firm, as a nexus, is a *space where internal relations and exchange dynamics are concentrated for the provision of goods and services*. As noted in the introduction, this nexal space can take different forms (e.g. geographic, legal, or digital) and its activities always produce side effects 'in the same way that movement creates ripples in a pond'.[186] Overall, this unlocks the full understanding of our initial definition of the firm, *as a nexus for the organised provision of goods and services*.

Topographically, this nexus can be *imagined as a peak in a broader landscape of internal relations*. Dimensions of the firm are different features of this peak which can be interacted with by the generative state, but also by other parties such as customers, employees, and so forth. It is possible to interact with

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[184] Consider, for example, the 1920s case of US alcohol prohibition which led to the large-scale production of illegal alcohol by criminal groups.

[185] This is being discussed, for example, in the context of the Netherlands (Timmerman 2021 Bestuursbesluiten Chapter 4).

[186] Also from the introduction: 'Multiple side effects can occur at the same time, can be positive or negative (or both), and can affect various aspects of the firm and its context, i.e. they can be political, social, environmental, etc. The relationship between a firm and its side effects is more likely to be complex and interrelated than singular or discrete.'

these features because of the social construction, the firm as a 'musical instrument', that is provided by the generative state.

One benefit of this *topographical metaphor* is that it solves an enduring problem in legal and economic discussions on firms, namely where to put their 'boundary'.[187] Endemic to these discussions is an assumption that firms and other market participants can be bounded, i.e. that they can be atomised and turned into discrete actors without internal relations. This assumption is necessary for the idea that there is an internal and external part of the firm which allows for a definable boundary between the market and the firm, or between the firm and other market actors.[188] While decades of work have shown that the definition of this boundary is intractable,[189] it is steadfastly assumed that it 'must' exist since there would otherwise be no hard distinction between markets and firms. The result has been a proliferation of different definitions, none of which has garnered consensus support. Our analysis shows, however, that the search for this boundary is as futile as trying to identify where 'exactly' gravity begins. There is no internal or external part of the universe, and there is no internal or external part of the firm which delineates where one set of internal relations ends and another begins. By extension, there is no absolute dividing line between different dimensions of the firm; all of them overlap in various ways. This does not, of course, mean that we cannot draw abstract, fictional boundaries for a variety of useful purposes. It only means that their delineation does not reveal anything objective about the firm or its relation to markets.

Another benefit of the gravitational metaphor, and its topographical approach, is that it shows how it is possible, from the perspective that everything is internally related, for the generative state and other parties to interact with firms even if we do not define them as separate, discrete entities. Recalling the firm as a 'peak' in a landscape of internal relations, we can see that this is similar to a mountain. We can climb it, and interact with it, even if we cannot say exactly where it begins. This is how we can think of, talk about, and regulate specific firms even without an identifiable internal-external boundary.

Next, we can expand on the idea that firms exist as a *dynamic and complex* nexus of internal relations between the state, people, and the environment. They are dynamic in the sense that their activities unfold over time, and complex because their activities are predominantly non-linear, chaotic, and do not tend towards a long-term, stable equilibrium.[190] These characteristics are important for understanding the regulatory relationship between firm dimensions and the generative state.

Dynamism entails that the state needs to think about its responsibility in relation to firms over time, in terms of their past, present, and future. The *past* includes all aspects of a firm's history, including the people involved, its sector, state conventions, its business model, commercial decisions, company

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[187] Coase, 'The Nature of the Firm'. Holmström and Roberts (1998) The Boundaries of the Firm Revisited. Araujo et al. (2003) The Multiple Boundaries of the Firm. Josefy et al. (2018) All Things Great and Small Organizational Size Boundaries of the Firm and a Changing Environment.

[188] Consider the following from Zenger et al.: "Our contention is that a robust theory of the firm—a theory that can persuasively define firm boundaries—must address four related theoretical domains. First, a theory of the firm must clearly articulate why and when markets work, highlighting the market's potential advantages as an institution of governance. Second, a theory of the firm must articulate the circumstances that lead markets to fail, highlighting the shortcomings of markets as a form of governance. Third, a theory of the firm must articulate the virtues of hierarchy or internal governance—the mechanisms that enable its effectiveness, and articulate why and when internal organization succeeds. Fourth and finally, a theory of the firm must articulate why and when organizations fail, documenting the reasons which cause organizations to fail as mechanisms of governance (Zenger et al. (2011) Theories of the Firm–Market Boundary, p. 91).

[189] Holmström and Roberts note, for example, that issues of interdependency and influence lead "to strategic considerations that transcend simple two-party relationships" (Holmström and Roberts (1998) The Boundaries of the Firm Revisited, p. 92).

[190] [*add reference to chaos theory and non-linear mathematics*]

policies, etc. It relates to how the state, people, and the environment have animated people and resources to create the flow of exchange dynamics which is enmeshed with the internal relations of a firm.

The *present* is the state's attitude, at this moment, in relation to this flow. If it allows the flow to continue unfolding, undisturbed along its current, complex trajectory then the state adopts a *passive stance*. If it contemplates an intervention, or makes an actual change, to some or all of this flow, then it has adopted an *active stance*.[191] This dynamic, passive-active distinction makes it easier to see how the activities of firms can be subject to more or less state intervention while being at the same time socially constructed.

The *future* is an imperfect imagining of how economic flows in a firm may unfold beyond the present moment. The generative state can, in principle, use any kinds of qualitative and quantitative approaches to develop estimates for these flows. The usefulness of these approaches varies; none of them is objective or perfect. They are, however, necessary insofar as the generative state needs to evaluate the reasonableness and necessity of its regulations against their anticipated future impacts.

Complexity entails that the state should, at any given moment, be ready to modify the direction and substance of firms' exchange flows in the collective interest. It cannot assume that equilibrium dynamics, posited or real, are sufficient to create desirable outcomes or enduring stability. Nor can it generally assume, because of nonlinearity and chaos, that economic flows will manifest similarly in similar firms and contexts. At the same time, the state's readiness for intervention needs to be tempered against the stability which people need to make decisions, structure activities, and plan for the future.

In this regard must be emphasised that *the state should not create a maelstrom of interventions*. One issue is that too many interventions can undermine people's sense of agency in their activities, in terms of the motivation which they experience and the meaning that they find in their work. It is therefore in the collective interest for the generative state to respect people's *need for stability*, and to ensure that its interventions are not unnecessarily disruptive. There are two important implications from this point.

The first is that the state may sometimes need to protect firms from the destabilising effects of market competition[192] so that they can operate under stable conditions. This may be necessary, for example, to establish novel exchange flows which are consistent with circular business models. Second, the need for stability demonstrates that there are good reasons for the generative state to act in accordance with liberal values, in this case the principle of non-intervention. These reasons exist even in the absence of a public-private divide which impairs the scope and effectiveness of state action. This runs contrary to the influential 'slippery slope' argument of Friedman and Hayek which suggests that state intervention in the economy invites more and more state intervention, with the ultimate outcome that the state has to micromanage everything and that a society becomes unfree.[193]

Building on the above, we are ready to examine some particular examples of firm dimensions. These are not exhaustive or intended to provide a taxonomy. Their only aim is to demonstrate and stimulate discussion. With that in mind, we will look at the following dimensions: property, governance, agency profile, business model, and sources of funding.

Property

Starting with *property*, we can identify from our internal relations model that firms can be owners, non-owners, and property. Sole traders and partnerships are both owned as property; the former is owned

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[191] Irregular monitoring and investigation by the state should be viewed as part of an active stance since such activities can influence, for example through the effect on expectations, how economic flows are unfolding. By contrast, if regular monitoring and data collecting do not often lead to action, then this could be more appropriately viewed as part of a passive stance.

[192] [*add reference to competition being a disruptive force for companies. Davies and neoliberalism book?*]

[193] [*add references to slippery slope arguments of Friedman and Hayek*]

by one person, the latter by a group of people. This differs from corporations which are able to own property as a separate legal person. In general *it is difficult, even unreliable, to infer from a firm's status as property what kind of impact it will have on human agency*. In theory, we can say that sole traders and partners have individual and joint ownership incentives, and that corporations rely on agents and a governance structure to manage their property. There are, however, at least three reasons that such an analysis is deficient.

First, there is the performativity of theories on property and differences in people's behaviour. If we do not assume that it is natural or self-evident for people to maximise the financial value of their property, then the connection between property and human agency becomes more nebulous. Second, there is the fact that firms in liberal societies are permitted to engage in any kind of lawful market activity. It follows that the relationship between human agency and what a firm actually does goes well beyond its status as property. Third is the fact that firms can have features which transcend their property status. For example, some sole traders and partnerships are sufficiently large to need a governance structure, and some countries allow for single person corporations, which narrows the gap between sole traders and corporations. Together, these three reasons entail that *property status cannot be used as a reliable guide to understand the effects of a firm on human agency or resource use*. It follows that property status also cannot be used to discern whether a firm's activities are consistent with the collective interest, or what kind of state regulation, if any, may be necessary or effective.

In light of the above, it is remarkable that the 'nature' of firms as property has received so much attention in academic discussions.[194] This is, of course, a side effect of thinking about firms in terms of their relationship to the public-private divide. If firms are private actors, or the property of private actors, then their freedom should be as unconstrained as possible. It then becomes necessary to alter the way that firms are conceptualised as property in order to introduce public constraints on the harmful aspects of their activities. Fortunately, an approach based on the generative state does not suffer from these limitations. It shows that firms, whatever their status as property, are socially constructed, and that the state has a responsibility to modify the property status (and other dimensions) of firms when this is necessary to ensure that human agency and resource flows are consistent with the collective interest. This may require the state to adopt a passive stance but could also lead to expropriation without compensation. In any case, there is no need to think about the firm's relationship to the public-private divide.

Governance

The next dimension of the firm which we will consider is its *governance*. This dimension is important because it shapes a firm's profile of human agency, thus impacting society's profile of human agency and its resource use. We can start by identifying that firms, like the state, have a *highest authority* which is able to decide on various aspects of firm activity. This highest authority can be organised in different ways in different firms. For sole traders, it is typically *unified* in the owner of the firm. For partnerships, this authority is *unified but shared* between the various partners. And for corporations, it is *fragmented and shared* between the management board, supervisory board, and shareholders. Regardless of how it is organised, it remains the case that *the highest authority is socially constructed and bounded by the conventions of the generative state*.

Next, we can note that this *authority is only empowered to do everything which is not forbidden by the generative state's conventions*. One consequence of this empowerment is that firms can organise their governance structure in many different ways, and can use it to pursue many different goals. And like the state, they can delegate parts of their highest authority to different people and groups within the firm. It follows from this creative capacity for governance that *we can infer little, if anything, about a*

[194] [*examples of work which writes about the 'nature' of firms as property. E.g. Robé, Claassen*]

firm's profile of human agency and resource use from the mere fact that its highest authority is unified, shared, or fragmented, or that it was established by contract, property, or statute. It also follows that we cannot discern solely from how the highest authority is organised whether a firm's activities are consistent with the collective interest.

For that aim, it will usually be more effective to examine other details of firm governance such as the purpose for which the highest authority is exercised. This *purpose of the firm* has lately received much attention in academia and business.[195] Scholars such as Mayer, Edmans, Henderson, and Serafeim have each written about how the pursuit of a well-formulated purpose can transform an unsustainable, profit maximising business into one which is profitable, sustainable, and pro-social.[196] The underlying promise is that this will, in the aggregate, lead to a profound and positive change in markets and the economy.[197]

In general, our analysis suggests that this attention is justified insofar as *a firm's purpose can have a performative effect on the decisions of its people*. This performativity arises because people's beliefs about the firm and its activities can have a self-fulfilling effect on their decision-making.[198] We must, however, qualify the strength of this performative effect for at least two reasons. First, the purpose of firms is not deterministic and there are many other factors which also shape people's decision-making. And second, the pursuit of purpose by firms is always morally impaired due to firmophilic tendencies and the financial survival condition. Both points entail that there are structural limits to the extent that a firm can achieve its stated purpose, and that *firms' pursuit of a sustainable purpose is not enough, in the aggregate, to lead to a sustainable transformation of markets and the economy*. This is consistent with our earlier finding that there is no aspect of commercial decision-making, by individuals or firms, which can be perfectly optimised so that it leads to socially optimal outcomes.

Notwithstanding these limits, the purpose of firms is still interesting for the generative state because it offers a point of intervention which can be used to shape human agency and resource use. As we will see, there are at least two overlapping justifications for these interventions:

1. To mitigate the effects of moral impairment due to commercial decision-making.
2. To encourage an attitude of care rather than domination in the treatment of people and property.

Regarding the first justification, we can recall that moral impairment in firms can take different forms. One form is organisational, and arises due to organisational structures and decision-making. A second form is financial, and occurs as an inevitable consequence of the state's adoption of money and the concomitant fact that firms are subject to an economic survival condition. Next, we can elaborate that there are *two kinds of financial moral impairment*.

The first, *involuntary moral impairment*, occurs because firms must cover their costs and need to think about their activities in financial terms. This kind of moral impairment cannot be mitigated insofar as budgets are involved in decision-making. The second, *voluntary moral impairment*, arises when a firm prioritises the pursuit of financial rather than non-financial value, despite being able to cover its costs. Importantly, this kind of moral impairment can be reduced or exacerbated depending on the relative priority between a firm's financial and non-financial aims. To see how this works, it helps to imagine

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[195] [*add examples of work on purpose of the firm*]

[196] [*add references to Mayer, Edmans, Henderson, and Serafeim*]

[197] Mayer, for example, writes that "Refocusing corporate objectives on purpose is not simply a modest extension of conventional managerial tools but a profound reconceptualization about the nature of economic activity and the way in which economies can contribute to human wellbeing. We flourish from having the capabilities to achieve our purposes and from assisting others to do the same, and business has a major role to play in that process because of its capacity to mobilize substantial resources. By conferring meaning on others, we provide meaning to ourselves and the world around us" (Mayer, 'Economics of Corporate purpose', p. 899).

[198]

that voluntary moral impairment operates along a spectrum, with at one end the maximum prioritisation of financial value and at the other end the maximum prioritisation of non-financial value.

[Insert figure of this spectrum]

Drawing on our earlier discussion on good governance, we can see that shareholder profit maximisation and ESV approaches can be positioned on the financial end of this spectrum. They place non-financial value in a subordinate position and encourage people in firms to see money as an end in itself. The middle of the spectrum is occupied by SWM and Pieconomics. These approaches place financial and non-financial value on an equal footing and encourage the maximisation of their aggregate value. In the process, they encourage people to see money as one end among many. Importantly, all of these good governance approaches are grounded in market fundamentalism and a commodity view of money. They are committed to the view that society needs firms to make money, and therefore skew the balance between financial and non-financial value so that the aggregate decision-making of firms results in a relatively lower amount of non-financial value. This is, as we already discussed, a suboptimal outcome in terms of social prosperity since financial value is only relevant in terms of its effects on human agency and resource flows, and is not an end in itself.

It follows from the above that states *should promote the pursuit of non-financial value by firms without losing sight of their moral impairment and economic survival condition*. To this end, it may help to ban firms from having a purpose to pursue financial value, or to legally require them to have a non-financial purpose. This change would not, of course, alter the fact that firms need to cover costs to continue operating, or that statements of purpose can be decoupled from the actual behaviour of people in firms.[199] In should therefore not be expected that the adoption by firms of a non-financial purpose is sufficient to sustainably transform the economy. It is likely, however, to help mitigate the effects of voluntary financial moral impairment. If it seems hard to imagine that firms such as corporations could have a non-financial purpose, then it helps to recall that corporations existed in a non-profit oriented form for more than two-thousand years and clearly managed to cover their costs during this time.[200] We can note, moreover, that 'private' for-profit corporations are a relatively recent, 19th century invention, and that they emerged in an intellectual and legal context that was heavily influenced by liberalism and which socially legitimised the private pursuit of financial benefits.[201]

From current discussions on corporate purpose it can be anticipated, as a counter-argument, that it will be more difficult to hold managers and directors accountable for their performance if corporations are required to adopt a non-financial purpose. According to these arguments, shareholder value and profit maximisation are clear benchmarks for performance, in the absence of which there would be too much scope for self-interested corporate leaders to pursue their own interest.[202] Underpinning this line of thought is a suggestion that non-financial value is nebulous and poorly defined, whereas profit metrics are tangible and concrete.[203] Building on our analysis, we can see that these arguments are incorrect due to being grounded in a naturalised view of people as free, individual economic agents, and the market fundamentalist idea that firms should make money as an end in itself. This does not, however, invalidate

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[199] [*Add reference to decoupling in criminology; Giulia's thesis*]
[200] Davoudi et al.
[201] Guenther (2019) 'Of Bodies Politic and Pecuniary - A Brief History of Corporate Purpose'.
"the distinction between public and private purposes in corporation law did not become broadly meaningful until the middle decades of the nineteenth century and was one of the defining characteristics, if not *the* defining characteristic, of the ensuing transition of the early American business corporation to the modem for-profit firm." (p. 30).
See also: Avi-Yonah (2005) The cyclical transformations of the corporate form A historical perspective on corporate social responsibility.pdf
[202] [*add reference to arguments in corporate governance on the need for shareholder primacy*]
[203] [*add reference to arguments in corporate governance on the need for shareholder primacy which also criticise the stakeholder model for being too vague*]

the broader point that corporate leaders may be inclined to abuse their position of power, both against others and for their own benefit. Against these personal shortcomings, however, we can suggest that corporate purposes are not an appropriate point of intervention since they are so flexible and open for interpretation. It is likely, moreover, that there are other, more effective measures which can be used to attract ethical people into positions of power, for example in terms of their selection, education, rewards, etc.[204] In any case, it is evident that it is socially hazardous to pay corporate leaders large sums of money and to tell them that their primary task is to make as much money as possible.[205] A corollary to the above is that it is not enough to rely on the performative effect of corporate purposes to counteract moral impairment. Other measures will also be required, though it should not be expected that they will eliminate financial or organisational moral impairment entirely.

The second justification for state action in relation to the purpose of firms requires less explanation. Drawing on our internal relations model of property, we can suggest that a non-financial purpose can help people in firms think about people and property in a way that does not see money as an end in itself or as one end among many. This, in turn, might help encourage an attitude of care rather than domination in the way that people relate to their firms as property.

Agency profile

The next dimension of the firm which we will consider is its *agency profile*. To start, we can recall our earlier definition of agency as "the experience of seeing a direct effect of your actions in the world, and knowing that these actions are genuinely your own." If we adapt this definition to the context of firms, then *we can ask how people's experiences – positive, negative, and otherwise, are enabled by the firm's existence*. The sum of these experiences then represents the firm's agency profile.

Next, it helps to identify that people's experiences are influenced by their identity in relation to the firm, for example if they are owners, employees, customers, investors, suppliers, a victim of its activities, and so on. At the same time, *these identities do not deterministically influence how people experience their interactions with the firm*. One owner may work extremely hard, another may be a lazy absentee. Some employees will have a high degree of flexibility and codetermination in their work, while others are hired only for routine, repetitive tasks. In some cases victims of firm activities may work at the firm, and may be at least partially responsible for the harm which they suffered. In other cases the harm of the victim will be shocking, and the firm will be entirely responsible. In general, such variations entail that we need to look beyond people's identities to create picture of a firm's agency profile. Having said that, it can still be useful to use them as a starting framework for the agency profile of firms.

We can ask, for example in relation to employees: how many people work at the firm? What task(s) do they perform? Are these tasks unpleasant, creative, repetitive, or otherwise? What level of skill and training is required to perform them? What resources are used by these tasks? Are there any short or long-term risks associated with performing these tasks (safety, ergonomics)? What monetary and other rewards do the people at the firm receive? Who decides how they spend their time at work, in terms of tasks and other activities? When and how much time do they spend at work? How much flexibility do they have in deciding their working hours? How many people at the firm participate, with or without decision-making power, in firm governance?

It follows from the above that *there are any number of questions, for employees and other identities, which can be asked to gain insight into a person's experience of agency in a firm*. These questions and their import can vary, moreover, for people in different firms, industries, and countries. They also vary depending on a person's societal context, and on whether the firm has a history of scandals and unethical

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[204] Add example from Graeber about how leaders used to be selected.
[205] [*Add reference from earlier*] The negative effects of money on intrinsic motivation are well documented.

activities. Any number of situations can invite different, or perhaps an additional, range of questions. From this we can draw a number of conclusion regarding the agency profile of firms.

First, *it is not possible to develop an objective or exhaustive set of questions in an attempt to map out, once and for all time, a firm's 'complete' agency profile*. This is due, in part, to the absence of a perfect normative standard for human affairs, but also because firms are a dynamic, complex nexus of internal relations. These circumstances entail that we can do no more than map out an imperfect profile, on the basis of imperfect questions about people's experiences in relation to firms. The fact that these profiles are imperfect does not mean that we should not try to develop them. After all, imperfect information is better than no information at all.

Second, it is *necessary to distinguish between questions which are more or less important* for gaining insight into a firm's agency profile. In this regard the questions asked should not only be evaluated in terms of their relevance to human agency, the quality of their formulation, and their relationship to firm activities, but also in terms of the resources which are available to those asking the questions, and the time which answering these questions requires from people working in firms.

Third, it is *important to recognise is that questions about a firm's profile of human agency are not neutral*. They can affect the activities of those asking and answering the questions in both a positive and negative sense. It may therefore be reasonable, for example, to ask fewer questions from smaller firms rather than large ones, to pay firms for answering questions about their profile, to ask all firms some general questions, and to reserve more specific questions for firms which e.g. are riskier in terms of their resource use, their history of unethical behaviour, etc.

Fourth, it is *likely that supporting measures will be required to promote the integrity of information collected about firm agency profiles*. Examples include punishments or fines against false information, or setting up an institution which is easily accessible and which people can use to report abuses, suggest questions, and so forth.

Fifth, it must be emphasised that *there is no universally best way to organise the agency profile of firms*. Egalitarian sentiments may suggest, for example, that equal participation in firm governance is the right, most ethical way to organise firms. Consider, however, that not everyone wants to participate in a firm's governance. Some may prefer, for example, to focus their creative energies on projects outside of work. Others are happy to do temporary work so that they can explore life in a different city or country for a while. Some firms only have a seasonal need for large numbers of employees, and it is not clear why they should have a say in the firm's long-term development. Sometimes, the information in a firm is highly sensitive, or it produces hazardous materials and has a dangerous production method; these situations may require a strict hierarchy and quick decisions. These examples show that, even if we can reasonably sympathise with the ideal that everyone should be granted equal participation rights at work, there are also good reasons not to apply it to all firms. In general, the absence of a universal normative standard creates similar issues for any other dimension of the firm which we may wish to consider. The result is that we cannot say *a priori* what a firm should look like so that it is consistent with the collective interest. This determination should therefore always be made on a case-by-case basis, with reference to the broader social context.

Information on the agency profile of firms can be used *inter alia* by the generative state to decide whether it should adopt an active or passive stance in relation to one or more firms, and to see whether it needs to make an intervention for the collective interest. For this purpose it can make any and all interventions, ranging from closely monitoring a single firm, imposing fines, expropriating it, replacing its management, or shutting it down entirely. Such interventions can be structural or one-off, can apply to all firms or may be tailored to specific firms, industries, etc. Many of these interventions will be familiar, such as reporting requirements and regular inspections, but they can also be new or more

unusual, such as forbidding certain kinds of employment contract in particular firms or sectors where they are prone to abuse, or limiting the number, type, or size of firms in a given sector.

An important feature of generative state interventions in relation to the agency profile of firms is that it *can also encourage or discourage kinds of agency which emerge from interactions between firms or sectors*. If, for example, it has been shown that interactions between several firms or between industries has been detrimental to resource use, sustainability, customer welfare, etc. then this means, in terms of our analysis, that kinds of human agency have been enabled which are inconsistent with the collective interest. When this occurs, the generative state has a responsibility to intervene, and can do so without asking whether this intervention is consistent with the private rights of those involved. An example of this kind of intervention was already adopted by the EU when it prevented auditing firms from selling consultancy services to firms that they are currently auditing.[206] The motivation was to prevent conflicts of interest which could lead to unreliable audits.

In my view, the use of such *constraints on exchange opportunities* can be usefully expanded to promote the integrity of sectors and professions which serve an important collective interest function, such as medicine, waste management, auditing, media, and legal services. It can also be used to facilitate desirable outcomes such as circularity, for example by requiring firms and other organisations to purchase from firms which are chained together with circular business models. While such interventions are not new, their scope of application has been strictly narrowed due to decades of deregulation, regulatory theories grounded in economic liberalism, and the market fundamentalist idea that firms should be as free as possible to make as much money as possible.[207] This can be contrasted with our analysis of the generative state which offers a much broader conceptual foundation for the regulation of commercial and other interactions between firms and industries.

Business model

The next dimension of the firm which we will discuss is its *business model*, which relates to how a firm earns monetary reward value for its provision of goods and services. In general, we can note that a firm can have one or more business models, for example if it offers a range of goods and services. We can also note that business models can be explained with different levels of abstraction. Here we can think of a business model being described as 'the retail of consumer goods', or as a complete list of goods which is being sold. There is no single, best way to describe business models. It is easy to imagine that more detailed descriptions can lead to more effective, fine-grained kinds of intervention, but it can also be true that abstract descriptions of business activities are better for inter-firm comparisons and sectoral analysis. Whatever level of abstraction is used, the key idea is that the generative state needs to evaluate whether a business model is consistent with the collective interest in terms of its effects on human agency, monetary integrity, and resource use.

As with agency profiles, we can ask any number of relevant questions: what does the business model use in terms of time, people, resources, technology, etc.? What goods, services, and wastes are being produced? Are there more ethical or sustainable ways to organise the business model? What positive or negative side effects does the business model have on people, society, or the environment?[208] Again, there is no perfect or exhaustive set of questions about business models. We can repeat, moreover, that the relevance of these questions depends on circumstances, that some are more insightful than others, and that it is never neutral to ask them. In addition to the information collected via such questions, the

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[206] [*add reference to auditing firms not being allowed to consult for the firms they are auditing*]
[207] [*add general references to history of deregulation*]
[208] This question can capture the negative effects of advertising on consumerism in society, or on the sexualisation of young women.

following points are relevant for the generative state's assessment of whether a business model is in line with the collective interest.

One, the financing of the generative state does not depend on wealth generated by firms. This means, first, that *the profitability of a business model is not a sufficient justification for its continued existence or discontinuation*. Harmful business models, for example those which undermine public health, can be discontinued, and unprofitable business models can be supported if they are crucial for national security, key to implementing new technology, necessary for the transition to a circular economy, needed for arts and culture, and so on. A second point is that *it is not a relevant aim for society or the generative state to enable the existence of as many profitable business models as possible*. Instead, it is more important to consider the effect of a business model, and of business models in the aggregate, on human agency and resource use. These effects should be considered both in terms of their actual impacts and their opportunity costs. A third point is that *the generative state may need to intervene when a business model is profitable to such an extent that it is inconsistent with the collective interest*, for example because it has a harmful effect on monetary integrity or inequality.

Two, it is *not sufficient to evaluate the effects of a business model in isolation*. It may also be necessary to consider the effects of its interactions with, and coexistence with, other business models. We already came across an example of business model interactions when we discussed the regulation of European audit firms to prevent conflicts of interest between their auditing and consulting services. Turning to the *coexistence of business models*, we can discuss the issue of diffuse pollution as an example. Our starting point is to consider that local ecosystems have an inherent capacity to absorb, without harm, a certain amount of pollution in the form of carbon dioxide or nitrates.[209] In this regard it is not necessarily a problem if a business model produces an amount of pollution within the limits of this capacity. It is, however, a problem when many business models, with a minor individual impact, operate in concert and produce an aggregate amount of pollution which exceeds this limit.[210] Under these circumstances, it is not possible to allocate blame to one business model rather than another. Furthermore, even if one business model is much more polluting, it might actually provide a much social contribution than a large number of less polluting business models. If we agree that limits on pollution may be necessary to protect human health and ecosystems, then we can identify that the generative state has several options at its disposal. It can rely on traditional methods such as taxation or emissions regulation, or it can promote or require the use of certain technologies. However, in line with our analysis, it can also enable or constrain different business models based on a combined assessment of their side effects and impact on human agency, monetary integrity, and resource use.

Three, once the generative state has adopted an active stance towards the business model(s) of one or more firms, there are *a wide variety of interventions it can use to modify the way that reward value is earned*. These modifications can be enabling or disabling insofar as they increase or decrease the reward value of a business model. Examples of enabling modifications include guaranteed purchases, tax exemptions, and subsidies. Disabling modifications include prohibiting or restricting production and sales, higher taxes, fixing prices, and restrictions on profit orientation.[211] As before, such interventions have been used in the past and are used by states today. And again, the difference lies in the logic of

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[209] [*optional reference to the absorption capacity of ecosystems*]

[210] Battistoni explains that "climate change is frequently understood, following Derek Parfit, as an "aggregation problem"—the unexpected result of a huge number of individually harmless decisions. By treating environmental problems primarily as a matter of scale (and thus, effectively, as matters of population), however, these accounts tend to draw too direct a link between action and effect, one that fails to address the way that individual agency is channeled and mediated by both social institutions and the material world" (Battistoni (2023) Rethinking Domination in the Age of the Externality, p. 4).

[211] For example, it could be decided that firms can legally produce marijuana in accordance with more relaxed policies on recreational drugs (reference). However, it is not self-evident that these firms should also be allowed to maximise profits or to advertise and expand their consumer base.

their application relative to the recommendations of modern economics. They are applied to ensure that human agency and resource flows are in line with the collective interest, and not to promote economic efficiency in a way which is consistent with individual freedom and the public-private divide.

Funding sources

The final dimension which we discuss is *the funding sources of firms*. Examples include the sale of goods and services, the savings of owners, bank loans, issuing shares, government funding, venture capital, and firm profits. From the perspective of the generative state, the types of funding source are less important than the conditions under which funding is obtained. Relevant questions include whether and when the funding needs to be repaid, whether it bears interest or not, what happens in case of default, whether and how the funder is able to influence firm decisions, and so forth. These and other funding conditions are important for at least four reasons: (1) they influence which business models are viable, and therefore impact human agency and resource use; (2) they influence monetary integrity, profit distribution, and inequality; (3) they may influence the governance of firms and the time horizon of their decision-making; (4) they influence firmophilic tendencies and the relative pursuit of financial and non-financial value. At a minimum, these four reasons need to be considered when the generative state is investigating whether and how different sources of funding can be made consistent with the collective interest.

One of the most important implications from our analysis of the generative state for this dimension is that there is *no economic need for states to attract foreign investment in order to finance the economic activities of firms*. We have seen in our analysis that money is socially constructed by the state, and that it is not an endogenous creation of individual economic activities. So while the input of foreign states can be useful in terms of expertise, resources, and technology, there is no need for foreign money to mobilise people and resources within state borders. A broader corollary to this point is that the money of foreign nationals is not necessary to finance domestic economic activities.

It follows that there is *no intrinsic economic need to provide access for foreign investors*, provided that its monetary system is well organised and reliable. In principle, this means that states can regulate investment activities and capital flows without fearing that this will lead to capital flight. There are no economic laws of gravity which dictate such an outcome, although it may be brought about as a self-fulfilling prophecy by state conventions, economic science, and investor behaviour.

A related insight is that it is *not strictly necessary for states to rely on private investment to fund the activities of firms*. Instead, the generative state can use any number of creative methods to distribute money to new and existing firms, including empowering consumer groups to allocate funding, giving larger budgets to local governments, promoting the growth of community banks, granting national prizes and other support for circular business models, and so on. These methods need to be consistent with monetary integrity, and each of them will have its implications for human agency and resource use, but there are no economic laws which dictate how they must be organised.

Importantly, this insight does not mean that private investment cannot be beneficial under certain circumstances, for example if it promotes innovation, decentralises state power, or enables desirable kinds of agency and reward value. Instead, the point is that it is wrong to think that, in the absence of private investment or high levels of taxation, there is nothing else we can do via the state to mobilise people and resources. It is a challenge, in other words, to the traditional view that capital accumulation, the (re)investment of individuals savings, and bank lending are a precondition for large-scale economic activities.[212] The fact that it can look this way in our societies is, again, a reflection of state conventions, history, and economic beliefs, and not an inevitability.

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[212] This view is evident, for example, in: Melicher and Norton (2016) *Introduction to Finance*.

To recap for this subsection, we have seen how the generative state enables the social construction of firms, developed a topographical model for understanding firms in terms of internal relations, and examined how this topography consists of different dimensions of the firm which can be interacted with by people, society, the state, and the environment. Together, these ideas help demonstrate that firms are not pre-social and that it is incorrect, even counter-productive, to think of them in economic terms as private actors, or in terms of individual freedoms and the public-private divide. Next, we consider what these findings mean for the "central problematic of corporate law".[213]

9.5.2 The generative state and the separation between ownership and control

Our starting point is to revisit the main findings of Berle Means, and of Fama and Jensen, regarding the problem of separation between ownership and control. As noted, the first two authors argued that dispersed shareholders had become unable to properly monitor corporate management, and that this had 'exploded the atom of property'. In their view, this meant that the standard tools of economics, based on private ownership incentives, could no longer be used to examine or regulate the corporation. This undermined the private status of corporations and meant that the interests of shareholders should be made secondary to those of the community. Ultimately, Berle and Means suggested that it was necessary to develop new forms of analysis and to focus on 'logical and human solutions to industrial difficulties' rather than the interests of shareholders as owners.

For their part, Fama and Jensen suggested that separation between ownership and control emerges when it is more efficient for shareholders as private owners to delegate their monitoring and control rights to other parties (managers and directors) than to exercise it themselves. This delegation, which occurs under imperfect market conditions, is the cause of shareholders' less-than-perfect monitoring of corporate activities. It does not, however, explode the atom of property or invalidate the application of theories and techniques from economics. It follows from the analysis of Fama and Jensen that we should address the problem of separation between ownership and control by ensuring that the delegation of ownership is as efficient as possible.

The remainder of this subsection revisits these arguments in terms of the generative state. Regarding the work of Berle and Means, we can start by challenging their idea that there was an 'atom of property' which once limited the scope of state intervention but was exploded by changes in the effectiveness of shareholder monitoring. First, we can identify that their atomic metaphor is incorrect since it builds on the public-private divide and assumes a pre-social, natural rights view of property. Second, we can contrast it with the internal relations model which explains that property is socially constructed and that owners can be empowered in many different ways. Under this model, it is not possible for property to exist as a pre-social 'atom', or for it to limit the scope of state power. Third, it follows that questions about whether shareholders are owners has no fundamental implications for the degree of shareholder empowerment, or for the permitted scope of state action. *The central question is therefore not whether shareholders are owners, but rather whether the degree of their empowerment is consistent with the collective interest, for example in terms of its effects on human agency, resource use, and monetary integrity*. This conclusion is similar to that of Berle and Means insofar as it also argues that shareholder interests are subordinate to community (i.e. collective) interests, and that it is more important to solve community issues rather than to improve shareholder ownership rights.

Turning to the work of Fama and Jensen, our entry point is their suggestion that shareholder ownership rights are delegated to managers and directors. In general, we can note that it does not matter whether these management and control rights 'belong' to shareholders since the corporation is, in any case, created or enabled by the conventions of the generative state. As against Berle and Means, the question

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[213] Reinier H. Kraakman et al., The Anatomy of Corporate Law: A Comparative and Functional approach 1, 2 (2009).

is not whether shareholders are owners, but whether their socially constructed empowerment is in line with the collective interest. In theory, this can include efficient control and monitoring by shareholders. We have seen, however, that there are fundamental issues with the pursuit of economic efficiency. It is for example, prejudiced against non-economic concerns and pre-determined to erode internal relations. These limits entail that *economically efficient monitoring and control by shareholders are not generally consistent with the collective interest.* It follows that the efficient exercise of shareholder ownership rights is not, and should not be, a central issue in corporate law and regulation. In my view it is a separate question to see whether and how their monitoring function can or should be made more effective.

One additional reason that shareholder ownership is not a central issue for the generative state is that, as we already discussed for dimensions of the firm, there are any number of ways to organise and exercise property rights. In this regard it is not possible to reliably infer, from the mere fact and degree of ownership empowerment, whether the activities of shareholders are consistent with the collective interest.

In summary, we can identify that *the separation between ownership and control is not a central problem from the perspective of the generative state*. It does not matter, in other words, that shareholders are not empowered as private owners. By extension, there is no need for the good governance of corporations to focus on addressing the three dimensions of corporate efficiency. Instead, the main idea of corporate law and regulation is to regulate any and all dimensions of corporate activity so that they are consistent with the collective interest. Any number of creative policy approaches can be adopted for this purpose. This can include an important role for shareholders, but with an important caveat that we cannot derive the desirable scope or substance of their role from the extent of their ownership empowerment.

9.6 Reflection on the limits of economic theories on markets for the analysis of firms

This Chapter challenged the market fundamentalist idea that markets and firms are pre-social, arguing instead that the state has a generative, not an appropriative, relationship to their activities. To develop this argument, it adopted the premise that people, society, the state, and the environment are internally related, and set out to explain how firms and markets are created by a generative state. In line with this aim, we first discussed the relationship between the generative state and law, property, money, and markets as social conventions. We then used this constellation of relationships to reconceptualise the firm and offer an alternative to economic ideas on these topics.

Starting with law, we critically examined the public-private divide and identified that it is predetermined to view internal relations as a threat to individual freedom. It followed that this divide is incompatible with the view that people are constituted by internal relations, and with a generative view of the state. It followed that we would need an alternative way to think about the legal relationship between people and the state. We subsequently identified, based on Crawford's work, that we 'exist as an *embodied self* which is not a 'free' atom or disembodied intellect but is situated in the world, lives and acts in that world, and learns about it through experience'. This embodied, or embedded, view allowed us to think about human agency ('the experience of seeing a direct effect of your actions in the world, and knowing that these actions are genuinely your own') as being constituted by internal relations, and to suggest that the state is the apex authority which is responsible for a society's profile of human agency.

Importantly, this approach to human agency is not defined in terms of absolute individual freedom but comes from the understanding that submission to certain constraints has a 'possibility conferring' potential that can enable different kinds of human experience. To paraphrase our earlier metaphor, we cannot play every musical instrument at the same time (absolute individual freedom), but we can have a genuine experience of the self if we choose one instrument, act within the limits of its intractability, and play it to the best of our abilities. We subsequently used this alternative view on human cognition and agency to reconceive the relationship between law and the state, not in terms of a public-private

divide and social contract, but as one whereby ‘laws are written conventions which the generative state, as the highest authority in society, uses to enable and constrain different kinds of human agency.’

Overall, we noted that the state has ultimate authority over a society’s profile of human agency and that it can use any and all means at its disposal to ensure that this profile is consistent with the collective interest, however interpreted. We also noted that law is only one of a range of social conventions which the state can adopt to shape the profile of human agency, and that other conventions include property, and money. Each social convention has its own, unique way of shaping human agency and its own, particular intractability which influences not only how it affects human agency but also how it interacts with other social conventions.

Turning to property, we broadly examined how Anglo-European ideas on property developed over time since the 1600s and gave rise to the modern ‘bundle of rights’ view which is currently dominant in both law and economics. We identified that property was historically viewed more often as a convention than as a natural right, and that economists currently use the latter view to argue that property ‘is an endogenous result of individual exchange whose existence and content can be explained in terms of market imperfections’. Notably, this economic approach belies the religious and socially constructed nature of property and, while consistent with market fundamentalism, is incompatible with a generative state perspective. To address this shortcoming, we examined anthropological research on property and saw that, while property is a human universal derived from ideas on what is sacred, private property is not. It followed that private property cannot be used, as economics does, as an inferential template for human property relations more broadly.

We subsequently relied on the work of Graeber and Wengrow to discern ‘that property is imbued with sacred status, and that this sacredness leads to the exclusion of non-owners.’ We also saw that ‘property owners are empowered to have authority over property, and that the reasons for this empowerment vary along a spectrum of care and domination. This enabled us to develop an internal relations model of property and to suggest that property is created when ‘a socially recognised act delineates or sets something real or imaginary apart from everything else, designates its owners and non-owners, and gives it a sacred, ontological status within the realm of property.’ We then concluded that the generative state is responsible for this realm of property, including but not limited to its enforcement, the kinds of social act which are recognised as property-creating, and the theories of property which are present in society.

Money was the third social convention which we examined. In general, we highlighted that theories on the origins and nature of money play a keystone role in economics since they frame the role of prices in the economy, how we value different kinds of economic activity, and how we think about the creation of wealth. We identified, moreover, that the two leading theories in this area are fundamentally opposed in terms of their view of the state. The traditional, commodity theory sees no generative role for the state and considers that money emerged as an endogenous creation of private bargaining in a primitive barter economy. The alternative, convention theory is compatible with a generative view of the state and argues that money was first adopted as an administrative tool by central authorities such as temples and palaces. Importantly, we found that only the latter, convention theory is supported by archaeological and anthropological evidence. We also inferred that the ahistorical orthodox theory seems allegorically designed to be consistent with market fundamentalism and economic individualism; it primarily serves the methodological needs of economic science and does little to enlighten us about the actual social role and development of money.

A key feature of the convention theory is that money first emerged as a unit of account rather than as a commodity. This means that the state has an important generative role regarding monetary exchange practices throughout the economy and allowed us to suggest that ‘money is a convention which the generative state can adopt to administer the mobilisation of resources, goods, and services in accordance with the collective interest’. Numerous implications followed: First, the fact that the state is a currency

issuer means that it is wrong to draw a parallel, as economics does, between state finances and those of individuals, households, or businesses. Second, the state does not appropriate financial wealth from a generative economy populated by private actors. Instead, the primary purpose of taxation is to animate currency and not to generate financial wealth for the state. Third, we found that state debt is key to the spread of currency and that states can always afford to mobilise people and resources within their area of administrative control. Fourth, we saw that individual exchange redistributes but does not create money, meaning also that profitable firms and sectors do not create financial wealth for society. Fifth, we highlighted that it is wrong to draw a social equivalence between financial and non-financial wealth. An important, sixth implication was that prices, because they are socially constructed via money, are unable to reveal any objective truths about the nature of economic dynamics throughout the universe.

The convention theory of money made it possible for us to generatively reconceptualise the relationship between markets and the state. Our starting point was to identify that the adoption of money leads to the social construction of a monetary realm which helps to address the social coordination problem, i.e. to mobilise people and resources so that they contribute towards the collective interest. We then defined that 'markets are the interface between the monetary realm and human agency; they are where the incentives of potential reward opportunities are crystallised, and where resources are mobilised and turned into an experience of reward'.

In relation to resources and human agency, we found that money, due to the reward incentives which it provides, always mobilises more than is required for a given collective interest project. This additional mobilisation allows people to experience monetary reward agency and is necessary, alongside taxation, to ensure that money is accepted in society and is able to address the coordination problem in the collective interest. It also, in combination with the nature of money as a fiction of commensurability, gives rise to many central features of money's intractability in society. These include, for example, the tendency to see money as an end in itself, the universalist lens which money provides, and the limited ability of the state to control and regulate the monetary realm. From a generative state perspective, we recognised that market exchange opportunities, and the reward agencies that they entail, can be imperfectly regulated to guide the mobilisation of resources and human agency in the collective interest. More generally, we saw that the existence of the monetary realm contributes towards the creation, alteration, and discouragement of different kinds of human agency in society.

A related finding was that economics tends to promote rather than limit the creation of human agencies which mobilise additional resources for the mere sake of monetary reward value. This is an issue for sustainability and social prosperity since there is, as we noted before, no need for a society to 'make' money. A corollary to this finding is that economics cannot effectively address the undesirable side effects of money as an intractable tool and social convention; it tends to mobilise extra resources in ways which are socially suboptimal. This reaffirms our earlier finding that economics is prejudiced against non-economic concerns and that economic efficiency is counter-productive from the perspective of sustainability and social prosperity.

Following our analysis of law, property, money, and markets as social conventions of the generative state, we examined the role of firms within this constellation of ideas. In general, our findings show that firms are not, and cannot be, pre-social. Instead, they are directly created, directly enabled, or indirectly enabled by generate state conventions. It followed from this point that we should not refer to firms as private actors since this implies that they are pre-social, and that there is, in principle, no inherent need for firms to receive egalitarian protection as private actors. Importantly, the social construction of firms does not mean that people cannot use them to express their personal creativity and experience different kinds of human agency. It does, however, mean that the state has an ultimate responsibility for their activities which goes beyond what is currently recognised under the public-private divide. To clarify, this responsibility does not entail that state control over firms should be unqualified; it can, for example, still be desirable to grant firms legal protection against unfair, unreasonable, or unnecessary state action.

Our findings show that there is no need for a fundamental antagonism between firms and the generative state since the latter is socially constructed by the latter. This is contrary to economics which, due to its scientific foundation, cannot help but frame state activities in the collective interest as a threat to firms and markets. It should be emphasised, however, that the absence of a fundamental antagonism does not mean that there is no creative, political, social, or other tension between states, firms, and people. This tension is multifaceted and complex; it not only pushes downwards from the state's powerful position, but also kicks upwards via the commercial drive which is an intractable part of the socially constructed nature of firms and people as currency users. The point of transcending this antagonism is therefore that there is space, alongside these tensions, for generative synthesis and collaboration between states and firms. While taking advantage of this space, it should be taken into account that firms are structurally unable to make socially optimal decisions because they always need to compromise against the concrete demands of their financial survival condition. This latter point is absent from good governance theories which assume, by virtue of their methodological individualism, that individual decision-making in firms can be perfected as a mechanism to attain socially optimal outcomes.

We subsequently discussed dimensions of the firm, and defined them as 'any actual or potential feature of firm activity which the generative state can modify to shape its profile of human agency and resource use'. We used this idea of dimensions, and our premise of internal relations, to develop a topographical model of the firm which sees its nexus of internal relations as a peak in an imaginary, social landscape. We subsequently showed, based on this model, that there is no need to establish an internal-external boundary for the firm, in the same way that there is no need to establish with 'objective' precision where a mountain begins and where it ends. Practically, we identified that the dimensions of a firm can be, and arguably should be, different for every society in accordance with the latter's requirements, history and conditions. We noted, moreover, that the state should not create a maelstrom of interventions on firm dimensions since this undermines the stability which is needed for people in firms to experience a genuine sense of human agency. It may, moreover, disrupt the regular mobilisation of resources which a society can become accustomed to and depend on. These and other concerns do not, however, mean that the state is anything less than ultimately responsible for the activities of firms or that it has anything less than the full capacity to take any and all steps and measures to regulate their activities which are necessary for the collective interest.

Against this backdrop we examined five different dimensions of the firm: property, governance, agency profile, business model, and funding sources. Regarding the first, we found that it is not possible, even unreliable, to infer from a firm's status as property what kind of impact it will have on human agency and resource use. The reason was that there is too much creative potential within and between firms to make such a determination.

In terms of governance, we identified that the highest authority of firms can be organised in different ways (unified, shared, or fragmented), and that it is always socially constructed and bounded by the bounded by the conventions of the generative state. We also noted that this authority is only empowered to do everything which is not forbidden by the generative state's conventions; it has no intrinsic private or pre-social rights. Again, we found that we can infer little about the human agency and resource use of a firm, or whether these are consistent with the collective interest, merely from its governance arrangements. We did, however, note that a firm's purpose can have a performative effect on the decisions of its people. This performativity may help minimise the effects of voluntary financial moral impairment, which arises from the pursuit of money as an end in itself, but cannot help mitigate involuntary financial moral impairment which is caused by adopting money as a social convention. As a whole, we noted that the pursuit of a sustainable purpose by firms cannot be enough, in the aggregate, to lead to a sustainable transformation of markets and the economy. This is because, as noted, there is no sense in which free decision-making in firms can be perfected to achieve socially optimal outcomes.

In terms of the agency profile of firms, we identified that these can be imperfectly outlined by examining how people's experiences (positive, negative, and otherwise) are enabled by its existence. We suggested that the state should collect information on the agency profiles of firms, but not under an assumption that it is possible to develop a perfect set of questions which can map out a firm's 'complete' agency profile. Instead, the purpose of this information is to inform state regulatory activities and to ensure that firm activities are consistent with the collective interest. What this means changes over time, as does the set of questions which it requires. In general, we noted that the state should also investigate human agencies which emerge not only within firms, but also from interactions between firms or in sectors. As we discussed, this information can be used to develop constraints on exchange opportunities which may, for example, promote the circular use of resources or buttress the integrity of professions and sectors which serve an important collective interest function, such as medicine, the media, etc.

In terms of business models, we argued that profitability alone is not a sufficient argument for their use or discontinuation. The question is rather whether the mobilisation of resources and human agency that is enabled by this business model are consistent with the collective interest, and should be supported or opposed on that basis. As a corollary to this point, we found that it is not a relevant aim for society to enable the existence of as many profitable business models as model. The reason, as noted, is that there is no social need for firms to 'make' money. A second corollary is that highly profitable business models may be inconsistent with the collective interest, for example since they stimulate inequality, and can be justifiably subject to intervention by the generative state.

Turning last to funding sources, we identified that the generative state can use and offer various funding sources to enable the activities of firms. As a rule, however, there is no strict economic need to rely on private savings or the money of foreign investors. It is equally possible for the state to provide funding through local governments, community banks, consumer representative bodies, and so on. Importantly, each of these funding options provides space for different kinds of human agency. Moreover, they are likely to impose different funding conditions on firms, which influences their resource use and agency profile, and may drive their activities in a more or less ethical and sustainable direction.

In summary, this Chapter provided a comprehensive reconceptualisation of many familiar concepts and presented us with an alternative way to think about the relationship between people, firms, markets, and the state. It showed how we can think about these concepts as being connected and internally related, rather than in terms of free competition, economic individualism, and socio-economic bifurcation. One important benefit of this approach, as compared to economics, is that it shows how different societies can meaningfully organise their people, firms, and markets in different ways. It does not simply judge all of them according to the same fictional, utopian benchmark that underpins market fundamentalism.

A second benefit is that it recognises, to repeat an earlier point, that we are not Gods, and sees that we will only ever be able to make imperfect, morally impaired decisions. This makes it possible to identify and mitigate both organisational and financial moral impairment. It shows, moreover, how we can use imperfect people, firms, and markets, with the help of an equally imperfect state, to mobilise resources in accordance with the collective interest. Neither is possible within the scientific framework provided by economics.

A third benefit is that the generative state is not inherently prejudiced against non-economic concerns and does not see the creation of money as a social end in itself. Its activities and policies are therefore not driven by the mistaken economic premise that there is a 'natural' individual need to make money. Instead, this 'need' is properly recognised as socially constructed by the financial survival condition, and is used as one of many regulatory levers to actively and passively ensure that a society's activities are consistent with the collective interest.

As a final remark, the generative state shows that our societies have a creative capacity to organise and regulate human agency and resource use in different ways. It has to be stressed, however, that the use

of this capacity can, depending on the particular society and state, be more or less ethical or sustainable. It is therefore wrong to suggest that our ideas regarding the generative state are inherently more ethical or sustainable than economics. It is, however, fair to say that the generative state provides more options than economics to make firms and markets ethical and sustainable since its scientific foundation is not predetermined to subordinate non-economic concerns and harmfully erode internal relations.

10. The limits of economic efficiency for the analysis of firms

Our analysis thus far has shown that economic efficiency plays a multidimensional role in the modern economic analysis of firms. We have seen, for example, that it is used in Coasean tradition to explain that firms exist whenever it is more efficient, under imperfect market conditions, to organise economic activities in a firm than on an individual basis. It also underpins the argument from competition which suggests that natural economic laws tend, over time, to favour modes of organisation which are more efficient and competitive. And it is reflected in the three dimensions of corporate efficiency (agency problems) that are central to contemporary economic ideas on good governance and sustainability.

We also discussed that economic efficiency is usually defined as Pareto optimality, a standard which is satisfied when there is maximum intensity of beneficial exchange. We found that this standard is problematic since it is wrongly viewed as neutral and objectively desirable, does not examine the wisdom of particular economic activities, and is inclined to promote economic imperialism. We also saw that it underpins the idea of market failures, and that it leads to a tautological problem diagnosis which suggests that we can solve all exchange-related problems by empowering market participants and making markets as-perfect-as-possible. The shortcomings of these ideas allowed us to discern that economic efficiency is inconsistent with the wise or long-term, sustainable management of people and scarce resources.

This Chapter revisits and extends these earlier discussions. It first explores economic efficiency in more detail and examines its role in relation to firms. Second, it engages with economic theories of value since these are key to understanding how firms, which produce all kinds of different goods and services, can be examined through the same, single lens of economic efficiency. Third, the Chapter outlines how economic theories on efficiency and value have given rise to the idea of a value-maximising firm as an ideal benchmark for firm financial and non-financial performance. Fourth, it investigates whether this benchmark is able to make firms sustainable in light of the limits of economics. Fifth, the Chapter asks how we can think about the performance of firms if not in terms economic efficiency, and offers a new, generative theory of value for this purpose.

10.1 Firms and economic efficiency

Our starting point is to recall the neoclassical model of the firm, as a maximiser which operates under perfect conditions, and which combines capital and labour inputs to produce certain outputs. There are no market failures under these conditions, meaning that all firms are economically efficient.[1] As noted, this turns firms into an economic black box and provides no theoretical space to explain differences between them, for example with regards to their profitability, costs, etc. This may be contrasted with modern economic approaches to the firm which explain the emergence of firms, and their differences, in terms of individual exchange under imperfect conditions.

The results of these imperfect conditions can manifest in different ways. There may, for example, be information asymmetries between different firms about the best available technologies. Alternatively, conflicts of interest between agents may result in a less than optimal use of firm resources. This, in turn, can result in different organisational forms to address these agency costs. Another alternative is that transaction cost variations in different parts of a firm are preventing the adoption of a better ways to combine inputs and produce outputs, leading to differences between them. Whatever the case, modern economics assumes that every firm suffers to a greater or lesser extent from market imperfections, and that none of them operates in a neoclassically perfect sense. This absence of a perfect firm means that

[1] Fried et al. explain: “If one takes classical microeconomics at face value, [then the measurement of efficiency] is a fruitless exercise, at least regarding ‘competitive’ markets. Functioning markets and the survivor principle simply do not tolerate inefficiency” (Fried et al. 2008, p. 100).

there is *no single benchmark which can be used to measure the efficiency of firm activities*. The result of this dearth is that several standards have emerged for this purpose in the modern economic literature.[2]

In general, these standards of firm efficiency can be split into a relative concern with technical and allocative efficiency. As we already noted in Chapter 6, *technical efficiency* relates to the efficient use of inputs to produce outputs.[3] It can be defined in different, more specific ways, for example as the maximum output given a certain amount of input, or as the lowest production cost per unit of output. For each of these definitions it is theorised that there exists a *production possibility frontier*, i.e. a range of different combinations of inputs which results in a more or less efficient production of outputs.[4] In the absence of a perfect standard, a firm's level of technical efficiency is usually compared to the best performance of other, comparable firms, or against its own best performance.[5] In general, it helps to recognise that production possibility frontiers are used, like Pareto optimality, as a boundary condition to identify maximised equilibrium outcomes. This is evident, for example, in the formal definition of technical efficiency provided by Koopman in 1951:

> "A producer is technically efficient if an increase in any output requires a reduction in at least one other output or an increase in at least one input, and if a reduction in any input requires an increase in at least one other input or a reduction in at least one output. Thus, a technically inefficient producer could produce the same outputs with less of at least one input or could use the same inputs to produce more of at least one output."[6]

The similarity to Pareto optimality is easy to discern. We can distinguish, however, that it focuses on the boundary of maximum production intensity, and not on maximum intensity of beneficial exchange. The latter includes a utilitarian component, which is the key difference between technical and *allocative efficiency*. In general, allocative efficiency assumes that prices embody the satisfaction of individual preferences and focuses on the optimisation of input and output prices rather than on their productive optimisation. In this regard it corresponds to the Pareto optimal point(s) on the production possibility frontier of firms.[7] Unlike technical efficiency, it does not allow for the production of items which are not desired by customers.[8]

Our next step is to highlight that there is, from a firm perspective, no scope for a neutral balance between allocative and technical (or other) efficiency. This is due to the financial survival condition which holds that the former must be prioritised though not necessarily maximised. The underlying reasoning is that it is not enough for a firm to be technically efficient, or to maximise production intensity, if there is not

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[2] For an overview see: Fried et al. 2008. See also: Margaritis, D., & Psillaki, M. (2007). Capital structure and firm efficiency. *Journal of Business finance & accounting*, *34*(9-10), 1447-1469. Habib, M. A., & Ljungqvist, A. (2005). Firm value and managerial incentives: a stochastic frontier approach. *The Journal of Business*, *78*(6), 2053-2094. Stigler, G. J. (1976). The Xistence of X-efficiency. *The American Economic Review*, *66*(1), 213-216.

[3] Nanka-Bruce 2011.

[4] "The *frontier production function* or *production frontier* is an extension of the familiar regression model based on the theoretical premise that a *production function*, or its dual, the *cost function*, or the convex conjugate of the two, the *profit function*, represents an ideal, the *maximum output* attainable given a set of inputs, the *minimum cost* of producing that output given the prices of the inputs, or the *maximum profit* attainable given the inputs, outputs, and prices of the inputs. The estimation of frontier functions is the econometric exercise of making the empirical implementation consistent with the underlying theoretical proposition that no observed agent can exceed the ideal. In practice, the frontier function *model* is (essentially) a regression model that is fit with the recognition of the theoretical constraint that all observations lie within the theoretical extreme. Measurement of (in)efficiency is, then, the empirical estimation of the extent to which observed agents (fail to) achieve the theoretical ideal." (Fried et al. 2008, p. 92)

[5] [add from the quotes in efficiency in the discard]. See also: *Fields (2002) The Essentials of Finance and Accounting for Nonfinancial Managers*, p. 16.

[6] Fried et al. 2008, p. 20.

[7] Need to find a source for this.

[8] Colander, Economics, 2020, p. 28-29.

also a concomitant business model that allows them to cover costs and continue operating. This inability to neutrally choose between different kinds of efficiency is a reflection of the voluntary and involuntary financial moral impairment which we already discussed.[9] One result of this impairment is that *forms of efficiency which are not allocative (not price- or money-oriented) are given a subordinate position in the decision-making of firms*. A second result is that *firms are structurally driven to relate to people and resources in an instrumental manner since their ongoing existence is, due to the financial survival condition, dependent on the prices and income which they are able to generate.*

This subordination and instrumentality are not always an issue and can manifest in more or less harmful ways in different firms under different circumstances. *However, they do impose a limit on the extent to which we can 'perfect' the decision-making of firms and align their interests with those of society and the state*. As we have seen, these limits on perfectibility are not accounted for by economics which assumes, even under imperfect conditions, that it is an objective good to empower market participants and make markets as-perfect-as-possible. The shortcomings of this way of thinking are evident, as we will now discuss, in the *standard premise that firms should be maximise economic efficiency*.

This premise draws on familiar ideas from the scientific foundation of economics. Without trying to be exhaustive, we can refer, for example, to the modern economic view that firms are a product of natural economic laws which tend, even under imperfect conditions, to favour competitive, efficient outcomes. This view suggests that firms are co-extensive with the market; in this regard it is their 'natural' essence to be efficient, and their 'natural' aim to be more efficient. Alternatively, we can remember the private disposition of economics and Smith's suggestion that people have a 'natural propensity to truck, barter and exchange'. If this suggestion is correct, then it follows that people and, by extension, firms exhibit maximising, economically efficient behaviour in a natural, pre-social setting. Lastly, we can recall the market fundamentalist argument that value is generated by individual economic activities and that the liberalised pursuit of efficiency is good for society since it yields the largest amount of aggregate value. In general, these and other economic ideas underpin the consensus view that firms should be as efficient as possible, and that the pursuit of efficiency is neutral and objectively desirable.

This *neutrality of firm efficiency* has a significant impact on the way we think about the role of firms in society. It suggests, for example, that it is natural and good for firms to survive and grow without limit since this provides social benefits and reflects their inherent nature. It also posits that it is neutral and self-evident that firms should, in pursuit of this aim, have liberalised access to any and all resources which are legally available. Furthermore, it normalises the idea that firms should maximise the intensity of their use of people and resources, again since this is their natural, efficient behaviour.

Importantly, if the pursuit of efficiency is a universal and essential feature of all firms, then this suggests that it can be abstracted or dissociated from anything which firms actually do in practice. Put differently, it does not matter what firms do because we can assume that they will, or should, do it efficiently. This invites us to ask, however, what is being produced across all firms which can be dissociated from their particular activities? The answer, quite simply, is *value*.

We discussed in Chapter 6 that value can be thought of in modern economic terms as both financial and non-financial. The former relates to the traditional, monetary sense of value while the latter is concerned with non-monetary utility and the satisfaction of individual preferences. Unfortunately, these definitions tell us what value is, but do not explain how it can be generated as an abstract product by firms, or how it can transcend all of their particular activities. It follows that we need to examine economic theories of value so that we can understand what, exactly, is being efficiently produced by firms.

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[9] Section 9.5.1.

10.2 Economic theories of value

Economic theories of value are designed to explain the formation of prices and why something is worth a certain amount.[10] Fortunately, there are only two theories of value which have been historically dominant in economics and which we need to cover.[11] We already mentioned the *labour theory of value* in relation to David Ricardo's work.[12] This was the leading theory among classical political economists, including Smith and Marx. Their interpretations varied, but the general idea was that labour is ultimately the source of value, i.e. that the prices of things are determined by the amount of work that went into producing them.[13] This is also consistent with Locke's natural rights theory of property which, as we have seen, suggests that property is a pre-social creation of human labour.[14]

In the second half of the 19th century, the labour theory of value was central to socialist critiques that capitalists were becoming wealthy at the expense of labour. The marginalist economists responded, as we saw,[15] by developing a *utility theory of value* which suggests that labour, like land and capital, is a factor of production whose price is determined by consumer preferences and market variations in supply and demand. This utilitarian approach to value underpins neoclassical and modern economics, and is still the dominant theory for explaining prices.[16]

A common distinction which is drawn between the labour and utility theories of value is that the former is *objective*, i.e. value is determined by the amount of labour (however hard to measure), and the second is *subjective*, i.e. value is determined by individual preferences.[17] In the first instance, it seems that the latter's subjectivity is incompatible with the idea that economics is an objective science. We can recall, however, that the marginalist revolution was grounded in a Platonist assumption that the economy is underpinned by an objective, mathematical realm of numbers. In this regard it can be imagined that the subjective preferences of individuals are captured objectively in the prices of exchange. This idea, that prices are 'caused' by individual preferences, is consistent with the commodity theory of money since it needs no involvement from the state. It makes it plausible, moreover, for neoclassical and modern economists to assume that prices have objective content can be used as an adequate proxy to measure the value and satisfaction of subjective, individual preferences.[18] It follows that *the value of satisfied preferences is reflected in the prices of a given exchange*.[19]

From a generative state perspective, we can add that these prices do not include all the different potential exchange opportunities which are present in the monetary realm, but only those which are ontologically crystallised during particular trades. Put differently, this means that value is a reflection of the market

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[10] D. Elder-Vass, 'No price without value: towards a theory of value and price', *Cambridge Journal of Economics*, 2019, p. 2. M. Patterson, 'Commensuration and theories of value in ecological economics', *Ecological Economics*, 1998, p. 106. Graeber, *Toward an anthropological theory of value*, 2001, p. 55.

[11] Generally, see: Mirowski (1991) Postmodernism and the Social Theory of Value.

[12] Section 2.1.2.

[13] Marx is a notable exception to this view insofar as his theory of value was not primarily aimed at explaining prices. For a discussion see, for example: Graeber, *Toward an anthropological theory of value*, 2001, p. 55-56. Mazzucato, *The Value of Everything*, p. 33-56. D. Elder-Vass, 'No price without value: towards a theory of value and price', *Cambridge Journal of Economics*, 2019, p. 3. Sinha, *Theories of Value from Adam Smith to Piero Sraffa*, 2013.

[14] Section 9.2.1.

[15] Section 3.1.1.

[16] M. Patterson, 'Commensuration and theories of value in ecological economics', *Ecological Economics*, 1998, p. 107. The landmark text for this approach in modern economics is Debreu's 1959 *Theory of Value*.

[17] See, for example: M. Patterson, 'Commensuration and theories of value in ecological economics', *Ecological Economics*, 1998, p. 106-107. Sinha, *Theories of Value from Adam Smith to Piero Sraffa*, 2013, p. 8.

[18] It is noteworthy that this view also seems to provide a scientific legitimation in favour of what Marx critiqued as commodity fetishism.

[19] "Marginalists tend to see value as nothing more than a synonym for price… and value theory as nothing more than 'a synonym for price theory'" (Elder-Vass, p. 4).

and not the monetary realm. One consequence is that *all economic value is embedded in exchange, and no value is created without it*.[20] This reflects the market fundamentalist idea that wealth is created by a generative economy and not through internal relations between people and their environment.

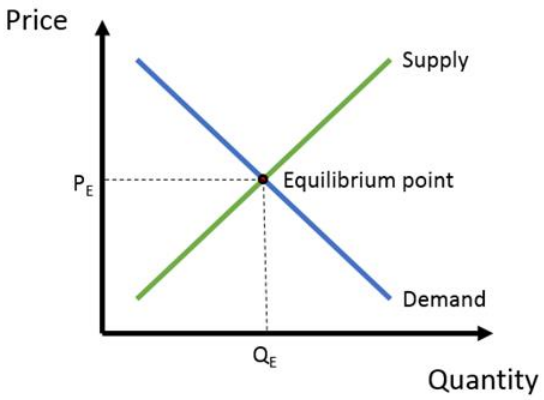
Looking more closely at the utility theory of value, we can identify that it is enabled by an assumption that *all preferences have a price*.[21] This assumption is reflected, for example, in modern economic game theory models which require that the rational preferences of representative agents are complete and transitive, i.e. that a person can decide between any two things or situations and rank them in relation to all other things or situations.[22] The importance, as Tadelis explains, is that "without such preferences we can offer neither predictive nor prescriptive insights."[23] At first glance, this game theoretic approach does not require money and can be grounded exclusively in the utility of different decisions, for example when choosing between going for a walk or staying at home. This suggests that not all value needs to be priced. If we look more closely, however, we can see that it relies on a fiction of commensurability, like the one that underpins money but with utility as the unit of account instead of euros or dollars. This is significant because different fictions of commensurability are, as we noted with different currencies,[24] always commensurable and cannot be conceptually separated. In this regard there is no fundamental distinction between utility, as a 'rational' construct to guide human decision-making, and money as a social construct; *utility is money by another name*. This collapses the distinction between financial and non-financial value insofar as both money and utilitarian preferences are, in economic terms, no more than two parallel fictions of commensurability. It follows that financial and non-financial value are ontologically equivalent and can, according to the utility theory, be directly exchanged for one another.

Another relevant assumption which underpins the utility theory is that *only the individual preferences of human beings are a source of value*. This anthropocentric individualism reflects the fact that only people can use money, but it also excludes societal notions of value and any ideas about the intrinsic value of non-humans or the non-living world. These can only be included as an indirect expression of individual preferences,[25] and are otherwise excluded from the universe of economic value.

To understand the role of the utility theory of value and these two assumptions in the scientific practice of economists, it helps to examine how they have been embedded in several key concepts in economic education: *supply-demand curves*, *consumer surplus*, and *producer surplus*. These concepts are also notable for our analysis because they are taught as a justification for liberalised market competition, and to criticise inefficient forms of state regulation and policy. Put differently, they are used to sustain market fundamentalism and promote the view that economic efficiency is a neutral and objective aim. To start, we can recall the basic model of supply and demand:

Figure 2: The basic supply-demand model

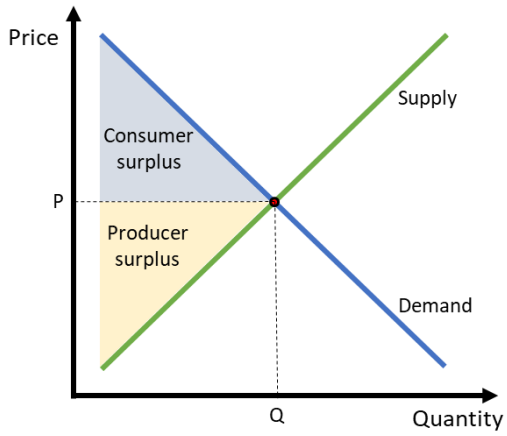
[20] As Moran and Ghoshal write, "resource combination [i.e. inputs] and exchange lie at the heart of the value creation process" (Moran and Ghoshal (1996) Value creation by firms, p. 4).
[21] "It is assumed that a continuous process of 'higgling' is able to transform the myriad bilateral exchange ratios between all the different commodities, based on individual preferences, into a single price for any uniform good" (Ingham, 2004, *The Nature of Money*, p. 17).
[22] Tadelis (2013) Game theory an introduction. P. 5-6.
[23] Tadelis (2013) Game theory an introduction, P. 6
[24] Section **Error! Reference source not found.**.
[25] Dasgupta eds. (2018) Handbook of Environmental Economics, p. 90.



As a reminder, changes in supply and demand are reflected in the position of the equilibrium point. More demand results in higher prices, more supply results in lower prices, and so on. We will zoom in on the value creating aspects of these dynamics, as described by the concepts of *consumer surplus* and *producer surplus*. The modern form of these concepts was pioneered by Alfred Marshall and is included as a standard component of economic textbooks.[26]

Consumer surplus is "the value a consumer gets from buying a product less its price".[27] This explanation is a bit difficult to conceptualise, so it helps to explain it further from a marginalist perspective. In this regard we can imagine that there are three consumers looking to buy a good whose equilibrium price is €10. Consumer A is, in principle, willing to spend up to €20 for the good, B is willing to spend up to €14, and C is willing to spend up to €10. The *difference in value between the maximum willingness to spend, and the equilibrium price of the good, is known as the consumer surplus*. So consumer A has a surplus of €10 (€20 minus €10), B has a surplus of €4 (€14 minus €10) and C does not have a surplus. In **Error! Reference source not found.** below, the aggregate of this situation is visually represented by the blue consumer surplus triangle.

Figure 12: Consumer and producer surplus



Producer surplus is then "the price the producer sells a product for less the cost of producing it."[28] Again, the concept is best understood from a marginalist perspective. If producer X is willing to supply a good for €4 euros per item, Y is willing to supply for €7 euros and Z is willing to supply for €10 euros, then *the difference between their willingness to supply and the equilibrium price is the producer surplus*.

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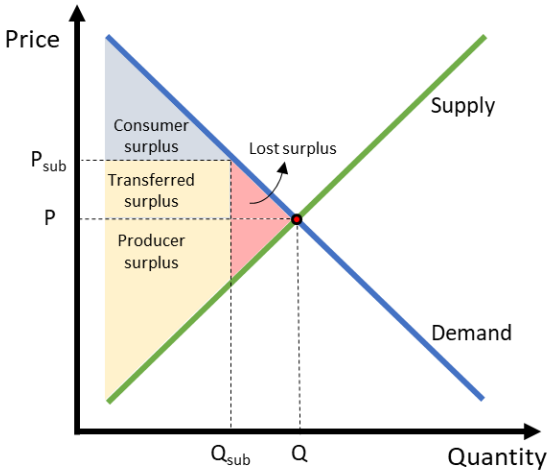
[26] [*add reference to Marshall and economics textbooks for the use of consumer/producer surplus*]
[27] Colander, *Economics*, 2017, p. 142.
[28] Colander, *Economics*, 2017, p. 142-143.

If we use the same equilibrium price, then X has a producer surplus of €6, Y a surplus of €3 and Z does not have a surplus. The aggregate situation is represented by the yellow triangle in **Error! Reference source not found.**.

The supply-demand model suggests that consumer and producer surpluses are maximised at the market equilibrium price, and that deviations from equilibrium will result in a lower level of aggregate surplus. Such a deviant situation is shown in **Error! Reference source not found.**, which describes a market with suboptimal prices and quantities (P_{sub} and Q_{sub}).

Figure 13: Lost surpluses following deviation from market equilibrium



In this case, market prices are too high, so fewer consumer preferences are being satisfied (i.e. the good is too expensive for some consumers). This results in a smaller consumer surplus triangle. It also affects the area of producer surplus. High prices mean that part of the consumer surplus is being transferred to producers, and that some producers are benefitting more from the situation than they would have under conditions of market equilibrium. Producers do not, however, receive as much surplus as consumers would have, which means that the overall situation is suboptimal. This is reflected in the red triangle, which represents the surplus which is lost due to deviation from market equilibrium.

It emerges from the above that deviations from free market conditions, from equilibrium outcomes, will always result in lower aggregate levels of consumer and producer surplus. This is how the model teaches students that free, competitive markets are universally desirable. As Colander explains:

> "What's good about market equilibrium is that it makes the combination of consumer and producer surpluses as large as it can be. In general, a deviation of price from equilibrium lowers the combination of producer and consumer surplus. This is one of the reasons economists support markets and why we teach the supply/demand model. It gives us a visual sense of what is good about markets: By allowing trade, markets maximize the combination of consumer and producer surplus."[29]

Interestingly, a minor variation on the same model is used to educate students that taxes are inefficient whenever they deviate from equilibrium outcomes. As shown in Figure 13, taxes result in higher prices and less consumer and producer surplus. They also generate a tax surplus which can be used by the state. However, this amount is always smaller than the amount of consumer and producer surplus which is lost. This lost surplus is neutrally referred to in economics textbooks as a 'deadweight loss'.[30]

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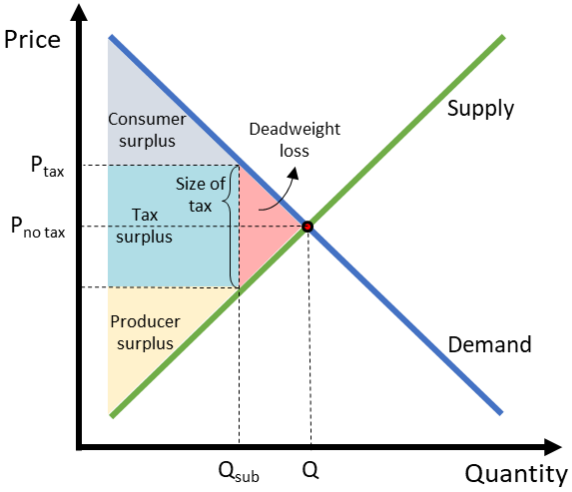
[29] Colander, *Economics*, 2017, p. 143.
[30] [*add reference to source which uses the term deadweight loss*]

Figure 14: Deadweight losses caused by taxation

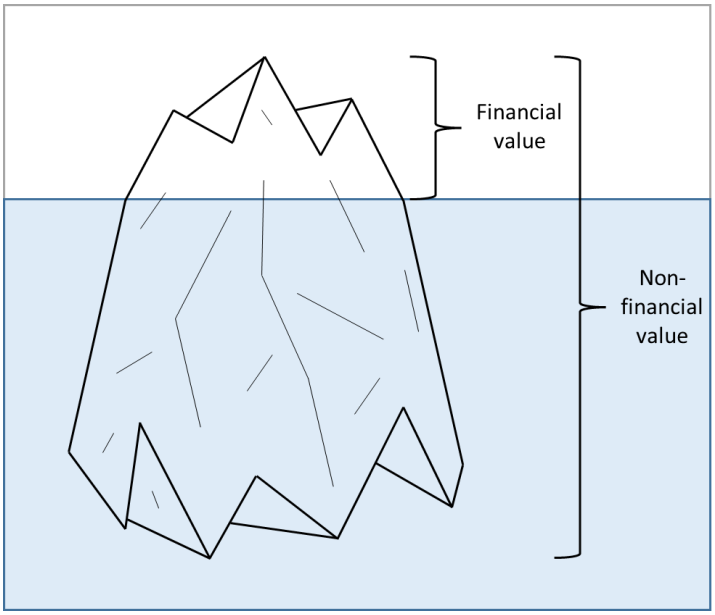


Armed with these models and concepts, generations of economics students leave their studies with a belief that free markets are universally desirable and that government taxes are economically inefficient (unless they are designed to approximate free market outcomes, for example to address externalities).

From the above supply-demand curves, and the concepts of consumer and producer surplus, we can see that all preferences are held by individuals as consumers and producers, which is consistent with the anthropocentric individualism which we previously identified. We can see, moreover, in these models and concepts that the preferences of consumers and producers can be seamlessly converted into each other, or into tax surplus, indicating their reliance on a monetary fiction of commensurability.

It is interesting to identify from the concepts of surplus that *prices can, but do not necessarily, reflect the full extent of, satisfied preferences*. More specifically, the value of non-financial surplus created by a particular exchange is either equivalent to its financial value (the price) or greater whenever individual preferences are satisfied in excess of market prices (whenever there is a customer or producer surplus). It follows that *the amount of money exchanged is the minimum total amount of non-financial surplus value which has been created.* This situation may be visualised as an iceberg (Figure 15) in which both financial and non-financial value are united but only the former is visible at the 'surface' in an objective, measurable form.

Figure 15: The iceberg of marginalist value



In theory, supply-demand models suggest that it should be easy to calculate the full amount of non-financial value which is being generated by economic activities: just calculate the total area of consumer and producer surplus from supply-demand curves. In practice, however, this is not an easy exercise.

First, it is difficult for economists to obtain and measure the necessary information about consumer and producer preferences and their willingness to pay.[31] Second, economists recognise that, in practice, the calculation of surpluses is influenced not only by individual preferences but also by distributions of wealth. As Colander notes, "How much importance your surplus is given depends on how much income you have. People with lots of income generate lots of surplus; people with little income generate little."[32] Third, and most remarkably, *it is doubtful whether supply and demand curves actually exist*.[33] It is likely that they are nothing more than a fictional projection of economic theory. These issues make it difficult, if not impossible, to calculate how much non-financial surplus value is created by the economy.

This is not a problem for economists insofar as the utility theory allows them to use financial value as a proxy for this purpose. According to this approach, *the total value of money exchanged represents the minimum amount of non-financial surplus value that is created by the economy*. This is, as we noted,[34] what GDP is trying to measure. It also explains why it is normatively meaningful, at least in economic terms, to measure and maximise this metric despite its obvious shortcomings.[35]

The fact that financial value is a proxy means that it gives an incomplete picture of non-financial value. However, it also provides objective proof, at least within the standards of marginalist economics, that

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[31] Cohen et al., 'Using big data to estimate consumer surplus: The case of uber', NBER working paper No. w22627, 2016. As an aside, in this article the authors try to use big data to calculate – using 50 million individual data points – the consumer surplus which is being produced by Uber. Even with this mountain of data, an impressive degree of manipulation is required to facilitate the calculations.

[32] Colander, *Economics*, p. 144.

[33] S. Fleetwood, 'Do labour supply and demand curves exist?', *Cambridge Journal of Economics,* August 2014.

[34] Section 6.2.3.

[35] Another relevant point is made by Mitchell, who explains that the idea of an abstract economy, introduced shortly after the Second World War alongside the measurement of GDP, makes it possible to invite future growth scenarios into consideration for the development of policies today. As he explains, "The economy provided a more pervasive effect, one that has since then escaped attention: a way to bring the future into government…. The government of the present, as it was imagined through new forms of the future, would come to operate within a new metric of temporal change, the measurement of growth" (Mitchell (2014) Economentality - How the Future Entered Government, p. 484).

preferences have been satisfied at least in proportion to the total amount of money exchanged. In this regard it does not matter that the picture is incomplete. The fact that the exchange occurred, and that money changed hands, is proof enough that something good happened for both parties. After all, if either party objected then the exchange would not have occurred, at least not under free market conditions. On this view, it does not matter *how much* surplus is created, only that the surplus *is* created. This echoes Pareto optimality which also does not ask how much utility is created, only that all surplus-creating opportunities are used.

Since the full scope of non-financial surplus value is subjective and cannot be measured, economists are inevitably led to focus on the objective, measurable dynamics of financial value. This may explain why it is reasonable, at least within their scientific practice, to focus on prices and monetary dynamics while being simultaneously indifferent towards the subjective content of economic activities. The idea that this provides sufficient and meaningful insight into the economy is enabled by the utility theory of value.

In summary, we can identify that the utility theory of value is consistent with the market fundamentalism of economics, in its defence of free markets and critique of state activities, and that it buttresses the discipline's focus on monetary dynamics and reliance on objective scientific standards. Our analysis has shown, moreover, that economic efficiency is grounded in the idea that value is created whenever preferences are satisfied during exchange, at a minimum according to the amount that is reflected in the prices of that exchange.

Returning to our discussion on firms, we can identify that *the maximally efficient firm is one which is value-maximising and generates the highest amount of satisfied preferences from its combination of inputs, as reflected in the prices of its exchanges*. Put differently, the maximally efficient firm is able to sell its outputs for the highest possible price relative to the price of the inputs that it used. It follows that *the economically efficient purpose of firms is to combine its inputs so that they have higher prices*.[36]

This shows that *increases in prices are the universal, abstract product which is efficiently created by firms*.[37] This 'value creation' can be interpreted in different ways. From the perspective of market fundamentalism and the commodity theory of money, it is a kind of double production which generates money as well as goods and services. From the perspective of the generative state, it also creates goods and services but only leads to the redistribution, and not creation, of money. We will later consider the implications of these different viewpoints. For now, we look more closely at the value-maximising firm.

10.3 The value-maximising firm

The value-maximising firm is an ideal benchmark that is used to evaluate the economic performance of firms of all sizes, shapes, and specialisations. It is based on the premise that economic efficiency is neutral and objectively desirable, and is relied on by economists, finance experts, investors, banks, and governments as a universal system of measurement and reward. The result of its pervasive use is that firms are globally converging on the particular, economic type of ideal firm that underpins its design. This section explores this benchmark in detail so that we can later discuss whether it is really the only or best way to evaluate the activities of firms.

We can start by noting that firms, in economic terms, create value (increase prices) on behalf of their owners,[38] and that this generally means something different for corporations as compared to other types

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[36] Moran and Ghoshal (1996) 'Value creation by firms', p. 5-6.
[37] This is reflected, for example, in the work of Porter and Kramer who define value as "benefits relative to costs" (Porter and Kramer (2011) Creating shared value, p. 6).
[38] At least, this is the premise within economics and finance for commercial firms. See, for example: Melicher and Norton (2016) *Introduction to Finance*, p. 5.

of firm. In the case of sole traders and partners, value is usually created directly for owners since their finances and activities are blended with those of the firm. In the case of corporations, value is created only indirectly for owners (shareholders) since this type of firm operates relatively independently from them, has its own separate legal personality and balance sheet, and has to transfer its financial value to them, for example through dividends and share buybacks. One consequence of this difference is that there are additional measures for corporate performance relative to other firms. These include share prices, dividends, etc.

Next, we can identify that the absence of an actually existing, neoclassical perfect firm means that *there is no single, perfect measure which can be used to evaluate, with certainty, the efficient performance of firms*.[39] This has resulted not only in different standards of efficiency, as we already noted, but also in a multiplicity of methods and metrics to measure firm financial and non-financial performance. We first discuss financial performance.

10.3.1 Financial performance

There are at least three economic purposes to measure the financial performance of firms. First, to see whether they are financially viable and can satisfy their financial survival condition. Second, to see how effective they are at creating financial value for their owners. And third, to compare their financial performance relative to other firms. The fact that all three purposes can be satisfied using the same financial information means that they can be, and often are, assessed using the same range of measures from accounting and finance. Examples include profit margins, gross margins, leverage ratios, inventory turnover, return on investment (ROI), return on assets (ROA), economic value added (EVA), and Tobin's Q.[40] None of these measures is accepted as the single best, or ideal metric. Instead, each of them provides a numerical ratio which captures one dimension of firm financial performance and functions as an imperfect[41] indicator for its overall[42] financial performance.

At first sight, it seems that the absence of a perfect measure for financial value, and reliance on imperfect measures, undermines the extent to which we can rely on financial value as a proxy for the amount of non-financial value which is generated by firms. It is important, however, to recognise that *the use of financial value as a proxy does not depend on having a perfect measure. Instead, it depends on market conditions and the extent of market failure* (if any). If conditions are perfect, or a close approximation thereof, then the utility theory of value suggests that we can safely rely on imperfect financial measures to tell us about the performance of firms, for example when making investment decisions.

This is key to understanding the *financial mode of perception* which makes it possible, for example for bankers and investors, to evaluate company performance primarily using imperfect financial measures, and for them to believe that this provides enough insight to determine whether something is a 'good' investment, not only for themselves but for society as a whole. Importantly, this mode of perception is *conditional on a premise that markets function either perfectly or as a close approximation thereof*. It

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[39] See, for example: Brealey et al. (2016) *Principles of corporate finance*, p. 8-9. Griffin (2016) Corporate impacts - focusing on relationships and outcomes, p. 2.

[40] Bertonèche and Knight (2001) *Financial Performance*.
Barney (2020) Measuring firm performance in a way that is consistent with strategic management.

[41] Consider, for example, the calculation of return on asset (ROA) ratios. These are influenced *inter alia* by the scope of the definition of 'assets', by the uncertain way that we calculate the depreciation of assets over time, and by the fact that not all assets are capable of being valued under competitive market conditions. The impacts of these imperfections are mitigated and minimised, though not eliminated, by the adoption of standard accounting principles such as the International Financial Reporting Standards (IFRS) and the Generally Accepted Accounting Principles (GAAP).

[42] This an abstract substitute for the missing, perfect standard.

does not offer a neutral or objective way of looking at the world because it is embedded in optimism about market functioning and, more broadly, in economic theory.[43]

In general, the financial mode of perception assesses whether and how money can be most effectively used as a scarce commodity. It has become globally embedded in different institutions, via economics and finance, and is the primary method which our societies use to determine which firms receive funding and on what conditions. These funding decisions are guided by an imperative that there should be maximum growth, or at least no overall reduction, in the financial value that accrues back to the original source of funding.[44] There are risks involved in all lending and investment activities, but these can be minimised by giving money primarily to value-maximising firms, even if these can be difficult to identify.[45] A corollary to this point is that non-value-maximising firms are riskier and therefore receive less favourable access to funding, if at all. It is via this differential analysis that *the financial mode of perception gives rise to a universal system of measurement and rewards which promotes the ideal of the value-maximising firm, as conceptualised by economics and finance*.[46]

This universal system is normalised and disguised as an impartial arbiter of natural economic laws. We should note, however, that *it does not, by virtue of its scientific foundation, provide a level playing field for firms which are not value-maximising*.[47] In fact, firms which deviate from economic rationality in their organisational approaches are structurally punished by this system of measurement and reward; they are delegitimised and deprived of funding. Ironically, the results of this economic prejudice, the marginalisation of alternative firms, is viewed as evidence of an economic process of 'natural' selection which suggests that only large, profit-oriented firms are able to survive and compete at the highest level. This does not, however, consider that the marginal status of these firms might be a socially constructed, financially engineered result of economic beliefs in favour of a certain kind of ideal firm. In this regard *the current dominance of financially-oriented firms is not necessarily natural or inevitable, but may be a performative result of ideas on economic efficiency which dominate how we think about, regulate, and allocate rewards for firms and in markets*.

Unfortunately, the situation is not significantly different when we consider non-financial measures of firm performance. This is not because these measures are inherently irrelevant or poorly conceived, but because they are, as we will see, mainly designed to be consistent with economic science. They therefore suffer from the same limits that we already identified.

10.3.2 Non-financial performance

In general, the problem is that while financial and non-financial measures of firm performance tell us different things, both kinds of measures are used to maximise the value creation of firms in line with the neutrality of economic efficiency. Furthermore, the fact that the concept of value is embedded in prices and exchange, and that financial and non-financial value are ontologically equivalent, means that

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[43] The mode of perception would not be conceptually coherent without market fundamentalism, the commodity theory of money, or the utility theory of value.

[44] The economic justification is that this prevents the undermining of individual prosperity and long-term growth (innovation, job creation, efficiency, etc.). See for example: Melicher and Norton (2016) *Introduction to Finance*. Brealey et al. (2016) *Principles of Corporate Finance*.

[45] [*add reference to minimising risk by focusing on value maximising firms*]

[46] Reflecting this mode of perception, Lund and Pollman describe how "Despite any consensus about universal good governance practices, the corporate governance machine pushes many firms toward one-size-fits-all governance solutions. These solutions are often embodied in corporate governance codes adopted by industry groups, as well as the voting guidelines adopted by proxy advisors and major institutional investors" (Lund and Pollman (2021), p. 40).

[47] Graeber (2017) It is value that brings universes into being, p. 234.

the transformative potential of non-financial information is currently impaired and can only lead to suboptimal outcomes.

To see why this impairment occurs, it helps to reflect on the relationship between economic theory and firm non-financial performance. Our starting point is to reiterate that if market conditions are perfect, then financial value can function as a reliable proxy for non-financial value, so the latter does not need to be measured directly.[48] However, *if conditions are imperfect* then this opens the door for one party to generate an inefficiently high amount of value at the expense of another.[49] As an example, consider a firm which benefits from information asymmetries to charge high prices, or which pollutes to benefit from externalities in the form of lower costs. Here, the firm has created more financial value but has done so at the greater expense of non-financial value, a form of inefficiency which is often criticised as short-termism.[50] This reduces the aggregate amount of value and undermines the reliability of financial measures as a proxy for non-financial performance.

We can infer from the above that *the reliability of financial value as a proxy decreases with the extent of market failure*. This is because the worse a market functions, the greater the opportunity for market actors to inefficiently generate value at the expense of other parties. In theory, non-financial measures make it possible to compensate for this inefficiency by helping to identify and reward firms which are genuinely value-maximising and are not simply profiteering. It follows that *non-financial measures are necessary to discern, in a context of market failure, between efficient and inefficient firms*.

As an aside, it is worth highlighting that inefficiently high profits are not, according to economic theory, caused by the profit maximising behaviour of firms; this is merely part of their efficient nature. Instead, these inefficiencies are caused by the 'fact' that markets and market participants are imperfect. This problem diagnosis, tautological as we discussed,[51] shifts responsibility away from any decision-making that takes place in firms and provides a *blameless view of firm activities*. It is a corollary to the premise that it is normal and neutral for firms to maximise economic efficiency, and relates to the presumption of political innocence which we already identified.[52]

Next, we can identify that *the economic need for non-financial measures of firm performance is created by market failures*.[53] One consequence is that information on firm non-financial performance is, in the first instance, valued for its ability to address market imperfections rather than for what it says about sustainability issues. This reaffirms our prior insight that economics is methodologically predetermined to subordinate non-economic factors and concerns to economic dynamics. It also helps to explain why there is often only a tangential relationship between the non-financial reporting of firms and the actual status and resolution of social and environmental problems.[54]

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[48] Hart and Zingales (2022) 'The New Corporate Governance', p. 4.
[49] Shapira and Zingales (2023) Is pollution value-maximizing? The case of DuPont. Hart and Zingales (2022) 'The New Corporate Governance'. Hahnel, *The ABCs of Political Economy*, p. 104.
[50] It is called short-termism since it reflects a failure of the firm to recognise that its long-term survival is entwined with the long-term prosperity of society and the environment. See, for example, Porter and Kramer (2011) 'Creating share value'. Sjafjell et al. (2015) 'Shareholder Primacy: The Main Barrier to Sustainable Companies'. Eccles and Spiesshofer (2015) Integrated reporting for a re-imagined capitalism. Lipton (2017) The New Paradigm. EY (2020) Study on directors' duties and sustainable corporate governance.
[51] Section 6.2.3.
[52] Section 7.1.
[53] Dasgupta Review (2021) 'The Economics of Biodiversity', p. 6.
[54] Elkington, for example, reflects 25 years after popularising the concept of 'triple bottom line' (TBL) reporting that "Thousands of TBL reports are now produced annually, though it is far from clear that the resulting data are being aggregated and analyzed in ways that genuinely help decision-takers and policy-makers to track, understand, and manage the systemic effects of human activity" (Elkington 2018). See also: Boiral and Heras-Saizarbitoria (2020) Sustainability reporting assurance - creating stakeholder accountability through hyperreality. Laine et al.

In light of escalating global issues such as inequality and climate change, perceived by economists as market failures, it is no surprise that a wide range of non-financial measures have emerged over the past decades to help identify and reward the activities of value-maximising firms. These measures are often classified as relating to the environmental, social, or governance (ESG) performance of firms, and are an empirical and finance-oriented complement to the corporate social responsibility movement which gained momentum from the 1950s onwards.[55]

ESG measures cover a wide range of non-financial aspects of firm activity, including for example: CO_2 and other emissions, biodiversity impact, waste production, plastic use, water use, charitable donations, remuneration policies, lobbying activities, and so forth.[56] This information may or may not be audited, and is used by various parties such as institutional investors, NGOs, academics, and sustainability rating agencies to examine, compare, and rank the relative non-financial performance of firms, and to identify trends and gaps.

The rise of CSR and ESG has been presented by its proponents as a fundamental transformation in the nature of business activities.[57] In their view, it shows that business is concerned not only with its financial bottom line but also with its positive impact on society and the environment.[58] Drawing on our earlier analysis of good governance,[59] we can confirm that it does indeed reflect a change in business attitudes and values so that money is treated as one end among many, and not just as the main or only end of business activities.

However, we must also be candid about the limits of these developments, and emphasise that they do not represent a paradigm shift away from economics or its underlying market fundamentalism. In this regard the development of non-financial measures of firm performance, as reflected in the rise of CSR and ESG, is *best seen a progressive improvement within the limits of economic science, and not as an effective solution to social and environmental issues*. Our analysis has shown, moreover, that this well-intentioned shift towards business sustainability is, due to its continued focus on economic efficiency, likely to exacerbate economic disembedding and its associated sustainability issues.

The connection between economics and CSR/ESG is evident, for example, in the *materiality criterion* that is used as a threshold to determine whether a firm should report on some aspect of its financial or non-financial performance.[60] The criterion was originally developed in accounting and auditing and holds that *information should be disclosed when it is likely to influence the economic decisions of users*

(2015) 'Ambiguity of environmental financial information: A case study of a Finnish energy company', p. 607-609. What is ESG Investing? MSCI Ratings Focus on Corporate Bottom Line (bloomberg.com)

[55] In general, it is worth noting that the corporate social responsibility movement was more concerned with business ethics while the ESG movement is concerned with measuring and comparing the non-financial performance, risks, and opportunities of different firms. Also relevant is that ESG as a concept emerged primarily with support from the financial sector, and that it has come to dominate the practical discourse, and much of the academic discourse, for corporate ethics and sustainability performance. For detailed histories see: Pollman (2022) 'The making and meaning of ESG'. Kaplan (2015) 'Who has been regulating whom, business or society? The mid-20th-century institutionalization of 'corporate responsibility' in the USA'. See also: Crane et al. (2008) 'The corporate social responsibility agenda' in *Oxford Handbook of Corporate Social Responsibility*.

[56] [*Add reference to Eumedion report*]

[57] See, for example: Porter and Kramer (2011). Camilleri (2017) *Corporate Sustainability, Social Responsibility and Environmental Management An Introduction to Theory and Practice*, p. 3. GRI (2022) Towards stakeholder capitalism: how we can get there, Issue 2.

[58] Section 7.1.

[59] Section 8.3.

[60] "Materiality is a key concept in the world of reporting and plays a part both in the preparation of the disclosures and their verification by an auditor. Materiality is used to 'filter in' the information that is or should be relevant to users. Particular information is considered 'material' - or relevant - if it could influence the decision-making of stakeholders in respect of the reporting company." GRI (2022) *The materiality madness - why definitions matter*, p. 1.

of information.[61] It has since been adapted for the disclosure of non-financial information and is central to the main international frameworks for sustainability reporting: the International Financial Reporting Standards (IFRS) Foundation[62] and the Global Reporting Initiative (GRI).[63]

The IFRS Foundation's S1 and S2 standards for sustainability reporting were published in 2023 via the Foundation's International Sustainability Standards Board (ISSB).[64] They rely on an ordinary threshold of materiality and "require an entity to disclose information about its sustainability-related risks and opportunities that is *useful to primary users of general purpose financial reports in making decisions relating to providing resources to the entity*".[65] The standards aim, in other words, to empower investors with information about firm non-financial performance so that they can make better, more economically efficient decisions.[66] This reduces information asymmetries and ensures that financial markets can effectively identify and reward value-maximising firms. Their primary aim is therefore to address market failures in favour of investor efficiency, not to address social and environmental issues.

The situation with the GRI is more complex because it adopts a broader, *double materiality* threshold for sustainability reporting which covers both *financial materiality* and *impact materiality*.[67] The first corresponds to the original idea of materiality that we already discussed, and is defined as "Information on economic value creation at the level of the reporting company for the benefit of investors (shareholders)".[68] The second is a more recent development that relates to the provision of material information on the "company's impact on the economy, environment and people… for the benefit of multiple stakeholders, such as investors, employees, customers, suppliers and local communities."[69] It follows that *impact materiality* is designed to address the information asymmetries of all stakeholders, and not just investors. It remains, however, ambiguous what kind of information should be shared as an 'impact'. The GRI defines the term as follows:

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[61] Messier, Martinov-Bennie and Eilifsen (2005) 'A review and integration of empirical research on materiality: Two decades later', *Auditing: A Journal of Practice & Theory*, Vol. 24 No. 2, pp. 153-187, p. 155.

[62] The history of the IFRS and the publication of its sustainability reporting standards are a morass of acronyms and consolidation. In short, it publishes its sustainability standards through the International Sustainability Standards Board (ISSB) and recently integrated two important frameworks for sustainability reporting, those of Sustainability Accounting Standards Board (SASB) and the International Integrated Reporting Council (IIRC) ("As of August 2022, the International Sustainability Standards Board (ISSB) of the IFRS Foundation assumed responsibility for the SASB Standards" (SASB Standards overview - SASB). IFRS, IASB and ISSB to Encourage Adoption of Integrated Reporting Framework - ESG Today).

[63] [*Add reference to GRI*]

[64] These standards also integrate the findings of the Financial Stability Board's (FSB) Task Force on Climate-related Financial Disclosures (TCFD) and serve as inspiration for the Task Force on Nature-related Financial Disclosures (TNFD) whose work is currently ongoing (IFRS - IFRS Foundation welcomes culmination of TCFD work and transfer of TCFD monitoring responsibilities to ISSB from 2024; Executive summary of the TNFD beta 0.4)

[65] IFRS S1 Objectives.

[66] The IFRS website explains that "The IFRS Foundation is a not-for-profit organisation founded in 2001 on the belief that better information supports better economic and investment decisions. As a public interest organisation, the IFRS Foundation works to achieve this vision through the development of high-quality, global standards that result in corporate information that informs investment decisions. This work contributes towards efficient and resilient capital markets, thus fulfilling society's needs."

[67] For more background on double materiality see: Baumüller and Sopp (2021) Double materiality and the shift from non-financial to European sustainability reporting - review, outlook and implications.

[68] gri-perspective-the-materiality-madness.pdf (globalreporting.org). It also features in the OECD Guidelines for Multinational Enterprises (2011), "Material information can be defined as information whose omission or misstatement can reasonably be expected to influence an investor's assessment of an enterprise's value. This would typically include the value, timing and certainty of a company's future cash flows. Material information can also be defined as information that a reasonable investor would consider important in making an investment or voting decision." (p. 22)

[69] gri-perspective-the-materiality-madness.pdf (globalreporting.org).

> In the GRI Standards, *impact refers to the effect an organization has or could have on the economy, environment, and people*, including effects on their human rights, as a result of the organization's activities or business relationships. The impacts can be actual or potential, *negative or positive*, short-term or long-term, intended or unintended, and reversible or irreversible. These impacts indicate the organization's contribution, *negative or positive*, to sustainable development" [emphasis added][70]

Impacts can be considered material when they are identified as such by the firm through its engagement with relevant stakeholders and experts.[71] The results of these engagements are often published in their annual reports, for example in the form of stakeholder materiality matrices.[72] We can also refer to the work of the European Financial Reporting Advisory Group (EFRAG) for understanding when impacts are material. This Group is collaborating with the GRI to develop the European Sustainability Reporting Standards (ESRS) for the EU Directive on Corporate Sustainability Reporting (CSRD). According to the draft standard ESRS1:

> "A sustainability matter is *material from an impact perspective when it pertains to the undertaking's material actual or potential, positive or negative impacts on people or the environment over the short-, medium- and long-term time horizons*. Impacts include those caused or contributed to by the undertaking and those which are directly linked to the undertaking's own operations, products, or services through its business relationships. Business relationships include the undertaking's upstream and downstream value chain and are not limited to direct contractual relationships…
>
> The *materiality assessment of a negative impact is informed by the sustainability due diligence process* defined in the international instruments of the UN Guiding Principles on Business and Human Rights and the OECD Guidelines for Multinational Enterprises. For actual negative impacts, materiality is based on the *severity of the impact*, while for potential negative impacts it is based on the *severity and likelihood* of the impact" [emphasis added][73]

It follows from the GRI and EFRAG explanations that the determination of material impacts depends on circumstances (severity, likelihood) and should be decided in consultation with stakeholders and outside experts. It relates to the effect of the firm on the economy, environment, and people, and is not conditional on whether the firm is affected by the impact. This does not, of course, mean that material impacts cannot also affect the firm. As the GRI sees it, "The reality is that the *impacts of an organization are or will become financially material* over time."[74] We can therefore identify that impact materiality overlaps with, but is not reducible to, financial materiality. In fact, the GRI suggests that the latter is best viewed as a sub-set of the former: "Without understanding these impacts, it won't be possible to get a complete overview of financially material issues affecting the company".[75]

In general, *it helps to look past the materiality definitions of these frameworks and identify that they are underpinned by economic theories on market failure and value creation*. Using this perspective we can discern that financial materiality is concerned with market failures (e.g. information asymmetries and externalities) which are material because they have a significant effect on the value-maximising potential of the firm *for owners*. And impact materiality is concerned with market failures which have a significant effect on stakeholders and the value-maximising potential of the firm *for society and the environment*. Seen through the lens of these definitions, we can identify that financial materiality is a

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[70] [*add page reference to GRI standards*]
[71] GRI Standards (2021) Foundation.
[72] Eumedion report. We should note that materiality matrices have, since 2021, fallen out of fashion within the GRI because they "often led to biases and incorrect interpretations" (public-faqs-universal-standards.pdf (globalreporting.org). See also: De Cristafaro and Raucci (2022) 'Rise and Fall of the Materiality Matrix - Lessons from a Missed Takeoff'.
[73] EFRAG (2022) ESRS 1 draft.
[74] GRI (2022) GRI perspective - materiality madness, p. 2.
[75] GRI (2022) GRI perspective - materiality madness, p. 2.

sub-set of impact materiality in the same way that shareholder models are a sub-set of stakeholder models.[76]

There are several arguments in favour of this economic interpretation of materiality. First, it is revealing that impacts are defined as positive and negative, which is identical to how economists often emphasise that externalities can be positive or negative. Second, the information disclosure of these frameworks reflects the private disposition of economics and is designed to empower stakeholders so that they can make better, more efficient decisions as private individuals.[77] Put differently, it is not primarily intended to serve government policy in a way which might deviate from economic rationality. The third argument relates to the EFRAG and GRI's use of due diligence as a reference point for identifying material impacts, and requires some further explanation.

Due diligence is a risk management approach, first developed for mergers and acquisitions, which holds that the financial information of target firms should be reviewed to prevent unexpected surprises.[78] It was adapted by Ruggie, the UN Special Representative for Business and Human Rights, and integrated into the UN *Guiding Principles on Business and Human Rights* (UNGPs) to help address adverse human rights impacts in the activities and value chains of firms. The concept has been well-received and was integrated, for example, in the OECD *Guidelines for Multinational Enterprises on Responsible Business Conduct* and the national legislation of France.[79] It also underpins a recent EU proposal for a Directive to introduce both mandatory human rights and environmental due diligence for European companies.[80]

Non-financial due diligence can be legally voluntary or mandatory, and generally entails that firms need to *identify, prevent, and mitigate their actual and potential adverse impacts*.[81] In practice, this asks firms to adopt policies and set up organisational processes to address certain risks (e.g. human rights abuses) in their activities and supply chains, and to ensure that these processes have enough resources to identify, prevent, and mitigate these risks, and to provide remediation for impacts.[82] The promise is that this will help stakeholders who suffer from these impacts, and will help firms reduce risks in their activities and supply chains. From a market failure perspective, it internalises the negative externalities of firms since it requires them to bear the costs of preventing and addressing their adverse impacts.

There are general concerns about the effectiveness of due diligence due to the "lack of consequentiality of reporting obligations, weak state monitoring, limited stakeholder involvement, and difficulties to establish legal liability".[83] However, even if we set aside these concerns then we can identify that *due diligence does not ask firms to bear more risk, or address more adverse impacts, than are directly or indirectly caused by or linked to their activities*. In this regard it only covers the extent of a firm's own market failures, and nothing more. This entails, first, that due diligence is unable to provide a structural

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[76] This relates to our discussion on modern economics and stakeholder models at the end of Section 8.3.
[77] IFRS: "The better information we have, the better we can act. Our purpose is to empower people with the right information to support better economic and investment decision-making." IFRS - ISSB: Frequently Asked Questions. This approach is also reflected in the EU strategy for CSR which notes that "The development of CSR should be led by enterprises themselves. Public authorities should play a supporting role through a smart mix of voluntary policy measures and, where necessary, complementary regulation, for example to promote transparency, create market incentives for responsible business conduct, and ensure corporate accountability" (p. 7).
[78] [*add general reference to information about due diligence*]
[79] OECD (2023) *Guidelines for Multinational Enterprises on Responsible business conduct (add second reference).*
[80] EU Due diligence proposal.
[81] OECD (2023) *Guidelines for Multinational Enterprises on Responsible business conduct*, p. 20.
[82] [*add reference to literature on due diligence proposal and its requirements*]
[83] These doubts are due to "lack of consequentiality of reporting obligations, weak state monitoring, limited stakeholder involvement, and difficulties to establish legal liability" (Schilling and Vacaflor (2021) Hardening foreign corporate accountability through mandatory due diligence in the European Union, p. 678). See also: LeBaron and Lister (2022) The hidden costs of global supply chain solutions.

solution for issues such as human rights violations or environmental harms. And, second, that it cannot, even when it functions perfectly, achieve more than an economically efficient outcome. This is why the EFRAG and GRI's references to due diligence are a reflection of economic theories on market failure.

The above arguments support the view that CSR and ESG, and the non-financial performance measures that they rely on, are a progressive movement within the limits of economics rather than an effective solution to social and environmental issues. While this may seem controversial, it is implicit in the common justifications of academics, industry organisations, and regulators in favour of CSR and ESG, namely that they are: (1) objectively desirable, and will (2) make markets more efficient, (3) help create value, and (4) redeem trust in business and capitalism.[84]

The *first justification, that non-financial measures of firm performance are objectively desirable*, may be inferred from the common claim that CSR and ESG are not just good for society and the environment, but also good for business, for example because they can help firms manage their risks, reduce the costs of capital, and offer business opportunities.[85] As the European Commission explains in the CSRD:

> "If undertakings carried out better sustainability reporting, the ultimate beneficiaries would be individual citizens and savers, including trade unions and workers' representatives who would be adequately informed and therefore able to better engage in social dialogue. Savers who want to invest sustainably will have the opportunity to do so, while all citizens would benefit from a stable, sustainable and inclusive economic system…
>
> The growth in the number of investment products that aim to pursue sustainability objectives means that good sustainability reporting can enhance an undertaking's access to financial capital. Sustainability reporting can help undertakings to identify and manage their own risks and opportunities related to sustainability matters. It can provide a basis for better dialogue and communication between undertakings and their stakeholders, and can help undertakings to improve their reputation."[86]

If everyone wins, then this suggests that a focus on firm non-financial performance is unobjectionable and can be pursued as a collective good.[87] It follows that it is self-evident, 'beyond' reasonable political debate, for firms and societies to engage in CSR and ESG.

We should note, however, that socially responsible activities were not always viewed in this positive light. On the contrary, they were long seen as controversial in economic, finance, and business circles. The reason is that they seemed to fall afoul of Friedman's influential argument, already discussed,[88] that it is inefficient and undemocratic for firms to engage in socially responsible activities and deviate from profit maximisation. It was in response to this critique that CSR advocates originally sought to develop the argument that it is economically rational, i.e. there is a business case, for firms to engage in socially responsible activities.[89] This argument failed, however, to become dominant because there was, for a long time, only inconclusive data on an overall positive relationship between firm financial and non-financial performance. The controversy persisted for several decades, and as late as 2008 Crane

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[85] Camilleri (2017) Preface, p. xi. Edmans (2023) Applying economics – not gut feel – to ESG. EU (2022) CSRD. Norman and MacDonald (2004) Getting to the bottom of triple bottom line. EU (2011) Renewed Strategy for CSR. GRI (2022) GRI perspective - towards stakeholder capitalism. WEF (2020) Measuring Stakeholder Capitalism.

[86] EU (2022) CSRD, preamble paragraphs 9 and 12.

[87] "Sustainability is not just "good to do", but "imperative to do". Once seen as little more than window dressing, goals and strategies about sustainability are positioning firms for long-term success. The underlying logic reflects a belief that business cannot survive in a society that fails." Palmer and Flanagan (2016) 'The sustainable company: looking at goals for people, planet and profits', *Journal of Business Strategy*, p. 28

[88] See section 8.3.

[89] For a discussion of the business case for CSR please see: Herbel and Herbel (2021) 'The Business Case for CSR, ESG and Responsible Business' in Lindsay and Martella (2021) Chapter 2.

et al. could write that "researchers have been… unable to agree on the answer to the one question that has dominated CSR research probably more than any other over the past 30 years, which is whether CSR is good for business or not."[90] Over the past decade, however, the controversy has been settled, in conjunction with the rise of ESG, in favour of the view that *some* socially responsible activities are profitable and make good business sense.[91] These activities are the ones which satisfy the materiality criterion and help firms identify and manage their economically relevant non-financial risks, impacts, dependencies, and opportunities.[92] We can identify from this controversy that the rise of non-financial measures of firm performance was, from the beginning, focused on consistency with economics and not on its replacement. This reaffirms our earlier point that CSR and ESG reflect, and do not transform, the scientific foundation of economics.

For completeness, we should note that controversy over the objective desirability of CSR and ESG has reignited over the past several years, especially in the United States.[93] Here, an 'anti-ESG' movement argues, much like Friedman did, that the concept leads to an expansion in unaccountable managerial power, impairs business profitability, and undermines societal prosperity. Former US Vice-President Pence argues, for example, that:

> "ESG is a pernicious strategy, because it allows the left to accomplish what it could never hope to achieve at the ballot box or through competition in the free market. ESG empowers an unelected cabal of bureaucrats, regulators and activist investors to rate companies based on their adherence to left-wing values. Like the social credit scores issued by the Chinese Communist Party, a low ESG score can be devastating, making it virtually impossible for a company to raise capital—and that is exactly the point."[94]

In response to this movement, Texas has already passed laws to forbid ESG-investing and the Florida governor recently prohibited state pension funds from taking ESG factors into account.[95]

In my view, these developments can be understood as *an ideological conflict between progressive and conservative interpretations of market fundamentalism*, with the latter arguing that the former is not sufficiently committed to the idea of free markets. To quote Pence again, "the next Republican president and GOP Congress should work to end the use of ESG principles nationwide. For the free market to thrive, it must be truly free."[96] This conflict echoes our earlier analogy between economics and ancient superstitions which saw disasters as evident of a lack of religious piety. Both sides share an underlying belief that the failure to attain economic efficiency and ideal liberal conditions is the root cause of social, economic, and environmental issues. They are divided, however, on what is then the 'right' kind of market fundamentalism to pursue: do we use the government to address market failures, or do we 'really' believe in the free market? However this conflict unfolds, it should be recognised that neither side offers an effective solution to escalating social and environmental issues.

The *second conventional justification in favour of CSR and ESG is that they will make markets more efficient*. More specifically, it is argued that they will help address market failures and that this, in turn,

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[90] Crane et al. (2008) *Oxford Handbook on CSR*, p. 4.
[91] See, for example: Ferrell, Liang, and Renneboog (2016) 'Socially responsible firms'.
[92] This terminology seems to be the developing standard for non-financial reporting, especially in relation to nature and biodiversity (https://www.ecgi.global/blog/are-companies-prepared-new-emerging-standard-biodiversity-reporting?mc_cid=a3cac339af&mc_eid=bd5617d7ee). To my knowledge, these terms first emerged together in the summary for business of The Economics of Ecosystems and Biodiversity (TEEB) Project, initiated by the G8 and five 'major developing economies' in 2007 (TEEB (2012) TEEB for business – executive summary).
[93] Pollman (2022) The making and meaning of ESG, p. 26-29.
[94] Republicans Can Stop ESG Political Bias - WSJ
[95] Political spat over climate risks in investments gets hotter | AP News
[96] Republicans Can Stop ESG Political Bias - WSJ

is necessary to achieve our social and environmental goals. This is evident, for example, in the EU's 2011 strategy for CSR and its 2019 Taxonomy Regulation:

> "Through CSR, enterprises can significantly contribute to the European Union's treaty objectives of sustainable development and a *highly competitive social market economy*. CSR underpins the objectives of the Europe 2020 strategy for smart, sustainable and inclusive growth, including the 75% employment target… CSR offers a set of values on which to build a more cohesive society and on which to base the transition to a sustainable economic system" [emphasis added][97]

> "Achieving the SDGs [Sustainable Development Goals] in the Union requires the channelling of capital flows towards sustainable investments. It is important to *fully exploit the potential of the internal market* to achieve those goals. In that context, it is crucial to *remove obstacles to the efficient movement of capital into sustainable investments in the internal market and to prevent new obstacles from emerging*" [emphasis added][98]

This justification is also evident in the ongoing work of the Taskforce on Nature-Related Financial Disclosures (TNFD):

> "The aim of the TNFD is to shift global financial flows away from nature-negative outcomes and toward nature-positive outcomes. Its goal is to develop and deliver a risk management and disclosure framework for organisations to report and act on evolving nature-related risks and opportunities.
>
> Transparent disclosure of information facilitates better risk and capital allocation decisions. An understanding of nature-related issues will enable financial markets to channel capital away from nature-negative outcomes and towards nature-positive solutions, opportunities and business models, ultimately supporting more efficient allocation of both risk and capital, and the functioning of stable markets."[99]

For further evidence we can refer to the 'Who cares wins' report which was written in 2004 following a collaboration between the UN Global Compact and a range of financial institutions.[100] Pollman has traced the origins of the term ESG to this report, and suggests that the term's meteoric rise to prominence should be understood through the lens of this cooperation between the UN and the financial sector.[101] Regarding the relationship between markets and ESG, the report explains that:

> "Ultimately, successful investment depends on a vibrant economy, which depends on a healthy civil society, which is ultimately dependent on a sustainable planet. In the long-term, therefore, investment markets have a clear self-interest in contributing to better management of environmental and social impacts in a way that contributes to the sustainable development of global society. A *better inclusion of environmental, social and corporate governance (ESG) factors in investment decisions will ultimately contribute to more stable and predictable markets*, which is in the interest of all market actors" [emphasis added][102]

As a final example, these views are also reflected in the Principles of Responsible Investment (PRI) which cover most of the world's professionally managed investments and an incredible $120 trillion in assets.[103] Its mission states that:

> "We believe that *an economically efficient, sustainable global financial system is a necessity for long-term value creation*. Such a system will reward long-term, responsible investment and benefit the environment and society as a whole. The PRI will work to achieve this sustainable global financial system by encouraging adoption of the Principles and collaboration on their

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[97] EU (2011) A renewed EU strategy 2011-2014 for Corporate Social Responsibility, p. 3.
[98] Preamble Paragraph 9 of Taxonomy Regulation.
[99] TNFD (2023) Draft v0.4 short summary, p. 4.
[100] UN (2004) Who cares wins.
[101] Pollman (2022) The making and meaning of ESG.
[102] UN (2004) Who cares wins, p. 3.
[103] https://www.unpri.org/about-us/about-the-pri

> implementation; by fostering good governance, integrity and accountability; and by *addressing obstacles to a sustainable financial system that lie within market practices, structures and regulation*" [emphasis added][104]

The above quotes show that regulators and industry organisations view CSR and ESG as tools that firms and societies can use to promote market efficiency and address market failures. Again, this means that they are consistent with economics and do not represent a change in paradigm.

The *third justification is that CSR and ESG will help to create value*, which means not only financial but also non-financial value. For context, we can identify that the term 'non-financial' value has fallen out of fashion since it is ambiguous and has proven difficult to define.[105] This ambiguity is due, at least in part, to the fiction of commensurability that is necessary to create money and the idea of financial value. This fiction entails that money cannot be disentangled from anything else, and that there is, as we already saw,[106] no essential distinction between financial and non-financial value. As an aside, we can note that the idea that such a distinction *can and does exist* is grounded in the commodity theory of money which assumes that money is a distinct kind of good. In any case, the ambiguity of non-financial value and the difficulty to create concrete distinctions between financial and non-financial value has given rise to various ways of thinking about firms' combined creation of financial and non-financial value.

Porter and Kramer, for example, refer in an influential 2011 article to 'creating shared value', and define value in economic and social terms as "benefits relative to costs, not just benefits alone."[107] They suggest that companies can create shared value by improving economic conditions in the communities in which they operate:

> "Companies can create economic value by creating societal value. There are three distinct ways to do this: by reconceiving products and markets, reconceiving productivity in the value chain, and building supportive industry clusters at the company's locations. Each of these is part of the virtuous circle of shared value; improving value in one area gives rise to opportunities in the others. The concept of shared value resets the boundaries of capitalism. By better connecting companies' success with societal improvement, it opens up many ways to serve new needs, gain efficiency, create differentiation, and expand markets."

Edmans outlines another prominent concept for joint value creation in his *Grow the Pie*. In the book he refers to profits and social value, and integrates the former into the latter. He explains that his grow the pie approach to responsible business can help enterprises:

> "… create *both* profit for investors and value for society… Crucially, the pie represents social value, not profits – profits are only one slice of the pie. Thus, under the pie-growing mentality, a company's primary objective is social value rather than profits. Surprisingly, this approach typically ends up *more* profitable than if profits were the end goal."[108]

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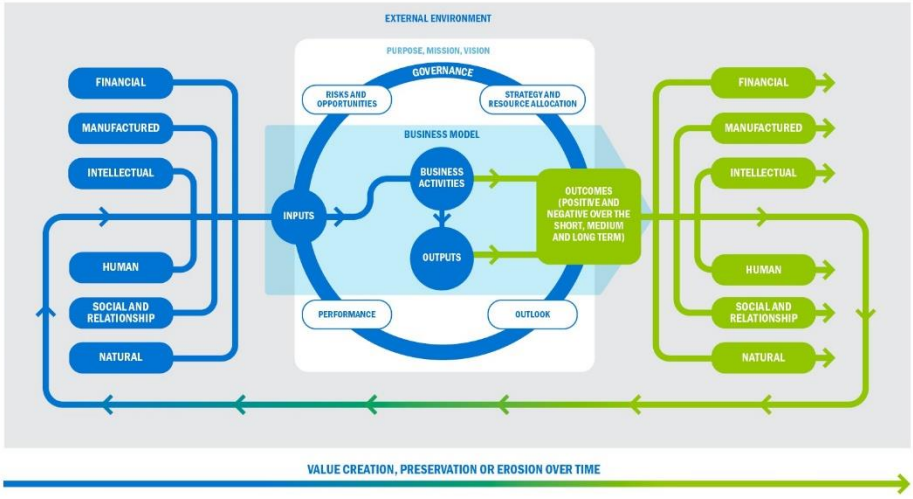
[104] PRI (2017) A blueprint for responsible investment.
[105] Baumüller and Sopp (2021) Double materiality and the shift from non-financial to European sustainability reporting - review, outlook and implications. Haller et al. (2017) The Term Non financial Information A Semantic Analysis of a Key Feature of Current and Future Corporate Reporting.
[106] See section 10.2.
[107] Porter and Kramer 2011, p. 6. See also: Griffin (2016) Corporate impacts - focusing on relationships and outcomes. As a relevant critique, Crane et al. argue that "the concept suffers from some serious shortcomings, namely: it is unoriginal; it ignores the tensions inherent to responsible business activity; it is naïve about business compliance; and it is based on a shallow conception of the corporation's role in society" (Crane et al. (2008) Contesting the value of 'creating shared value').
[108] Edmans (2022) Grow the pie, p. 3.

Our final example is the 'six capitals model' of the International Integrated Reporting Framework (IIRF).[109] This model, illustrated below, is popularly used by large, international firms to describe their value creation process through their effect on six capitals: financial, manufactured, intellectual, human, social and relationship, and natural.

Figure 16: The six capitals model of value creation[110]



The aim of this model is "explain to financial capital providers how an organisation creates value over time" through a "combination of quantitative and qualitative information, which is where the six capitals come in."[111] This information helps to ensure that firms do not unsustainably use their capital stocks, and to identify and describe how they can and are increasing their value.

One common theme that unites these different approaches is that financial and non-financial value are both seen as ends in themselves. In this regard they can be positioned in the middle of the spectrum of financial moral impairment that we previously identified.[112] A second commonality is that the creation of financial value is presented as an essential function that is fulfilled by firms for the rest of society. As Edmans explains:

> "This positive effect [of social value] on profits is crucial… without profits, shareholders wouldn't finance companies, companies couldn't finance investments, and investments couldn't finance shareholders' needs (citizens' retirements, insurance companies' claims or pension funds' liabilities). Thus, ideas to reform business that ignore profits' crucial role in society are unlikely to be implemented – enterprises aren't charities."[113]

This view is also reflected in the World Economic Forum's (WEF) 2020 *Davos Manifesto* which relies on Porter and Kramer's concept of shared value creation:

> "The purpose of a company is to engage all its stakeholders in shared and sustained value creation. In creating such value, a company serves not only its shareholders, but all its stakeholders – employees, customers, suppliers, local communities and society at large. The best way to understand

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[109] https://www.integratedreporting.org/what-the-tool-for-better-reporting/get-to-grips-with-the-six-capitals/ This Framework and its model have been absorbed into the IFRS Foundation, whose ISSB has used it as a foundation for the recent S1 Standards (https://www.ifrs.org/content/dam/ifrs/meetings/2023/april/ac/ap08-management-commentary-and-integrated-reporting.pdf). For a discussion see: Eccles and Spiesshofer (2015) 'Integrated Reporting for a Re-Imagined Capitalism'.

[110] https://www.integratedreporting.org/what-the-tool-for-better-reporting/get-to-grips-with-the-six-capitals/

[111] https://www.integratedreporting.org/what-the-tool-for-better-reporting/get-to-grips-with-the-six-capitals/

[112] Section 9.5.1.

[113] Edmans (2022) Grow the Pie, p. 4.

> and harmonize the divergent interests of all stakeholders is through a shared commitment to policies and decisions that strengthen the long-term prosperity of a company."[114]

In general, the value-creating ideas which underpin CSR and ESG imply that the financial success of firms is key to the overall prosperity of society. This is consistent with the commodity view of money, and with market fundamentalism which suggests that wealth is created by private actors in a generative economy. This confirms a third time that contemporary approaches to the non-financial performance of firms are embedded in economics and does not offer a change in paradigm.

The *fourth justification for CSR and ESG is that a focus on firm non-financial performance will redeem trust in business and capitalism*. This is deemed necessary because capitalism and business are, or are increasingly seen as, a cause of sustainability issues.[115] A failure to resolve these issues is, moreover, likely to invite 'uneconomic' regulation which is antithetical to capitalism and business.[116] As Porter and Kramer explain:

> "The capitalist system is under siege. In recent years business increasingly has been viewed as a major cause of social, environmental, and economic problems. Companies are widely perceived to be prospering at the expense of the wider community.
>
> Even worse, the more business has begun to embrace corporate responsibility, the more it has been blamed for society's failures. The legitimacy of business has fallen to levels not seen in recent history. This diminished trust in business leads political leaders to set policies that undermine competitiveness and sap economic growth. Business is caught in a vicious circle."[117]

These concerns also feature in the 2019 statement of the Business Round Table which signalled that the US business community has shifted away from shareholder primacy in favour of a commitment to all stakeholders:[118]

> "America's economic model, which is based on freedom, liberty and other enduring principles of our democracy, has raised standards of living for generations, while promoting competition, consumer choice and innovation. America's businesses have been a critical engine to its success.
>
> Yet we know that many Americans are struggling. Too often hard work is not rewarded, and not enough is being done for workers to adjust to the rapid pace of change in the economy. If companies fail to recognize that the success of our system is dependent on inclusive long-term growth, many will raise legitimate questions about the role of large employers in our society.
>
> With these concerns in mind, Business Roundtable is modernizing its principles on the role of a corporation."[119]

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[114] Davos Manifesto 1973: A Code of Ethics for Business Leaders | World Economic Forum (weforum.org)

[115] See, for example: Ernst and Young (2022) Enough Report: A review of corporate sustainability, in a world running out of time. Griffin (2016) Corporate impacts - focusing on relationships and outcomes, p. 3.

[116] Edmans suggests that "it's in companies' own interests to transform the way they do business and take very seriously their impact on society. In fact, it's urgent that they do. Otherwise, the promised regulations will be passed, and customers and workers will switch to competitors whose values they share" (Edmans (2022) Grow the Pie, p. 4). See also Lipton (2017). https://www.weforum.org/agenda/2019/12/why-we-need-the-davos-manifesto-for-better-kind-of-capitalism/. Henderson (2021) *Reimaging Capitalism in a World on Fire*.

[117] Porter and Kramer (2011) *Creating shared value*, p. 4.

[118] https://opportunity.businessroundtable.org/ourcommitment/. For a discussion and critique of this statement please see: Bebchuk and Tallarita (2020) The illusory promise of stakeholder governance (**add more**).

[119] https://opportunity.businessroundtable.org/ourcommitment/

The conventional, though certainly not uncontested,[120] diagnosis of these problems with business and capitalism is that they are caused by short-termism and an excessive focus on shareholder value.[121] Schwab, the Founder and Executive Chairman of the WEF describes the problem as follows:

> "Shareholder capitalism, currently the dominant model, first gained ground in the United States in the 1970s, and expanded its influence globally in the following decades. Its rise was not without merit. During its heyday, hundreds of millions of people around the world prospered, as profit-seeking companies unlocked new markets and created new jobs.
>
> But that wasn't the whole story. Advocates of shareholder capitalism, including Milton Friedman and the Chicago School, had neglected the fact that a publicly listed corporation is not just a profit-seeking entity but also a social organism. Together with financial-industry pressures to boost short-term results, the single-minded focus on profits caused shareholder capitalism to become increasingly disconnected from the real economy. Many realize this form of capitalism is no longer sustainable."[122]

These concerns are echoed in the 'Corporate Governance for Sustainability' statement which was signed by dozens of academics:

> "The current model of corporate governance needs reform. There is mounting evidence that the practices of shareholder primacy drive company directors and executives to adopt the same short time horizon as financial markets. Pressure to meet the demands of the financial markets drives stock buybacks, excessive dividends and a failure to invest in productive capabilities. The result is a 'tragedy of the horizon', with corporations and their shareholders failing to consider environmental, social or even their own, long-term, economic sustainability."[123]

The EU also adopts this problem diagnosis in its 2018 'Action Plan: Financing Sustainable Growth':

> "Transparency of market participants' activities is essential to a well-functioning financial system. Corporate transparency on sustainability issues is a prerequisite to enable financial market actors to properly assess the long-term value creation of companies and their management of sustainability risks. Corporate reporting is ineffective when longer-term risks are not fully transparent and thus cannot be taken into account. Corporate transparency on sustainability will not only inform market participants, but also help to steer companies in a more sustainable and long-term direction…
>
> Sustainability and long-termism go hand in hand. Long-termism describes the practice of making decisions that have long-term objectives or consequences. Investments into environmental and social objectives require a long-term orientation. However, current market practices often focus on producing high returns over a short timeframe. Therefore, a central focus of the sustainability agenda is to reduce the undue pressure for short-term performance in financial and economic decision-making, notably by increased transparency, so that investors, whether corporate or retail, can take better informed and more responsible investment decisions."[124]

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[120] Edmans. Roe. Banerjee (2008) CSR the good the bad the ugly. Van Aartsen (2020) *A journey into causes of corporate misbehaviour*. Bebchuk and Tallarita (2020) 'The Illusory Promise of Stakeholder Capitalism'.
[121] Sjåfjell. GRI (2022) GRI Perspective – towards stakeholder capitalism. Eccles and Spiesshofer (2015). EY (2020) Study on directors' duties and sustainable corporate governance.
[122] https://www.weforum.org/agenda/2019/12/why-we-need-the-davos-manifesto-for-better-kind-of-capitalism/
[123] Johnston, Veldman et al. (2019) 'Corporate governance for sustainability: Statement'
[124] EU (2018) Action plan: Financing Sustainable Growth, p. 3-4. It also features in the document for the EU Green Deal: "The private sector will be key to financing the green transition. Long-term signals are needed to direct financial and capital flows to green investment and to avoid stranded assets… Sustainability should be further embedded into the corporate governance framework, as many companies still focus too much on short-term financial performance compared to their long-term development and sustainability aspects. At the same time, companies and financial institutions will need to increase their disclosure on climate and environmental data so that investors are fully informed about the sustainability of their investments" (EU (2019) Green New Deal, p. 16-17).

In light of these problems with short-termism and shareholder primacy, it seems self-evident that all we need to do is promote long-termism and create value for all stakeholders, not just shareholders. Moreover, it seems that this is achievable by encouraging the combined financial and non-financial performance of firms and ensuring that markets are efficient. This will transform capitalism into a new version, *stakeholder capitalism*, which is sustainable and helps firms to create value for everyone.[125] As Eccles and Spiesshofer explain:

> "The essence of a re-imagined capitalism lays in resource allocation decisions that go beyond short-term financial performance. Achieving this will require companies and investors to take a longer-term view and use a broader range of performance metrics. To do this, they will need information that goes beyond financial metrics, even as this information should be related to financial performance. Substantial changes in internal and external reporting will be required."[126]

Elkington, too, emphasises that this line of reasoning motivated his 'triple bottom line' (people, planet, profit) approach, an early attempt in CSR to address sustainability issues by accounting for and improving the non-financial performance of firms:

> "[Triple Bottom Line]'s stated goal from the outset was system change — pushing toward the transformation of capitalism. It was never supposed to be just an accounting system. It was originally intended as a genetic code, a triple helix of change for tomorrow's capitalism, with a focus was on breakthrough change, disruption, asymmetric growth (with unsustainable sectors actively sidelined), and the scaling of next generation market solutions."[127]

This vision is also embedded in the WEF's *Measuring Stakeholder Capitalism* report, which outlined in 2020 a range of non-financial measures for the performance of firms:

> "… those corporations that align their goals to the long-term goals of society, as articulated in the SDGs, are the most likely to create long-term sustainable value, while driving positive outcomes for business, the economy, society and the planet. This is the true definition of stakeholder capitalism."[128]

To give a last example, we can refer to Edmans' article 'The end of ESG' which suggests, in an apparent response to the anti-ESG movement, that ESG-investing should not be politicised because it is not really any different from other kinds of investment risks that are already being taken into account:

> "ESG is both extremely important and nothing special. It's extremely important since it affects a company's long-term shareholder value, and thus is relevant to all academics and practitioners, not just those with ESG in their research interests or job title. It also affects a company's impact on wider society. This is relevant for anyone who cares about more than just financial returns, as well as for ensuring that capitalism works for all and safeguarding the public's trust in business.
>
> But ESG is also nothing special. It shouldn't be put on a pedestal compared to other intangible assets that affect both financial and social value, such as management quality, corporate culture, and innovative capability. Like other intangibles, ESG mustn't be reduced to a set of numbers, and companies needn't be forced to report on matters that aren't value-relevant [i.e. material]. Funds that use ESG factors to guide stock selection and engagement shouldn't be lauded over those who study other value drivers, and investors in the latter deserve the same protection. We can embrace differences of opinion about a company's ESG performance just as we do about its management

[125] For a critique see especially: Bebchuk and Tallarita (2020) The illusory promise of stakeholder capitalism.
[126] Eccles and Spiesshofer (2015) Integrated Reporting for a Re-imagined capitalism, p. 1.
[127] Elkington (2018) 25 Years Ago I Coined the Phrase "Triple Bottom Line" - Here's Why It's Time to Rethink It.
[128] WEF (2020) Measuring Stakeholder Capitalism, p. 7.

> quality, strategic direction, or human capital management. And, perhaps most importantly, ESG needn't be politicized."[129]

The above justifications and quotes allow us to confirm once more that CSR and ESG, and the non-financial measures of firm performance which they entail, are a progressive movement within the limits of economics and not a change in paradigm. Although it can reasonably be argued that 'stakeholder capitalism' is a more ethical and sustainable alternative to 'shareholder capitalism', it does not follow that it also offers an effective transition to a sustainable society and economy.

The overarching problem, as we have seen, is that non-financial performance measures are designed to be consistent with economics so that value-maximising firms can be identified and rewarded. They are therefore *an expansion of, and not a replacement for, the financial mode of perception and its universal system of measurement and rewards*. One result of this value-driven approach is that firms are subjected to 'market' discipline whenever they stray too far into the territory of non-material, non-financial value creation.[130] Unilever, for example, was attacked by one of its major investors because its management was "obsessed with publicly displaying sustainability credentials at the expense of focusing on the fundamentals of the business."[131] And Danone's CEO was recently ousted, despite making the firm a sustainability world leader, because of the company's relative financial underperformance.[132] Overall, this analysis suggests that *value-maximising firms can only become sustainable within the limits of economics, and are not able to transcend the limits of this discipline or provide an effective response to the sustainability issues of our societies.* The next section looks at this problem in more detail.

10.4 Firm efficiency and sustainability

Thus far we have seen that ideas on economic efficiency and value creation have resulted in a universal system of measurement and rewards which is centred on the ideal of a value-maximising firm. We have seen, moreover, that economic interpretations of value and value-maximisation depend on whether firm activities take place in a context of perfect or imperfect markets. The latter conditions have been used by economics to explain social and environmental issues as market failures and have, via CSR and ESG, spurred the development of sustainability-related, non-financial measures of firm performance. These measures are used by stakeholders, primarily investors and creditors, to identify which firms are more sustainable and to reward them accordingly. In general, it is heralded that the development of non-financial measures of firm performance is part of a transformation away from shareholder capitalism towards stakeholder capitalism. It is argued that this will provide a sustainable foundation for a new economy since it can address the negative social and environmental impacts of economic activities.

This section will challenge these ideas and developments by drawing on our findings from previous Chapters. We will identify that they are unable to transform capitalism but can only perpetuate it since they build on the same misconceptions about natural economic laws which gave rise to a belief in capitalism in the first place. We will see, moreover, that stakeholders will not be adequately protected because attempts to resolve market failures are premised on market fundamentalism and radical separation, both of which are predetermined to erode the internal relations that are central to stakeholder interests. We will also identify that the rise of stakeholder capitalism cannot ensure the wise stewardship of resources because it remains committed to the pursuit of economic efficiency, is grounded in the

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[129] Edmans (2022) The end of ESG, p. 26.

[130] [*add reference on firms such as Danone and Unilever being criticised for focusing too much on sustainability*]

[131] https://www.reuters.com/business/retail-consumer/unilever-under-pressure-show-sustainability-focus-is-good-business-2022-02-09/#:~:text=Last%20month%20Terry%20Smith%2C%20CEO%20of%20Unilever%27s%20ninth-biggest,a%20dozen%20Unilever%20investors%20ahead%20of%20its%20results

[132] https://www.forbes.com/sites/frankvangansbeke/2021/03/20/sustainability-and-the-downfall-of-danone-ceo-faber-12/?sh=576ac5d35b16).

private disposition of economics, and does not understand the generative role of the state. Lastly, we will demonstrate that a focus on financial and non-financial value-maximisation does not maximise societal prosperity because it mistakenly views money as a commodity and treats it as one end among many, rather than as a means to societal ends.

These issues are all evident in *efforts to value nature* so that it can be integrated into the economic and financial decision-making of firms and other market actors. This section will focus on these efforts as a case study because their success is seen as a precondition for the sustainable transformation of firms and capitalism. As Serafeim et al. explain:

> "Measuring and valuing the impacts that companies have on society and the environment, while not itself a sufficient condition, is a necessary one for reimagining capitalism. In the absence of clearly defined impact metrics and transparency, these considerations are likely to be absent from decision-making. Decisions will continue to be made on existing financial metrics that do not reflect a holistic view of how an organization creates value as they ignore impacts on employees, customers, the environment and the broader society."[133]

This keystone role for the valuation of nature means that flaws in this activity will undermine the whole architecture of sustainable value-maximisation and stakeholder capitalism that has been constructed on its presumed feasibility and success.

We also focus on the valuation of nature because it is rapidly gaining in prominence and *can be expected to become a mainstream practice among firms over the coming years*.[134] This mainstreaming is driven by legitimate, acute concerns about the destruction of ecosystems and biodiversity loss,[135] and has inspired, for example, ABN Amro to report that they reduced their negative impact on biodiversity from €165 million in 2020 to €95 million in 2021.[136] The World Bank has also become involved and recently estimated that the Amazon Rainforest could be worth at least $317 billion per year, $20 billion of which relates to ecosystem services such as rainfall and protection against fires and soil erosion.[137] The UN is also on board and its Food Systems Summit (UNFSSS) assessed in a 2021 report, *The True Cost and True Price of Food*, that the price of unsustainable agriculture is almost $20 trillion dollars.[138] These valuations are well-intentioned, and the issues which they address are severe. This makes it especially important to examine whether and how they are affected and limited by their reliance on economics.

10.4.1 Economics and the valuation of nature

In terms of background, we can highlight that valuations of nature are part of a larger project, initiated by environmental economists, to develop a measure of social wealth that transcends the limits of GDP and can facilitate sustainable development.[139] According to proponents of this project, GDP and other measures based on economic activity are insufficient since they capture only one dimension of social prosperity and neglect others such as our health, education, relationships, and environment. To address

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[133] Serafeim et al. (2019) Impact-weighted financial accounts

[134] Sullivan (2014) The natural capital myth, or will accounting save the world - preliminary thoughts on nature, finance and values. Gómez-Baggethun and Ruiz-Pérez (2011) Economic valuation and the commodification of ecosystem services.

[135] "In spite of its numerous achievements in terms of protection of rare species and habitats, traditional conservation approaches have been powerless to reverse or stabilize the metabolic patterns of the global economy, characterized by ever-increasing demands on natural capital stocks, ecosystem services, and biodiversity (Gómez-Baggethun and Ruiz-Pérez (2011) Economic valuation and the commodification of ecosystem services, p. 614).

[136] ABN Amro (2021) Impact on Biodiversity.

[137] https://brazilreports.com/a-preserved-amazon-rainforest-worth-usd-317-billion-per-year-world-bank/4807/.

[138] UNFSS (2021) The True Cost and True Price of Food.

[139] Dasgupta eds. (2018) Handbook of Environmental Economics, Chapter 3, p. 86-87.

this shortcoming, they generally argue that it is better to measure the wealth of society in terms of *three kinds of capital*: produced (or manufactured or reproducible), human, and natural.[140]

These capital stocks can each be defined and subdivided in different ways. *Produced capital* can include categories such as knowledge capital, social capital, and institutional capital. *Human capital* can include health, skills, education, and so on. And *natural capital* can include anything ranging from land and forests to ecosystem services such as water purification and pollination.[141] It is unclear whether money should be seen as a kind of capital, as is conventional for example in finance and the six capitals model. It is, however, clear for all of these capitals that their *value is generally expressed in terms of money*.[142]

Also clear is that these three capitals are used by environmental economists to flesh out the concept of *sustainable development*.[143] Their consensus interpretation of this term builds on the 1987 Brundtland report, *Our Common Future*, which defined in 1987 that development is sustainable when "it meets the needs of the present without compromising the ability of future generations to meet their own needs."[144] This definition was adapted into economic terms so that *sustainable development is satisfied when there is no overall reduction in the value of the three capitals from one generation to the next*. As Barbier puts it:

> "Economists are generally comfortable with [Brundtland's] broad interpretation of sustainability, as it translates easily into economic terms: an increase in well-being today should not have as its consequences a reduction in well-being tomorrow. That is, future generations should be entitled to at least the same level of economic opportunities— and thus at least the same level of economic welfare—as currently available to present generations. Consequently, economic development today must ensure that future generations are left no worse off than present generations. Or, as some economists have succinctly put it, *per capita* welfare should not be declining over time."[145]

The main controversy among economists regarding this interpretation of sustainable development is whether the three kinds of capital can be freely exchanged for one another (i.e. if and to what extent they are substitutable).[146] In general, this has given rise to 'strong' and 'weak' economic approaches to sustainable development. *Strong* approaches suggest that natural capital is fundamentally different, for example because depletion of (some) natural capital is irreversible, or because we have uncertain knowledge about it.[147] They call "for rapid progress towards both the more efficient and the more frugal use of natural resources"[148] and are more inclined to limit resource exploitation and highlight issues such as international inequality, overconsumption, and inter-generational equity.[149] *Weak* approaches

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[140] See, for example: Fenichel and Yashina (2019) Choices and the value of natural capital, p. 121.
[141] Dasgupta Review (2021) Barbier (2019) The concept of natural capital.
[142] Daily et al. (2000) 'The value of nature and the nature of value', *Science*, p. 396. Even in cases where utility is used this is usually expressed in terms of willingness to pay X amount, which is again monetary (Dasgupta eds. (2018) Handbook of Environmental Economics, p. 73). Sullivan (2014) The natural capital myth, or will accounting save the world - preliminary thoughts on nature, finance and values.
[143] Barbier (2019). Dasgupta eds. (2018). For an overview of approaches from different disciplines, see: Auty and Brown (2021) An overview of approaches to sustainable development (chapter in book).
[144] Brundtland (1987) WCED – Our Common Future, paragraph 27. Generally, see: Du Pisani (2006) Sustainable development - historical roots of the concept.
[145] Barbier (2019), p. 18.
[146] Fenichel and Yashina (2019) Choices and the value of natural capital, p. 133. Barbier (2019), p. 18.
[147] See for example: Pearce et al. (1996) Measuring sustainable development - progress on indicators. Hamilton (2021). Barbier (2019). For an example of the strong approach to the valuation of ecosystem services, see Costanza et al. (2017) Twenty years of ecosystem services - how far have we come and how far do we still need to go. Wegner and Pascual (2011) Cost-benefit analysis in the context of ecosystem services for human well-being - a multidisciplinary critique, p. 495.
[148] Auty and Brown (2021) An overview of approaches to sustainable development, p. 5.
[149] Auty and Brown (2021) An overview of approaches to sustainable development, p. 5-8.

consider that the three capitals are substitutable, and that their central objective "is to at least maintain, if not enhance, the total capital stock passed on to future generations."[150]

While the strong and weak approaches disagree on the substitutability of natural capital, and therefore on the extent to which natural capital may be excluded from economic activities, they nonetheless *share a common focus on economic efficiency*. They agree, in other words, that the three capitals should be used in a manner which is economically efficient, i.e. we should use them to satisfy as many preferences as possible in light of current technologies, environmental conditions, resource availability, the needs of future generations, etc.[151] Furthermore, both approaches rely on theories and methods from modern economics[152] and therefore also on its underlying scientific foundation of market fundamentalism and methodological individualism. This is evident, for example, from the fact that game theoretic models have been developed which can account for both weak and strong approaches to sustainability (the limits of the latter are included as thresholds).[153] One way to understand these commonalities is to consider, as Barbier does, that weak sustainability is a minimum criterion for sustainable development, onto which stronger considerations may be added.[154]

Another common feature of economic approaches to sustainable development is that they are *embedded in liberalised exchange and the satisfaction of individual preferences*. This is readily apparent in typical cases when natural capital, such as forests and mines, are seen and valued as different kinds of privately owned assets which provide a certain monetary income and can be depleted with use over time.[155] It is also apparent when the costs, for example of protecting or restoring an ecosystem, are used as an indirect proxy for its natural capital value. There are, however, other circumstances when it is more difficult to identify that natural capital values are embedded in exchange, such as when:[156] (1) there are *no apparent markets* for the use of natural capital, for example when people freely enjoy clean air, walking in the woods, or watching birds; and (2) the *prices of natural capital are not determined directly via competitive market processes*, for example when pollution is indirectly priced into goods.

Regarding the first situation, it helps to identify that *it is not the non-market use of the natural capital, but its valuation process which is embedded in exchange*.[157] This can be inferred from the methods which economists use to value non-marketed natural capital on the basis of people's willingness to pay.[158] They ask, for example, how much they would pay to see the birds, visit the woods, or how much they would be willing to pay to have a natural park within a certain distance rather than not at all. The natural capital's value is subsequently determined by the imagined 'exchange' that people make between the alternative scenarios. As Daily et al. explain regarding this process:

> "… valuation […] translates the consequences of maintaining the status quo and opting for each alternative into comparable units of impact on human well-being, now and in the future. These

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[150] Auty and Brown (2021) An overview of approaches to sustainable development, p. 5-8. See also: Barbier (2019), p. 18.
[151] "However it may be defined in detail, achieving sustainable development necessarily entails creating and maintaining wealth" (Hamilton (2021), p. 2). See also: Barbier (2019) The concept of natural capital, p. 20. Bateman and Mace (2020) The natural capital framework for sustainably efficient and equitable decision making, p. 5.
[152] See, for example: Arrow et al. (2012) Sustainability and the measurement of wealth. Dasgupta Review (2021).
[153] Hamilton (2021), p. 4.
[154] Barbier (2019) The concept of natural capital, p. 20. Critically, see: Sullivan and Hannis (2017) Mathematics maybe, but not money - on balance sheets, numbers and nature in ecological accounting, p. 1464.
[155] Barbier (2019) The concept of natural capital, p. 16.
[156] Starrett (2000) Shadow Pricing in Economics, p. 16.
[157] See, for example: Bateman and Mace (2020) The natural capital framework for sustainably efficient and equitable decision making, p. 4. Costanza et al. (2017) Twenty years of ecosystem services - how far have we come and how far do we still need to go, p. 7-8.
[158] Critically, see: Wegner and Pascual (2011) Cost-benefit analysis in the context of ecosystem services for human well-being - a multidisciplinary critique, p. 495.

> impacts are defined in terms of the resources that people would be willing to forgo to get the goods, services, or other outcomes associated with a particular alternative. The common measuring unit is typically monetary."[159]

And from the 2018 *Handbook of Environmental Economics*:

> "Building on the efforts of market researchers to uncover willingness to pay for new products, environmental economists have developed increasingly refined methods to estimate willingness to pay for non-marketed environmental resources. A wide range of methods now exists to measure preferences over non-marketed biotic and abiotic resources. As long as respondents have full information about the benefit they obtain from the resource, these methods yield reasonable estimates of willingness to pay to acquire (or willingness to accept compensation for the loss of) the resource."[160]

The above shows that even the value of non-marketed natural capital is grounded in exchange. We can readily infer, moreover, from the references to well-being and people's willingness to pay, that it is also grounded in the satisfaction of individual preferences, as captured by changes in prices.

Regarding the second situation, *it is not the non-competitive formation of natural capital prices that is significant, but the way that economists have compensated for this shortcoming by using the concepts of revealed preferences and shadow pricing.* According to these concepts, the value of non-marketed natural capitals, or the value of impacts on natural capital which are not priced directly (such as pollution when purchasing a laptop), can be inferred as a 'shadow price' from information revealed by people during other purchasing decisions.[161]

> "In the simplest case, a unit of capital is valued as the net present value of the flow of future services it confers… A perfectly functioning market for capital harmonizes this value in use with its value in exchange – its spot price. However, even when markets for an asset are imperfect or completely absent, the individual and collective decisions made by society in terms of investment or depletion nevertheless affect the present value accorded by the last increment of capital – revealing an implicit (shadow) price."[162]

There are disagreements on the precise terminology, but it is sufficient for us to distinguish between the shadow price that can be inferred from actual purchasing decisions, and the *optimal* shadow price that would obtain under perfect market conditions and would internalise all externalities.[163] As an aside, we can note that environmental economists do not all advocate that optimal shadow prices are used to signify the value of natural capital.[164] In their view, it is unjustified to assume that the economy operates efficiently with few or minimal market failures, and therefore misleading to use optimal prices. This does not, however, mean that these economists depart from the standard view that fewer market failures, i.e. better information and fewer externalities, will lead to relatively more optimal (shadow) prices for natural capital.[165] In this regard their aspirations remain squarely directed towards traditional economic

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[159] Daily et al. (2000) 'The value of nature and the nature of value', *Science*, p. 396.
[160] Dasgupta eds. (2018) Handbook of Environmental Economics, p. 82.
[161] Starrett (2000) Shadow Pricing in Economics, p. 16. Costanza et al. (2017) Twenty years of ecosystem services - how far have we come and how far do we still need to go, p. 9.
[162] Dasgupta eds. (2018) Handbook of Environmental Economics, p. 89.
[163] Dasgupta eds. (2018) Handbook of Environmental Economics, p. 89-90.
[164] Arrow et al. (2012), p. 319-320. Fenichel and Yashida (2019). The contrasting view is provided, for example, by Hamilton, who suggests that "the wealth accounting problem lies in the estimation of values for resource assets and their depletion, with the aim of arriving at an approximation of the values that would be observed in a free market" (Hamilton (2021), p. 4).
[165] This is evident, for example, from the influential 2021 Dasgupta Review of environmental economics which was commissioned by the UK government: "The Review studies the wedge between the prices we pay for Nature's goods and services and their social worth [i.e. the difference between shadow prices and optimal shadow prices] in terms of what economists call 'externalities'. Over the years a rich and extensive literature has identified the

concerns. In any case, we can identify that the use of revealed preferences to triangulate shadow prices for non-competitively priced and non-marketed natural capital shows that it, too, is embedded in exchange and individual preferences.

Thus far we have identified that valuations of nature are designed to promote economic efficiency, and that the value of particular natural capitals is calculated with reference to exchange and the satisfaction of individual preferences. This shows that valuations of nature are consistent with the utility theory of value and, more broadly, with the scientific foundation of economics. Building on our earlier analysis, we can also highlight that *valuations of nature are an attempt to position 'atomised' parts of our environment on the one-dimensional ruler which is provided by money as a fiction of commensurability*. In standard economic terms, this positioning turns nature into a 'real' commodity with a price and an 'objective' existence within the Platonist realm of numbers. As we can see, it is this commodification which enables the integration of natural capital into the economic decision-making framework of rational individuals.[166]

One corollary to this economic view is that, if nature is not commodified and continues to exist without a price, then it will never be properly valued and will never feature adequately in the decision-making of individuals: *nature must be valued if we are to save it*.[167] These beliefs are reflected, for example, in the following statement from Fenichel and Yashida:

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measures that can be deployed (the forces of the law and social norms) for closing that wedge. The presence of the wedge is why the citizen investor will insist that companies disclose activities along their entire supply chain. Disclosure serves to substitute for imperfect markets" (Dasgupta review (2021) The Economics of Biodiversity, p. 6).

[166] [This belies the view of leading environmental economists, such as Costanza, that pricing is not necessarily the same as commodification. In their view, natural capital can be priced without being commodified. This fails to consider, however, that economic theories on money are themselves premised on the idea that things with a price are commodities.] *If I have time can find some literature on this. I heard about it in an online discussion with the guy. an maybe find some authors who do not see this as commodification since it doesn't enter 'normal' market exchange*] → found it: "valuation and commodification are not equivalent concepts. Modern political economy defines commodities as 'products that are produced to be sold on markets' (Polanyi, 1944/1957: 127) or simply as 'any object intended for exchange' (Appadurai, 1986: 9). This definition is consistent with the one offered by classical economists. For example, Marx defines commodities as 'any product with the capacity to satisfy human needs of any kind' (Marx, 1867/1965: 3), but adds later that to become a commodity 'such a product has to pass from one hand to another, through an act of exchange' (Marx, 1867/1965: 9). Thus, the second relevant implication that follows from these definitions is that assigning an economic value to an object or act does not automatically involve commodification. Valuation is a necessary but not sufficient condition for commodification, as valuable goods and services have to be alienable in order to become commodities. In other words, a complementary institutional structure that allows appropriating ecosystem services (property rights) and their sale or exchange (a market) has to exist before commodification can take place… The demarcation between economic framing of the environment, monetary valuation and commodification as distinct processes is thus consistent from a theoretical point of view. As we shall see, however, the distinction between these processes partly fades when analysed within the broader political, institutional and economic context in which ecosystem policy and science operate, with a special intensity since the late 1980s… Since valuation outcomes are inevitably attached to the ideological and institutional structures in which environmental policy operates, valuation practitioners cannot expect monetary figures to be neutral in relation to the process of nature commodification. In the context of ongoing privatization, monetization of ecosystem services will act directly or indirectly as a precondition and driver of commodification." (Gómez-Baggethun and Ruiz-Pérez (2011) Economic valuation and the commodification of ecosystem services, p. 622-624).

[167] "There is not one right way to assess and value ecosystem services. There is however a wrong way, that is, not to do it at all… Even without any subsequent valuation, the very process of listing all the services derived from an ecosystem can help ensure their recognition in public policy. This makes the analysis of ecological systems more transparent and can help inform decision-makers of the relative merits of different options. However, valuation is often useful, because many decisions involve trade-offs between ranges of things that affect human wellbeing differently. In these cases, we do not really have a choice." (Costanza et al. (2017) Twenty years of ecosystem services - how far have we come and how far do we still need to go, p. 5, 7). See also: De Groot et al.

> "It is not sufficient for sustainable development or sustainability more broadly to be an abstract unachievable goal. Sustainability must be measurable, and early attempts to measure sustainability suggest it is also achievable…. Measurement of economic programmes that inform natural capital asset prices is an essential element in providing actionable sustainability measurements."[168]

It also underpins the explanation of Serafeim et al. for why societies and firms need to value nature:

> "In order to determine units of impact, we need an accounting system to convert impacts of diverse nature and origin into a *common currency* that can be evaluated alongside conventional financials and to determine how these can be meaningfully aggregated to inform decision making. Without such a transformation in business accounting, strategic analysis will continue to ignore, or at best wade through the vagaries of, both negative and positive externalities."[169]

These justifications are even being adopted by wildlife groups such as the World Wildlife Fund (WWF):

> "We need to look at the value of nature in economic and social terms to help us better understand the full implications of the choices we make. Instead of making decisions based on short-term financial interests, we can look at the longer-term benefits for people and the economy – and of course nature itself. Using this argument, we're persuading governments and businesses to take better care of the natural world, so that it can continue to sustain us all into the future."[170]

The above quotes also demonstrate that *the valuation of nature is necessary for sustainability because it enables the effective use of economic reasoning*.[171] The reverse implication is that *only* economics, and no other discipline, is able to mobilise resources for the adequate protection of our environment.[172] The universality of this claim is consistent, as we have seen,[173] with the misconception of economics as an objective science.

A second corollary to this economic view of nature is *a premise that there is a perfect price for each atomised part of nature* which, when obtained, will solve all of our sustainability issues since it means that all market failures will have been eliminated. This premise is evident, for example, in the Full or True Cost Accounting (FCA/TCA) approaches which are being developed and used to measure and price the impact of externalities from economic activities.[174] It also plays a central role in the World Business Council for Sustainable Development's (WBCSD) Vision 2050 document for the transition to a sustainable economy and society:

> "Business can lead the process of transformation by doing what business does best: creating and commercializing solutions that people need and want, and engaging governments, investors and the

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(2012) Global estimates of the value of ecosystems and their services in monetary units. Critically, see: https://siansullivan.files.wordpress.com/2018/01/natural-capital-and-fairytales-sullivan2017-devt-and-change.pdf. Sullivan (2014) The natural capital myth, or will accounting save the world - preliminary thoughts on nature, finance and values.

[168] Fenichel and Yashida (2019) Choices and the value of natural capital.

[169] Serafeim et al. (2019) Impact-weighted financial accounts, p. 13.

[170] https://www.wwf.org.uk/what-we-do/valuing-nature

[171] "What goes unmeasured often goes unvalued—thereby contributing to the poor management of many natural capital stocks. Failure to manage and invest in natural capital means that society is dissipating wealth, reducing future productivity, and potentially jeopardizing the sustainability of well-being and wealth of future generations" (Fenichel and Abbott (2014), Natural Capital from Metaphor to Measurement, p. 22).

[172] The Economics of Ecosystems and Biodiversity, a joint collaboration between the United Nations Environmental Programme (UNEP) and the European Commission, noted in 2010 that: "Applying economic thinking to the use of biodiversity and ecosystem services can help clarify two critical points: why prosperity and poverty reduction depend on maintaining the flow of benefits from ecosystems; and why successful environmental protection needs to be grounded in sound economics, including explicit recognition, efficient allocation, and fair distribution of the costs and benefits of conservation and sustainable use of natural resources." (TEEB (2010) Synthesis Report, p. 3).

[173] Section 5.2.1.

[174] Contemporary Environmental Accounting | Issues, Concepts and Practice (taylorfrancis.com) need to get pdf

> public to make this possible in competitive markets. But this has to take place within the parameters of true value creation, rather than value extraction. True value, a concept developed in the original Vision 2050, is where social and environmental costs and benefits are internalized and reflected in the relative price of goods and services, and in companies' P&L statements, costs of capital and market valuations."[175]

The perfect prices assumption also features prominently in the work of the True Price social enterprise which works with influential firms and organisations to establish tools to measure and value nature.[176] Their website promises that "If a product is sold for a true price, then no damage is done to people or to nature: it is fully sustainable. If all products are sold for a true price, then the global economy is sustainable."[177] It has to be stressed that that this claim is overstated since *perfect prices cannot do more than lead to Pareto optimal decisions within an inclusive approach to the measurement of wealth*. This means that they are only consistent with the weak approach to sustainable development which, as noted, allows for substitutability between different capitals and permits harm to people and nature when it results in an overall increase in value. The result is that *perfect prices do not prevent damage to people or nature*, but only compensate for it in terms of overall inclusive value.[178]

A third corollary is that *non-monetary measures of natural capital, whether qualitative or quantitative, are not enough to achieve efficient sustainable development*. Of course, this does not mean that non-monetary measures are unwelcome or unnecessary. The information which they provide is better than none at all, and they can help as a preliminary step towards later monetary valuation, or to inform a strong approach to sustainable development.[179] It should nevertheless be recognised that sustainable development can only be economically efficient when it is grounded in information about prices, i.e. when natural capital has been positioned on the fiction of commensurability. It follows[180] that *economically efficient sustainable development is only achievable once all natural (and social) capital has been commodified and priced*.

A fourth corollary is that *the prices of natural capital are determined, directly or indirectly, via market dynamics which are subject to natural economic laws*. This may be inferred from the fact that valuations are embedded in exchange, i.e. in the dynamics of supply and demand. One consequence of this belief in natural economic laws is that 'optimum' prices are a matter of obtaining perfect market conditions, and that regulatory policies should focus on addressing market failures. Put differently, we need to 'work with' the free market rather than fight against economic gravity. Importantly, this fails to consider that prices are socially constructed, and neglects that prices might be influenced as a matter of policy for the pursuit of beneficial outcomes. This leads, in general, to an impaired view of what the state can do in relation to sustainability issues.

In summary, we have identified that valuations of nature are part of an attempt by economists to develop and pursue an inclusive measure of societal wealth. We have seen, moreover, that these valuations are primarily monetary, and that they are embedded in the pursuit of economic efficiency, exchange, and the satisfaction of individual preferences. This means not only that they are consistent with the scientific foundation of economics, but also that they complement the universal system of measurement and

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[175] WBCSD (2021) Vision 2050 Time To Transform, p. 23.
[176] Home - True Price. A similar company from the US, TruCost, was absorbed by Standard & Poor Global for their branch on ESG assessments (https://www.spglobal.com/esg/trucost).
[177] https://trueprice.org/about-us/
[178] As Coase explained: "If we assume that the harmful effect of the pollution is that it kills the fish, the question to be decided is: is the value of the fish lost greater or less than the value of the product which the contamination of the stream makes possible?" (Coase (1960), p. 838).
[179] Costanza et al. (2017) Twenty years of ecosystem services - how far have we come and how far do we still need to go, p. 7-9. Bateman and Mace (2020) The natural capital framework for sustainably efficient and equitable decision making.
[180] See section 6.2.3.

rewards which favours the ideal, value-maximising firm. This complementarity is the focus of the next subsection.

10.4.2 Firms and the valuation of nature

To explore the connection between firms and the valuation of nature, we can examine how this practice was adapted from its origin in environmental economics into something that could enter the daily practice of firms. To start, we can highlight that early efforts to value nature struggled to position the valuations of particular natural capitals within a more general framework. It was not self-evident, for example, whether and how the monetary value of a hectare of mangrove forest in Southern India could be compared to a hectare of mangrove forest on the African West Coast or the Caribbean, or for that matter to a stretch of the Gobi Desert or a patch of Open Ocean in the Pacific. Issues related not only to the different environmental conditions, but also to diverse human uses of, and interactions with, these areas. The solution to this problem was to assume, as a starting point, that the findings of one area could be compared to another in terms of the same 'unit value'.[181] As Costanza et al. explain in their twenty-year review of valuing ecosystem services:

> "When ecosystem services research began in full swing, a major problem was to find empirical economic valuation data in various contexts and spatial scales. One approach is the 'value transfer' or 'benefit transfer' method… which transposes value estimates from one location to another, adjusting for differences in ecological and economic contexts... The 'unit value' method, based on this approach, adopts average values per unit area, aggregated over all valuation studies for a particular ecosystem."[182]

We can readily identify, from our earlier analysis,[183] that the unit value method introduces a fiction of commensurability between the valuations of different natural capitals. This enables their comparison in monetary terms and allows the value of one natural capital to be used as a proxy for other, as yet unvalued natural capitals. As we will see, this has allowed environmental economists to develop, with relatively few data points, an estimated value for every major biome and ecosystem on the planet. This, in turn, has proven key to the rise of firm valuations of nature.

One of the first major attempts at a global valuation of natural capital was the 2007 Project on The Economics of Ecosystems and Biodiversity (TEEB), a collaboration between the United Nations Environmental Programme (UNEP) and the European Commission.[184] Its work and findings were summarised in the abstract of a 2012 article by De Groot et al.:

> This paper gives an overview of the value of ecosystem services of 10 main biomes expressed in monetary units. In total, over 320 publications were screened covering over 300 case study locations. Approximately 1350 value estimates were coded and stored in a searchable Ecosystem Service Value Database (ESVD). A selection of 665 value estimates was used for the analysis.
>
> Acknowledging the uncertainties and contextual nature of any valuation, the analysis shows *that the total value of ecosystem services is considerable and ranges between 490 int$/year for the total*

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[181] For an overview see: Navrud and Ready (2007) Environmental value transfer - issues and methods, Chapter 1. For completeness we should note that these authors also refer to an alternative, 'value function' transfer method. The difference, however, is immaterial for our analysis since it merely modifies the unit transfer method on the basis of additional, local findings regarding individual revealed preferences, willingness to pay, etc. (Navrud and Ready (2007) Environmental value transfer - issues and methods, p. 4).

[182] Costanza et al. (2017) Twenty years of ecosystem services - how far have we come and how far do we still need to go, p. 9.

[183] Section 9.3.

[184] TEEB (2010) Synthesis Report. Costanza et al. (2017) Twenty years of ecosystem services - how far have we come and how far do we still need to go, p. 9.

> *bundle of ecosystem services that can potentially be provided by an 'average' hectare of open oceans to almost 350,000 int$/year for the potential services of an 'average' hectare of coral reefs*.
>
> More importantly, our results show that most of this value is outside the market and best considered as non-tradable public benefits. The continued over-exploitation of ecosystems thus comes at the expense of the livelihood of the poor and future generations. Given that many of the positive externalities of ecosystems are lost or strongly reduced after land use conversion *better accounting for the public goods and services provided by ecosystems is crucial to improve decision making and institutions for biodiversity conservation and sustainable ecosystem management*" [emphasis added][185]

Several other, notable initiatives have since emerged at the international level. There is, for example, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).[186] It was founded by 94 states in 2012 and is institutionally supported by various branches of the UN.[187] Its aim is to "strengthen the science-policy interface for biodiversity and ecosystem services for the conservation and sustainable use of biodiversity, long-term human well-being and sustainable development".[188] The IPBES does not focus exclusively or primarily on monetary valuations. Instead, it adopts a more expansive approach, still under development, which tries to take into account, for example, the intrinsic value of nature and relational values between people and nature.[189]

The relatively non-monetary focus of IPBES may be contrasted with the parallel international work of the UN System of Environmental-Economic Accounting (SEEA), the World Bank Global Program on Sustainability, the Ecosystem Services Partnership, and the Natural Capital Project. The SEEA is an international statistical standard, promoted by the UN, which is used by over 90 countries around the world to develop environmental accounts alongside other standard economic indicators such as GDP.[190] It has been designed to measure, in physical and monetary terms, flows in environmental inputs and outputs, changes in the stocks of environmental assets, and the effect of economic activities on the environment.[191] The SEEA explains that monetary valuations are not always appropriate, and should not always be leading. They are nonetheless considered highly relevant for economic applications, i.e. for "the assessment of specific policies and projects using a benefit-cost framework, the development of environmentally adjusted economic aggregates and raising awareness around the economic contributions of ecosystems, particularly in settings where ecosystems have traditionally been assigned an implicit value of zero."[192] Put differently, monetary valuations are important for allocating resources in an economically efficient manner and for addressing information asymmetries.

The Global Program on Sustainability (GPS) is a World Bank program for sustainable development.[193] It relies on a standard three capitals approach from environmental economics and has structured its work around three core pillars: the collection and analysis of data on natural capital and ecosystem

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[185] De Groot et al. (2012) Global estimates of the value of ecosystems and their services in monetary units, p. 50.
[186] Costanza et al. (2017) Twenty years of ecosystem services - how far have we come and how far do we still need to go, p. 12.
[187] https://www.ipbes.net/history-establishment.
[188] Decision IPBES_2_4.pdf
[189] Diaz et al. (2015) IPBES Conceptual Framework. See also: Pascual et al. (2017) Valuing nature's contributions to people - the IPBES approach. Jacobs et al. (2017) The means determine the end - pursuing integrated valuation in practice. Costanza et al. (2017) Twenty years of ecosystem services - how far have we come and how far do we still need to go, p. 11.
[190] https://seea.un.org/content/frequently-asked-questions See also: https://seea.un.org/sites/seea.un.org/files/documents/EA/seea_ea_white_cover_final.pdf
[191] https://seea.un.org/content/seea-central-framework
[192] https://seea.un.org/content/frequently-asked-questions#Are%20monetary%20values%20a%20necessary%20part%20of%20natural%20capital%20or%20environmental%20economic%20accounts
[193] https://www.worldbank.org/en/programs/global-program-on-sustainability

services, supporting low-income countries in setting up their natural capital accounts, and the better integration of data on natural capital in financial markets.[194] The GPS is highly focused on monetary valuations of natural capital and argues in a report, *The Changing Wealth of Nations 2021*, that they are indispensable to efficient sustainable development:

> "Where government policies are designed to maximize short-term income only, results can come at the expense of future income and well-being opportunities. [Inclusive] Wealth accounting [based on produced, human, and natural capital] helps identify and correct such policy failures. Assets that are mispriced get mismanaged. Environmentally harmful produced capital and fossil fuels are often overrewarded by markets, while essential human and renewable natural assets are often undervalued and underpriced. This leads to the latter's degradation and depletion, with systemic risks to macrofiscal stability and potentially existential risk to humans. Governments should therefore use policies and pricing to support socially beneficial assets and do the reverse for those with negative external effects…
>
> [The GPS] balance sheet approach to asset valuation, rigorously based on both the SNA framework and the SEEA, provides comparable and comprehensive measures of wealth. This allows ministries of finance and national treasuries to consider monetary trade-offs and the important role for asset accumulation across natural capital, human capital, and produced capital. It also shines a light on the role of capital degradation, depletion, and depreciation, which can undermine the sustainability of economic growth. For some assets, particularly natural assets, this monetary valuation can help ensure they get an appropriate level of economic policy consideration, given their importance to sustainable economic prosperity."[195]

Also relevant is that the GPS offers free access to several databases with information on national level ESG performance as well as a 'Changing Wealth of Nations' database with monetary valuations and a 'wealth accounting profile' for the produced, human, and natural capital of each country.[196]

The Ecosystem Services Partnership (ESP) is an international network of "over 3000 ecosystem services scientists, policy makers and practitioners".[197] They have developed a database for ecosystem services which "contains over 8500 monetary values and is thereby the largest open-access database with standardized monetary values for all ecosystem services and all ecosystems globally."[198] A focus on monetary evaluations is also evident in the Natural Capital Project (NCP), a partnership between academics and conservation organisations[199] which has over 100 projects around the world and aims to "make valuing natural capital easier and more accessible to everyone".[200] In support of these aims the NCP has developed an open access InVEST tool which allows users to spatially "map and [monetarily] value the goods and services of nature", for example in terms of carbon, crop pollination, habitat risk assessments, scenic quality, recreation, coastal vulnerability and more.[201]

It is the development of databases with valuations of nature, such as those of TEEB, the GPS, and the ESP, together with tools such as NCP's InVEST,[202] which has made it possible over the past decade for

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[194] https://www.worldbank.org/en/programs/global-program-on-sustainability/gps-pillars
[195] World Bank GPS (2021) The changing wealth of nations 2021 - executive summary, p. 4-5.
[196] https://www.worldbank.org/en/publication/changing-wealth-of-nations/data
[197] https://www.es-partnership.org/
[198] https://fsd.nl/ecosystem-services-valuation-database/. The website of the database now lists 9400 values (https://www.esvd.info/).
[199] The collaboration includes: the Stanford Center for Conservation Biology; the Stanford Woods Institute for the Environment, The Nature Conservancy, World Wildlife Fund, the Chinese Academy of Sciences, the Institute on the Environment at the University of Minnesota, and the Stockholm Resilience Centre (https://naturalcapitalproject.stanford.edu/who-we-are/natural-capital-project).
[200] https://naturalcapitalproject.stanford.edu/who-we-are/natural-capital-project.
[201] https://naturalcapitalproject.stanford.edu/software/invest
[202] There is also the 'Benchmark for nature' project of the Oxford Biodiversity Network which "combines AI-enabled technologies with biodiversity conservation science to mine open-access data and produce an indicator

firms to value their activities in relation to natural capital. Suddenly, a firm with twenty factories can plot their locations on a world map and use different tools to identify whether they are, for example, at risk of flooding, near protected natural areas, close to biodiversity hotspots, next to politically sensitive areas, etc. They can also estimate, for example, what natural resources are being used at each site (e.g. water), what local risks are associated with the use and extraction of these resources (e.g. city X is running low on water), and how local natural capital stocks are affected by these activities (e.g. the firm uses 3% of the local water supply). Alternatively, they can measure the pollution emissions for each site and, using these tools and databases, provide a monetary estimate for its effects on local biodiversity, water quality, human health, etc. This is how ABN Amro, for example, could estimate that they reduced their impact on biodiversity from €165 million to €95 million between 2020 and 2021.

ABN Amro is a front runner in this area, but it can reasonably be expected that natural capital valuations will become a mainstream practice among firms in the coming years.[203] One reason is that *an extensive support network* has been established to help businesses engage in this practice. In addition to the above initiatives there is, for example, the Natural Capitals Coalition (NCC), a multi-stakeholder forum with over 400 members from conservancy organisations, inter-governmental organisations, businesses, and states.[204] This forum offers a 'capitals approach' which "enables organisations to understand how their success is directly or indirectly underpinned by natural capital, social capital and human capital, empowering them to make decisions that offer the greatest value across all capitals."[205] In pursuit of this aim, the NCC published in 2021 a Natural Capital Protocol which explains how businesses can identify, measure, and monetarily value their material impacts and dependencies on natural capital, and how they can interpret and act on these results.[206] Complementary efforts are undertaken by the Value Balancing Alliance', a group of multinational corporations which was commissioned by the European Union to develop green accounting principles,[207] and which shares a common goal to:

> "…create a way of measuring and comparing the value of contributions made by businesses to society, the economy, and the environment – a metric not previously reflected in a company's balance sheet. The Alliance translates environmental and social impacts into comparable financial data. Our members test the methodology to ensure feasibility, robustness, and relevance."[208]

Firms can also purchase assistance from a range of consultancies, including but not limited to the Impact Institute,[209] GIST Impact,[210] the Integrated Biodiversity Assessment Tool (IBAT) Alliance,[211] or

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of the impact on biodiversity of economic activity. This will enable financial institutions to measure the biodiversity impact risk associated with a given investment prospect, and to compare that with others in the sector or geography in an automated way." (https://www.biodiversity.ox.ac.uk/project/benchmark-for-nature/)

[203] At the 2012 IUCN World Conservation Congress, WBCSD President Peter Bakker stated that "… there's a new language which is emerging, which is called "natural capital." For a businessperson that is much easier to understand; you have financial capital, you have social capital, and now you have natural capital. And so if you're a modern business leader, of course you manage for natural capital just as you would manage your financial capital." (As cited in Sullivan (2014) The natural capital myth; or will accounting save the world - preliminary thoughts on nature, finance and values, p. 15).

[204] Members include the UN Food and Agriculture Organization, the European Investment Bank, Unilever, UNEP, the WWF, the WBCSD, the World Resources Institute, the World Bank, and many more (https://capitalscoalition.org/the-coalition/)

[205] https://capitalscoalition.org/capitals-approach/

[206] Natural Capitals Coalition (2021) Natural Capital Protocol.

[207] https://www.value-balancing.com/en/about-us.html

[208] https://www.value-balancing.com/en/about-us.html

[209] https://www.impactinstitute.com/.

[210] GIST Impact focus on putting a monetary value on firm's material impacts across four capitals (financial, natural, social, human). https://gistimpact.com/why-impact-economics/#anchor-use-cases

[211] The IBAT tool has already been used, for example, by the US Army, Allianz, Heidelberg Cement, Anglo American, GlaxoSmithKline, the World Bank and many other organisations to assess their biodiversity impact. https://www.ibat-alliance.org/about-us?locale=en

PwC.[212] These examples show that a wide range of guidance, databases, screening tools, consultancy services, and more is available to help firms think about, measure and value their activities in terms of natural capital.[213]

Another reason for the mainstreaming of natural capital valuations is that ongoing developments in CSR and ESG, driven by concerns about biodiversity loss, are leading to changes in the universal framework so that firms are also measured and rewarded for their efficient use, preservation, and creation of natural capital as part of their overall maximisation of financial and non-financial value. These changes are taking place through a combination of *changing market expectations and regulatory developments*.

The most prominent example of changing market expectations is the TNFD reporting framework that is currently under development and will be published in September 2023. As noted, the aim of this globally influential framework[214] is to give market participants, especially investors and creditors, the financial information that they need to understand the impacts, dependencies, risks, and opportunities of firm activities on nature. This will allow them to make better informed, and therefore more efficient and value-creating, economic decisions.[215] The TNFD framework does not specify that firms should focus on monetary evaluations, and its ancillary publications provide an overview of both monetary and non-monetary tools and databases which companies can use to identify, measure, and assess their nature-related impacts, dependencies, risks, and opportunities.[216] It does, however, rely on a financial materiality criterion which focuses on economic decisions by users of information. This may encourage monetary valuations insofar as these are necessary for the effective pursuit of economic efficiency.

Relevant examples of regulatory changes include the OECD *Guidelines for Multinational Enterprises on Responsible Business Conduct*, the EU *Taxonomy*, and the ESRS standards of the EU CSRD. We do not need to examine these policies in detail and can simply note, for example, that the most recent 2023 version of the *Guidelines* was updated to include environmental due diligence. While this document is legally voluntary and cannot be enforced in OECD countries, the update does signal that value-creating firms should also be concerned with their impacts on nature, i.e. with their effects on natural capital.

Next, we can turn to the *Taxonomy* which creates an EU-wide classification system to help companies and investors identify which economic activities qualify as 'environmentally sustainable'.[217] To satisfy this definition, activities should "make a substantial contribution to at least one of the EU's climate and environmental objectives, while at the same time not significantly harming any of these objectives and meeting minimum safeguards."[218] The EU Commission takes pains to point out that it is "not a rating of the "greenness" of companies", and that "Activities that are not on the list, are not necessarily polluting activities. The focus is simply on activities that contribute substantially to environmental objectives."[219] It follows that the *Taxonomy* does not offer a template to distinguish between sustainable and unsustainable firms, but only provides a standard method to facilitate the measurement and reward of certain kinds of sustainable firm activities. As part of this process, it draws attention to the effects of firm activities on natural capital, while also preserving their freedom as private actors.

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[212] https://www.ibat-alliance.org/is-ibat-for-me?locale=en

[213] See also the WBCSD *Guide to Corporate Ecosystem Evaluation: A Framework for Improving Corporate Decision-Making* (2011). The UNEP Finance Initiative's (UNEP FI) *Natural Capital Declaration Roadmap: The Natural Capital Declaration (NCD) Roadmap: Implementing the Four Commitments of the Natural Capital Declaration*, Geneva, and Global Canopy Programme, Oxford (2013).

[214] https://tnfd.global/about/#who.

[215] https://tnfd.global/about/.

[216] https://framework.tnfd.global/wp-content/uploads/2022/06/TNFD-Data-Discussion-Paper-Mar-2022.pdf

[217] https://ec.europa.eu/sustainable-finance-taxonomy/

[218] Taxonomy.

[219] https://ec.europa.eu/sustainable-finance-taxonomy/

Lastly, we consider the CSRD reporting standards which were designed to be consistent with the ISSB and GRI and were adopted as an EU Delegated Act in 2023.[220] These include five ESRS sub-standards on the environmental activities of firms (E1-E5) and respectively cover climate change, pollution, water and marine resources, biodiversity and ecosystems, and resource use and circular economy. The ESRS standards do not use the term natural capital, but their reporting threshold relies on a double materiality requirement and their content covers environmental risks, opportunities, impacts, and dependencies. The standards do not, moreover, specify that firms should disclose this information in monetary terms and are instead focused on physical metrics. It is, however, likely that monetary valuations and the term natural capital will soon be adopted as part of broader developments in EU Environmental Policy. The EU *Biodiversity strategy for 2030*, for example, is concerned with 'measuring and integrating the value of nature'. It explains that:

> "Biodiversity considerations need to be better integrated into public and business decision-making at all levels. Building on existing work, the Commission will develop in 2021 methods, criteria and standards to describe the essential features of biodiversity, its services, values, and sustainable use.
>
> These will include measuring the environmental footprint of products and organisations on the environment, including through life-cycle approaches and natural capital accounting. In this context, the Commission will support the establishment of an international natural capital accounting initiative."[221]

There is, moreover, a recent proposal from the European Commission to expand its current approach to environmental accounting with environmental economic accounts. [222] These changes are modelled on the UN SEEA, mentioned previously, and their aim is to "provide better information for the European Green Deal, a growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy".[223] As the proposal explains:

> "Environmental economic accounts are a multipurpose statistical framework bringing together economic and environmental information. They measure the contribution of the environment to the economy and the impact of the economy on the environment in a consistent and compatible way with macroeconomic statistics (national accounts).
>
> Users analyse and use environmental economic accounts in modelling and outlooks and for preparing policy proposals and reporting on policy implementation and impact. The new modules will make more integrated datasets available for such purposes.
>
> Ecosystem accounts integrate biodiversity and natural capital considerations with mainstream economic questions on resource allocation and sustainability..."[224]

Perhaps the clearest statement on the connection between these expansions in environmental accounting and the activities of firms can be found on the Commission website:

> "The EU strives to promote environmentally responsible business practices. Natural capital accounting has the potential to provide a concrete basis for business performance reporting by explicitly mapping out impacts and/or dependencies on natural resources and placing monetary value on them."[225]

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[220] https://ec.europa.eu/commission/presscorner/detail/en/qanda_23_4043
[221] [*add page reference EU Biodiversity strategy for 2030*]
[222] EU (2022) Proposal for introducing new environmental economic accounts modules, p. 1.
[223] EU (2022) Proposal for introducing new environmental economic accounts modules, p. 1.
[224] EU (2022) Proposal for introducing new environmental economic accounts modules, p. 1.
[225] https://environment.ec.europa.eu/topics/nature-and-biodiversity/natural-capital-accounting_en

We can reasonably anticipate from the above that the increased focus on firms' environmental activities, as evident in the *Taxonomy* and CSRD, is likely to expand and develop further along environmental economic lines, including the mainstreaming of monetary valuations of nature.

In summary, we have seen that the valuation of nature by firms is part of an environmental economic project to develop and implement an inclusive measure of societal wealth. We also saw that this project is grounded in the scientific foundation of modern economics, meaning that it is subject to its limits in terms of market fundamentalism, methodological individualism, etc. More specifically, we identified that valuations of nature are embedded in exchange and individual preferences, and that they are being mainstreamed for at least three reasons:

1. A suggestion, embedded in environmental economics, that economic reasoning and valuations of nature are needed for sustainable development and to save the environment.
2. The rise of new tools and databases which, alongside an extensive support network, has made it practicable for companies to engage in these valuations.
3. Pressure from markets and regulators based on the economic expectation that firms can, and should, help address the loss of ecosystems and biodiversity by efficiently managing their financial and non-financial value.

The next subsection examines whether this mainstreaming has the potential to make our societies and economies sustainable, in light of the various limits of economics that we previously identified.

10.4.3 The limits of the valuation of nature

In general, we can see that *valuations of nature can only be economically efficient, or value-maximising, when markets are maximally liberalised and there are no market failures*. Put differently, this means that valuations of nature are only able to 'save' the environment on condition that we implement the free market utopia that is at the core of economics. This idea, that free markets are a pre-condition for effective environmental action, reflects the market fundamentalist view that the economy is generative, is separate from society, and that its individualised dynamics are governed by natural economic laws. It also mirrors our earlier finding that economics is methodologically predetermined to subordinate non-economic factors to efficient economic dynamics.[226]

Also relevant, as we later discuss in more detail, is that valuations of nature require, as a preliminary step, that the environment is conceptually disintegrated into separate component 'atoms' – this ecosystem, that species, this plot of land – so that it can subsequently be commodified.[227] This *atomisation is needed to simplify and reduce internal relations in the environment, i.e. to attain radical separation, and to make it intelligible for the methodological individualism of economics*. A corollary to this point is that valuations of nature are underpinned by an assumption that different elements in our environment are separate and not internally related. Just like individuals being posited as being pre-social, we find a similar assumption that natural capital is disconnected and repositioned as 'pre-environmental', 'pre-ecosystem', etc.

The above shows, as we already identified for economics more broadly,[228] that there is *nothing neutral or objective about valuations of nature*.[229] These valuations are grounded in a particular set of liberal

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[226] Section 5.2.2.
[227] "The attempt to compartmentalize ecosystem services as discrete units, however, is at odds with the fact that ecosystem functions are inextricably linked to each other" (Gómez-Baggethun and Ruiz-Pérez (2011) Economic valuation and the commodification of ecosystem services, p. 621).
[228] Section 5.2.1.
[229] Bracking et al. 'Value(s) and valuation in development, conservation and environment' in Bracking et al. (eds) (2018) Valuing Development, Environment and Conservation Creating Values that Matter, pp. 18-41.
Martín-Lopez et al. (2014) Trade-offs across value-domains in ecosystem services assessment, p. 226.

economic beliefs and are guaranteed to perpetuate those beliefs as their use is mainstreamed.[230] This includes the idea that economics is an objective science which, together with its underlying market fundamentalism, operates as an 'inevitable' limit on the potential scope of human social arrangements. As noted, it is a belief in this inevitability that gives rise to the idea of capitalism as a really existing system.[231] The fact that this same inevitability underpins the mainstreaming of valuations of nature is proof that *this practice cannot transform the underlying 'nature' of capitalism but can only perpetuate it together with many of its unsustainable, economic features*.

One of these unsustainable features is *economic imperialism*, i.e. the incremental tendency of economics to 'discover' that more and more aspects of the non-economy are really just economic. This imperialism is exhibited in the way that environmental economists could use the unit value method and commodify nature without experiencing a sense of passing borders. In fact, it was only their wisdom and subjective sense of judgment, and not economic science, that allowed them to discern that there are differences between natural and financial capital, and to develop a distinction between strong and weak sustainable development. This distinction does not, however, transcend socio-economic bifurcation (the separation between the economy and the non-economy) but only repositions the boundary of this fictional divide. It sustains, in other words, the market fundamentalist position that the economy is separate from society and the state, and fails to recognise the generative potential of the latter.

Economic imperialism is also spurred by the search for perfect (shadow) prices. These prices can only exist under utopian free market conditions and are therefore conditional on the elimination of market failures. The problem, however, is that attempts to resolve sustainability issues by addressing market failures are tautological and provide little more than a destructive form of self-perpetuating solutionism. They are tautological because, as we have seen, they presume in circular manner that we can solve all sustainability-related issues by perfecting markets and empowering individuals to an omniscient and omnipotent extent.[232] And they are destructive since achieving free market conditions is predicated on the radical separation of internal relations between people and the environment.[233] The search for perfect prices is therefore predetermined to degrade the very thing that it is trying to protect. This degradation is self-perpetuating insofar as the sustainability issues to which it gives rise are economically interpreted as additional market failures and used to justify further attempts to approximate free market conditions.

As an example, we can refer to ongoing attempts by firms to identify, value, and compensate for their impacts on natural capital. As noted, these attempts are unable to address structural issues and can do no more, even in an ideal world, than address a particular market failure. It follows that they will not be able to address, with sufficient effectiveness, the structural causes of the sustainability issues that they aim to help resolve. Importantly, this suboptimality in their design is not evident from the perspective of those who are implementing the impact-based approach. Instead, these experts will signal that they need further support and more information so that they can 'really' measure the full impact of firm activities and help individuals make the right decisions. *From an expert perspective, there is always a missing link* such as an ecosystem service which was unvalued, a preference which was unaccounted for, a group of people which was insufficiently informed, a manager who was insufficiently empowered, a supplier which was inadequately monitored, an auditing approach which was not reliable enough, a creditor who failed to understand the firm's value creation model, and so on. The problem is not that these arguments are wholly false but that their truth value and call to action are embedded within an economic theoretical framework that fails to recognise that reality cannot be perfected, and that radical

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[230] For a similar argument refer to Sullivan (2014) The natural capital myth, or will accounting save the world - preliminary thoughts on nature, finance and values.
[231] Section 6.1.1.
[232] Section 6.2.3.
[233] In the case of valuations of nature, this radical separation is extended to include all those internal relations which constitute the environment itself.

separation will always create another market failure to address.[234] Put differently, these arguments are blind to the structural limits of economics and its false utopian promise; they bely that we cannot solve sustainability issues by economically empowering individuals to an omniscient and omnipotent extent.

An ancillary consequence of economic imperialism is that it *crowds out other ways of thinking about sustainability policies and how to mobilise resources to promote sustainability aims*. This crowding out is ensured by the proclaimed objectivity of economics, the influential positions of its scientists, and its hegemony over decisions on how to allocate people and resources. As we saw with the universal system of measurement and rewards for value-maximising firms, its result is that alternative ideas, which are incompatible with economics, are not given a fair hearing or a level playing field. Instead, they are condemned from inception for being too impractical, too expensive, or for their negative impact on economic growth and competitiveness. The result is that they are seldom implemented and, if they are, then their existence is tenuous and uncertain due to being uneconomic. It follows that only ideas which are consistent with economics can find predictable, fertile ground within existing social arrangements.

As an example of crowding out we can consider how corporate regulation has, despite decades of social and environmental problems, scandals, and scholarship, developed little beyond the modern economic approach embodied in corporate governance, CSR, and ESG. A second example is provided by Gómez-Baggethun and Ruiz-Pérez, who describe how the inability of environmental scientists to stem the environmental harm of economic activities has compelled them to adopt the latter discipline's imperial language and logic.[235] They explain how environmental scientists have made:

> "...a strategic endorsement of valuation as a pragmatic and transitory short-term tool to communicate the value of biodiversity using a language that reflects dominant political and economic views... This strategic endorsement of valuation has become an increasingly dominant position as the environmental movement attempts to look for novel conservation strategies where traditional ones have failed to halt biodiversity and habitat loss"[236]

It seems that these scientists have been impelled by the hegemony of economics to bend their scientific practice towards the needs of economics rather than the environment. As Sullivan notes, "Increasingly it seems as though a normative conceptualisation of 'nature' as 'natural capital' is in itself becoming synonymous with notions of environmental care".[237] Valuations of nature feed into this process of crowding out because they expand the imperial reach of economics and its pursuit of efficiency. These valuations provide, moreover, an 'objective' line of argumentation which may deter states and other

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[234] This issue stems from the utopianism of economics' liberal foundations. To repeat an earlier quote from Eulau: "Liberalism's failures were undoubtedly due to its utopianism, itself an expression of bondage to the deterministic view of the universe characteristic of Newtonian and Darwinian science. If cherished goals, whatever they were-a free market, the rights of man, regulation of competition, social security, or any other, depending on time and place-were not achieved as programmatically specified, the tendency was to blame the opposition (which one had to tolerate and live with) rather than the program. The program itself was beyond reproach. That it might be unrealistic, ill-timed, or unwise were considerations which, if they did arise, could not be admitted. Even though God may not have been a liberal when he created the world, liberals had to talk like gods when they announced their plans. For men of good will-and liberals could well pride themselves on being such-the liberal program was so obvious, so self- evident, so desirable, and, above all, so inevitable, that only fools or knaves would not see its virtues. Because liberalism was modern and permeated by the spirit of science, its dream would surely come true. Utopia was always just around the corner" (Eulau (1966) From utopia to probability - liberalism and recent science, p. 7-8).

[235] Gómez-Baggethun and Ruiz-Pérez (2011) Economic valuation and the commodification of ecosystem services, p. 614.

[236] Gómez-Baggethun and Ruiz-Pérez (2011) Economic valuation and the commodification of ecosystem services, p. 614.

[237] Sullivan (2014) The natural capital myth, or will accounting save the world - preliminary thoughts on nature, finance and values.

parties from adopting environmental policies which deviate from economics but might actually be more effective.

A second unsustainable feature of capitalism which is promoted by valuations of nature is its *private disposition*. This disposition protects the economic freedoms of market actors as private individuals, provides a blameless view of their activities, and shields them from political intervention.[238] It not only contributes towards the crowding out effect discussed above, but also *protects and empowers existing economic power structures*, for example in the form of large multinational firms and ultra-high-net-worth individuals. This latter effect occurs because economic structures, and the power which they possess, are disaggregated by economics and modelled as a pre-social outcome of individual economic dynamics. This renders them invisible, thus protecting them, and turns them into a natural expression of private activity, thus empowering them. An ancillary consequence of this approach is that economics is unable to consider how these structures might also be socially constructed, for example via history, culture, scientific practice, and state policy.

In the case of valuations by nature, the effects of this private disposition are two-fold. First, it entails that these *valuations are unable to recognise or address the structural effects of economic structures on individual decision-making*, as may arise for example due to firmophilic tendencies. A related point is that the effectiveness of these valuations, like economic efficiency more generally, is disconnected from the actual histories and activities of firms and other economic structures. This ahistoricism is consistent with the liberal idea of freedom as the absence of constraint, and the premise that individual decision-making can be perfected. It does not, however, consider that firms are subject to a financial survival condition, that the decision-making of individuals in firms is morally impaired, that leading firms often have business models which depend on profits from environmental harms, and that firms have a long history of acting legally and illegally to continue committing these harms. Put differently, valuations of nature are consistent with the freedom of firms to become perfect value-maximisers, and inconsistent with the idea that non-economic root causes may be preventing them from realising this freedom.

The second effect of the private disposition of economics is that it masks, due to its focus on individuals, that the implementation and effectiveness of monetary valuations is contingent on the ongoing success of the firms which implement them. Paraphrased, *the success of valuations of nature as an approach to environmental policy requires that the firms which integrate these valuations are also successful*. It follows that optimal valuations of nature are not only dependent on free market conditions, but also on the overall success of firms which implement them. The fact that these valuations are used primarily by large, existing economic structures such as banks, large corporations, and state institutions, means that environmental policy is being coupled directly to the economic performance of this sub-set of powerful market actors. Since nature has no money or property, these actors can only be rewarded for valuations of nature via a redistribution of money and resources from other actors in society, as effected by the shift that we identified earlier in the universal framework of measurement and reward. Importantly, in order to constitute a reward, and to generate overall success for these actors, it is *necessary that this beneficial redistribution is greater than their original expenditure on implementing the monetary valuations*. Seen from this perspective, we can identify that the 'efficient' economic approach which tries to sustainably optimise the activities of private actors is, from a societal perspective, no different from paying firms a premium to implement suboptimal forms of sustainability policy. In this regard it seems that valuations of nature are not just efficient economic policy, but also a social construct to funnel resources to address sustainability issues into the hands of large, existing economic actors, thus guaranteeing their ongoing success. Critically, we can ask whether our societies are better off giving this sustainability premium to firms, with their firmophilic tendencies and moral impairment, or to

[238] See section 7.1.

people and organisations which are less morally impaired and are dedicated primarily to achieving environmental outcomes rather than value-maximisation. Is it a value-driven company, or a group of ecologists, who should receive money and resources for implementing environmental policy?[239]

A third unsustainable feature that is being promoted by valuations of nature is the *methodological individualism of economics*. As noted, this method atomises and radically separates the environment so that it can be commodified and valued. There is, however, more to be said about this process in terms of how economics thinks about and uses information. This way of thinking can be captured in *four economic assumptions about information*: (1) it is discrete; (2) it is unambiguous; (3) it can be possessed by individuals; and (4) it is scarce or finite.

The first assumption, that *information is discrete*, means that it can be modelled as a thing, a 'data point' or a 'package', which can be delineated and isolated from people and their environment. This may be contrasted, for example, with the idea of information as a relationship between a knower and a thing. The second assumption, that *information is unambiguous*, builds on the premise that it is discrete, and suggests that it can only be rationally interpreted in one right way.[240] The logic is that, if a piece of information can be interpreted in multiple ways, then this suggests that there are different kinds of rationality. This is incompatible with the idea of economics as an objective science, i.e. true for all places and for all times, and with its reliance on rational, representative agents.[241] The third assumption, that *information is a possession*, suggests that individuals can have more or less information, and that information is an individual characteristic rather than a social construct. The fourth assumption, that *information is scarce or finite*, is needed to give it value for individual decision-making. Importantly, this assumption also makes it feasible to posit that an individual can become fully or perfectly informed if they are able to collect all of this information.

All of these assumptions underpin the use of valuations of nature to improve the economic decisions of individuals. They suffer, however, from fundamental issues which impairs their ability to promote sustainability. The first issue is that information can, in fact, have multiple, conflicting interpretations, and that there are multiple kinds of rationality that can point in different, legitimate directions.[242] This has been captured famously in the rabbit-duck illusion below, which, as we can see, is open to more than one interpretation at the same time.[243]

Figure 17: Rabbit-duck illusion[244]

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[239] The carbon offset market, and its underlying issues, are a good example of this dilemma. See, for example: https://e360.yale.edu/features/al-maktoum-uae-dubai-africa-carbon-credits

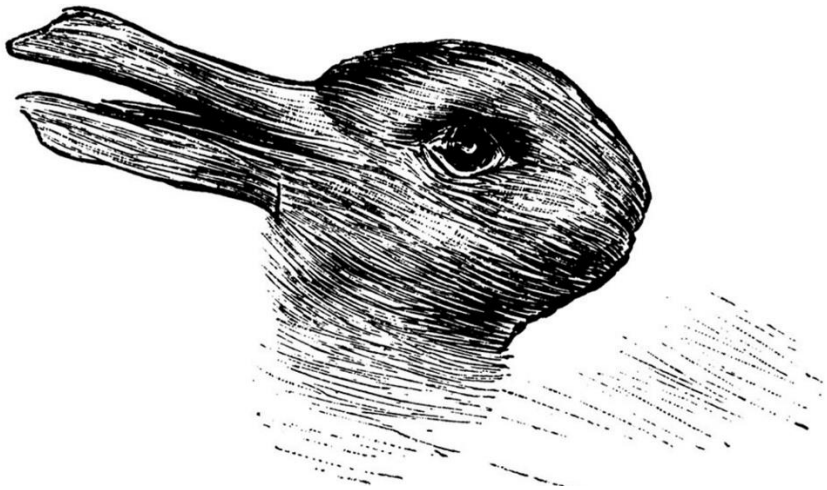
[240] Using the terminology of the philosophy of information, it is committed to the feasibility of a 'Unified Theory of Information' (Floridi (2016) The Routledge Handbook of Philosophy of Information, p. 2).

[241] Chapters 5 and 6.

[242] We already discussed this in section 8.3 and drew on an example from Sen's *The Idea of Justice*. Regarding information we can cite Floridi who explains that "Decades of research have shown no consensus or even convergence on a single, unified definition of information. This is hardly surprising. Information is such a powerful and flexible concept, and such a complex phenomenon that, as an *explicandum*, it can be associated with several explanations, depending on the level of abstraction adopted and the cluster of requirements and desiderata orientating a theory" (Floridi (2016) The Routledge Handbook of Philosophy of Information, p. 2).

[243] "[I]f preferences are ordered according to different rules, then the aggregation of all preferences on a single scale of measure may not be feasible" (Wegner and Pascual (2011) Cost-benefit analysis in the context of ecosystem services for human well-being - a multidisciplinary critique, p. 498).

[244] https://media-cldnry.s-nbcnews.com/image/upload/newscms/2016_07/974636/rabbit-duck-drawing-tease-today-160215.JPG



If information is ambiguous, then this undermines the third and fourth economic assumptions about information. It cannot be unequivocally possessed in greater or lesser amounts, and individuals cannot become perfectly informed due to conflicting interpretations of information and different viable paths to rationality. A corollary to this point is that there are no perfect prices, and that no level of addressing market failures or efficient value-maximisation will lead to perfect, sustainable results.

The second fundamental issue concerns *the idea that more information is always better* since it allows individuals to tend towards perfect decision-making. In the case of valuations of nature, the implication is that more information about nature will always lead to better estimates of monetary value, as captured for example in studies about peoples' willingness to pay. The problem, however, is that *people often find it more difficult to value the things that they have the best knowledge about*, because these are often also what that they care about the most. This emotional connection can make it more difficult for people to translate their better knowledge into a more accurate monetary valuation and can even make them reluctant to make such valuations.[245] The most straightforward example is that it is impossible to put a price on a family member, partner, or best friend, even though we know them better than anyone else. Similarly, anyone who becomes passionate about a city, a hobby, or a type of animal, and has the best knowledge about it, will at the same time be hard pressed to give it a monetary value. The general point is that more information does not necessarily lead to better valuations, thus undermining the potential of valuations of nature to tend towards perfect, sustainable outcomes. Furthermore, even if we reject human emotional connections as irrational or non-economic, then this only reaffirms that monetary valuations offer an incomplete picture of human value and leads to the same conclusion.

The third fundamental issue relates to the assumption that information is discrete and can be delineated and isolated from people and their environment. It implies namely that *the collection of information is neutral and only has an effect via changes in individual decision-making*. This belies, however, the fact that knowledge about a thing, for example an ecosystem, exists in a relationship between the knower and the thing which is being known. This is readily apparent when we try to monetarily value anything with which we are closely connected, for example our mothers. If we take this task seriously and set aside our ethical qualms, then we can identify that we can break down our mother, and everything she does or has done for us, into a range of different services. Cooking, cleaning, babysitting, washing, and even hugs can be reconceptualised as a service provided by strangers. Next, we can record the time our mother has spent on providing these services and can use their market value to develop a reasonable estimate of their aggregate monetary value. This process allows us to value our mother. However, it

[245] As Wegner and Pascual put it, "intrinsic values exhibit monetary incommensurability, i.e. individuals are unable and often refuse to measure them along the scale of money" (Wegner and Pascual (2011) Cost-benefit analysis in the context of ecosystem services for human well-being - a multidisciplinary critique, p. 495). See also: Brennan (1992) Moral Pluralism and the Environment, p. 16-17.

also destroys her in the sense that she would no longer exist as an identifiable person in whom all of these tasks, and much else, is united. Importantly, this process destroys not only our mother, but also all of the countless ways in which part of us, as her child, was created via contact with her. This example shows that *the valuation process, and the atomisation which it entails, cannot help but distort the internal relations between the valuer and whatever is being valued*. A corollary to this point is that there is nothing neutral about the collection of information, for example about biodiversity and ecosystems. It seems, moreover, that valuations of nature distort not only those aspects of our environment which are being valued, but also our relationships to them.[246] Interestingly, our example suggests that the intensity of these distortions is proportional to the intensity of internal relations between the valuer and the thing being valued. By extension, this means that stakeholders who are closest to a given ecosystem or biodiversity area are likely to suffer most from distortions due to valuations of nature. This suggests that these valuations are unlikely to effectively serve their needs or interests.

A fourth unsustainable feature of capitalism that is being promoted by valuations of nature relates to their *anthropocentric individualism and focus on individual preferences*.[247] The general problem is that this approach reflects only part of the internal relations that we need to consider if we want to realise human value in a sustainable way. More specifically, we can identify, as with information, that people are internally related to their environment, and that human activities cannot be disentangled from these relations. This means that human value, financial or non-financial, is also embedded in and constituted by them. This poses a problem for approaches to value-maximisation, including valuations of nature, that are embedded in economics and the satisfaction of individual preferences, and which assume that preferences are an innate characteristic of isolated, pre-social (and pre-environmental) individuals.[248] These approaches are *unable to provide anything more than a partial perspective on human value and are missing, at a minimum, the constitutive contribution of internal relations*.[249] It follows that they are methodologically inadequate for the sustainable realisation of human value.

A fifth unsustainable feature that is being propagated by valuations of nature is a *focus on economic efficiency*. As we have seen, this form of efficiency is grounded in Pareto optimality and aims to achieve maximum intensity of beneficial exchange.[250] *It encourages the over-use of resources and undermines their ethical and sustainable long-term management*. Since valuations of nature are intended to promote sustainable development, as interpreted by environmental economists, it follows that they also promote this unsustainable approach to efficiency.

The sixth and final unsustainable feature that we will discuss is that valuations of nature, due to their economic foundation, build on a *commodity view of money* and assume that the generative economy must be liberalised so that it can 'make' money. The problem with this view, as noted,[251] is not only that it has no historical basis, but that it treats money *as a* societal end and not as *a means* to societal ends. In the context of value-maximising firms, it fails to recognise that financial value is only indirectly

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[246] "[W]hile certain numbering practices may indeed be resonant with an affect of "valuing nature", using money as a measure of nature's value(s) may effectively "miss the point" and thereby trivialise and devalue both "nature" and human relationships with natures-beyond-the-human" (Sullivan and Hannis (2017, p. 1460).

[247] Bateman and Mace (2020) The natural capital framework for sustainably efficient and equitable decision making, p. 2. Gómez-Baggethun and Ruiz-Pérez (2011) Economic valuation and the commodification of ecosystem services, p. 620.

[248] See also Wegner and Pascual (2011) Cost-benefit analysis in the context of ecosystem services for human well-being - a multidisciplinary critique, p. 494-495.

[249] Wegner and Pascual note that "results from environmental psychology confirm that ecosystems have relevance to human well-being far beyond the satisfaction of preferences, including a strong bearing on psychological health, social integration and socio-cultural identity" (Wegner and Pascual (2011) Cost-benefit analysis in the context of ecosystem services for human well-being - a multidisciplinary critique, p. 493).

[250] Section 6.2.3.

[251] Section 9.3.

relevant from a societal perspective (as a tool of governance), and that only non-financial value provides a direct contribution to human value. The result is that valuations of nature are only able to help promote human value in a distorted, suboptimal way.

In summary, we identified that *the potential of valuations of nature to promote sustainability is limited* because they perpetuate a belief in capitalism and economic science, are unable to protect the interests of stakeholders, undermine our ability to sustainably manage resources, and only provide a suboptimal approach for realising human value. We have seen, moreover, that these issues are due to the origin of these valuations in economic approaches to sustainable development, which makes them subject to the methodological and normative limits of this discipline.

Issues with the valuation of nature are significant because they demonstrate that *a shift from shareholder to stakeholder capitalism will not be able to make our firms and societies sustainable*. It represents no more than a progressive shift within the paradigm of economics and cannot transcend the limits of its unsustainable scientific foundation. To clarify, this does not mean that stakeholder capitalism is not likely to provide better sustainability outcomes than shareholder capitalism. After all, it can be expected that some attention to social and environmental issues is better than none.[252] It should nonetheless be understood that stakeholder capitalism is unable to address root causes for the unsustainability of firms and markets insofar as these are caused or concealed by the methods and objectives of economics. Some examples that we came across include firmophilic tendencies, financial moral impairment, erosion of internal relations, and the overuse of resources while pursuing economic efficiency. The result of these shortcomings is that stakeholder capitalism can only provide suboptimal sustainability results, and that it does not provide an effective foundation for the societal transition to sustainability.

Another relevant finding is that *the diagnosis of short-termism to explain the unsustainability of firms is incomplete and incorrect*. It is incomplete because it does not identify that the inefficient pursuit of shareholder value and short-term financial performance is not a root cause for the unsustainability of firms but is merely symptomatic of deeper flaws in the scientific foundation of economics. And it is incorrect because it wrongly suggests, in line with environmental economics, that we can address sustainability issues by efficiently creating inclusive, long-term value for all stakeholders. The errors of this problem diagnosis are significant because it is the dominant explanation for the unsustainability of firms among contemporary academics, businesses, and policy makers. It is central, moreover, to leading European and international efforts to regulate and incentivise firms to become more sustainable, and to the idea that a shift to stakeholder capitalism is necessary for a sustainable society and economy.

It has to be asked, however, *if a focus on economically efficient value creation for all stakeholders is not a foundation for a sustainable society and economy, then what is*? Drawing on our earlier findings, it seems that we might find a solution to this problem in our ideas on the generative state. We should note, however, that while these ideas provide an alternative conceptual framework to economics for thinking about individuals, markets, firms, and states, they do not explain how and for what purpose(s) we might want to mobilise resources other than in the collective interest. In this regard they are missing an equivalent to economic theories of value which prescribe that societies should focus on value creation (defined as price increases). It follows that we need a new theory of value to complement the generative state and imagine how human agency, resources, and money can be mobilised to serve the collective interest.

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[252] This underpins a common justification for relying on valuations of nature despite their imperfections (Dasgupta review (2021) The Economics of Biodiversity, p. 302). The idea is that "what goes unmeasured often goes unvalued" (Fenichel and Abbott (2014), Natural Capital from Metaphor to Measurement, p. 22) and that "it is better to be roughly right than precisely wrong" (Serafeim et al. (2019) Impact-weighted financial accounts, p. 30.) See also: Daily et al. (2000) 'The value of nature and the nature of value', *Science,* p. 396.

10.5 Towards a generative theory of value

This subsection takes some preliminary steps towards the development of a *generative theory of value*. More specifically, the aim is to outline how the generative state can, via the use of money, markets, and firms, mobilise resources in a more ethical and sustainable way than is currently enabled by economics. Our starting point is to revisit some of our earlier findings and outline their implications for a new theory of value.

First, we can recall that the utility theory of value defines value as the preferences which are satisfied in a given exchange.[253] As noted, this theory is based on a commodity view of money and the idea that prices are a product of supply-demand dynamics between pre-social individuals. It suggests that prices are a natural phenomenon which arises because individuals pursue their rational self-interest and are subject to natural economic laws. Second, we can remember the contrasting, convention view of money and our analysis of the generative state which showed that prices are socially constructed. This social construction arises when money is adopted as an administrative tool by the state to mobilise resources. It also arises because prices are constituted, as an emergent phenomenon, by internal relations between people and their environment. Third, we can reiterate that money is not a societal end in itself, although it may be perceived as such by individuals who, due to the state's adoption of money, are subject to a financial survival condition. Last, we can restate that anthropocentric individualism is methodologically inadequate for the sustainable realisation of value because it assumes away internal relations between people and their environment.

A first implication of these previous findings is that *we should not define value in terms of prices but with reference to internal relations*. A corollary to this point is that *we should not include money in our definition of value*. If we did include it, this would turn money into one end among many and, due to its underlying fiction of commensurability, would promote the commodification of other kinds of value.

A second implication is that *value is qualitatively different from a societal and individual perspective* since the pursuit of money may be an individual end but is not a societal end. A corollary to this point is, as noted, that individual value cannot be aggregated to yield social value, as is wrongly suggested by Smith's utopia.[254] Since our aim is to provide a theory of value to complement the generative state, it follows that *we should define value at the collective rather than individual level*. To clarify, this does not entail that individual value is unimportant, only that it is not the only end of societal value. In support of this aim, we will try to outline a *general theory of human value* which can be used by diverse states and societies. The intention is to create space for the distinctive culture, history, environment, values, etc. of different people.

A third implication is that *thriving internal relations are key to human value*. How this is interpreted is different for each state and society, but it is true for all of them that resources will need to be mobilised for this purpose, and that a failure to do so will undermine this thriving. This connection between value and the mobilisation of resources suggests that *we should create a bridge between our theory of value and the generative role of the state regarding money, markets, and firms*.

The above implications provide a foundation that we can use to differentiate our generative theory of value from those of economics and other disciplines. For context, it helps to identify that theories of value are abundant, diverse, and divergent.[255] One reason for this variation is the close yet ambiguous relationship between terms such as value, values, and valuation. Another is that scientific practices are

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[253] Section 10.2.
[254] Section 10.2.
[255] Hirose and Olson (2015) The Oxford Handbook of Value Theory. Steinert (2023) Interdisciplinary Value Theory. Graeber (2001) Toward an anthropological theory of value. Wuthnow (2008) The Sociological Study of Values.

subjective, and that researchers interpret these terms for different reasons, using different methods, and within different intellectual traditions. Given this variation, it is unsurprising that our new theory is consonant with some features of these existing theories and dissonant with others. We will examine some of these shared features and divergences, and add some distinctive ones, so that we can provide an overview of our generative theory of value as we position it within the conceptual landscape.

A feature which our theory shares with economic theories of value, and only with these theories, is its attention to the formation of prices.[256] This sets our theory and economic theories apart from those in other disciplines which are primarily concerned with *value in the sense of values*. To give an example, a sub-branch of philosophy known as axiology is built around questions of what is good and right, and issues such as whether something can have intrinsic value, whether values are commensurable, and the relationship between values and desire.[257] A similar attention to values can be seen in psychological theories which emphasise "abstract motivational goals that transcend situations and that systematically relate to one another", in sociological theories which address the relationship between people's beliefs, actions, and group/social values, and in anthropological theories which "highlight the cultural processes responsible for value creation, re-creation, and transmission".[258] While money and financial value can also play a role in these non-economic theories of value, the key difference is that they are unconcerned with price formation.

A feature of our theory which diverges from economic theories is that *value is not objectively reflected in prices but is socially constructed and embedded in internal relations*. This relational view of value is shared with some theories of value which can be found in environmental ethics or anthropology.[259] The most relevant of these for our theory is provided by Graeber in *Toward an Anthropological Theory of Value*.[260] In this leading anthropological text,[261] he defines value as:

> "Value, I'll suggest, can best be seen in this light as *the way in which actions become meaningful to the actor by being incorporated in some larger, social totality — even if in many cases the totality in question exists primarily in the actor's imagination*." [emphasis added][262]

A useful feature of this definition is that it is able to capture the internal relations in which our approach to value is embedded. Also useful is that these totalities can be imaginary since this allows us to account for fictional realms such as the monetary and legal realms that are created by the social conventions of the generative state.[263] Paraphrased for our purposes, we could therefore say that value is the way that actions become meaningful for people because they are embedded in a larger totality of internal relations. Unfortunately, however, this description is incomplete since it does not indicate how actions can become meaningful. And since it does not indicate how we might want to act it is, like our analysis of the generative state, unable to explain for what purpose(s) we might want to mobilise resources. A

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[256] This includes the efforts of environmental economists to create an inclusive measure of wealth for sustainable development. The reason is that measures are, as we saw earlier in this Chapter, embedded in exchange and the satisfaction of preferences, as reflected in their reliance on methods such as shadow prices and willingness to pay. The prominent exception to this rule is Marxist theories which are focused on proportionate labour time, not price, as a measure of societal value (Graeber (2001) Toward an anthropological theory of value, p. 55).
[257] Hirose and Olson (2015) The Oxford Handbook of Value Theory.
[258] Steinert (2023) Interdisciplinary Value Theory, pp. 7, 33, 51. Wuthnow (2008) The Sociological Study of Values.
[259] D. Schmidtz 'Value in Nature' in Hirose and Olson (eds.) (2015) The Oxford Handbook of Value Theory, Chapter 20, p. 384. Steinert (2023) Interdisciplinary Value Theory, p. 56. Graeber (2001) Toward an anthropological theory of value.
[260] Graeber (2001) Toward an anthropological theory of value, p. 9.
[261] Souleles et al. (2023) Introduction to special issue - Value, values, and anthropology.
[262] Graeber (2001) Toward an anthropological theory of value, p. 9.
[263] Section 8.5, Chapter 9.

second issue with this description is that it focuses on human action and does not recognise that inaction and other forms of life and the environment can also be sources of value.

Fortunately, we can address these shortcomings by building on Graeber's *definition of values*, borrowed from Kluckhohn, as "*conceptions of the desirable*".[264] In line with this definition, we can suggest that something has value when it contributes towards the fulfillment of conceptions of the desirable. More completely, we can define *value as a contribution towards the fulfillment of conceptions of the desirable as embedded in larger totalities of internal relations*.

This broad definition entails that value may come from any human or non-human, real or imaginary, source. It can come just as easily from human action as from the environment, for example in the form of a beautiful landscape. This definition also entails that a source of value can provide a continuous or discrete contribution (or both) to the fulfillment of values. For the former, we can think of a natural park whose existence provides a constant source of fulfillment or human rights protections which are a source of personal safety and national pride. For the latter, think of a meal, musical performance, medicine for pain relief, etc. Another relevant feature of our definition is that value is not objective or absolute, and that it may change depending on what values are being entertained and following changes in internal relations. An important final note is that *the pursuit of value cannot lead to the permanent fulfillment of values* since the latter are inherently ambiguous[265] and utopian. To illustrate, we build schools because we find education desirable, but this does not mean that schools are able to perfectly fulfil our values regarding education. I desire good and healthy food, but there is no meal which can provide permanent satisfaction. In short, we may desire the perfect but can only ever achieve the imperfect. It follows by extension that, if there is no final or permanent way to satisfy values, then there is also no ultimate or objective sense in which value can be obtained. This does not demean the pursuit of value, or the fact that we have values, but rather reflects that there is no sense in which our societies can obtain a perfect, stationary equilibrium by maximally pursuing some kind of higher meta-value(s). Put differently, the dynamic nature of value and values, as embedded in impermanent totalities of internal relations, entails that there is no perfect or ideal society which humans can pursue. This does not mean that we cannot improve ourselves or our societies and states, only that there is no endpoint for this process of self-, collective, and contextual improvement.

Another useful feature of our definition of value is that it recognises, in line with our discussion on the nature of scientific practice, that *value and values are embedded in human subjectivity* and are not an objective feature of a thing.[266] Furthermore, it is broad enough to recognise that different people and societies can and do have different values. This is useful since it enables *value pluralism*, the idea that different values may interact and overlap but are not ultimately reducible to one another.[267] A powerful example of this irreducibility is provided by Sen who describes it in terms of legitimate, competing interests.[268] I quote a paraphrased example from him in my previous work:

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[264] Graeber (2001) Toward an anthropological theory of value, p. 12.

[265] "Values are better conceived as vague and often inchoate understandings and commitments that guide actors in ways that are never fully transparent to their reflective consciousness" (Souleles et al. (2023) Introduction to special issue - Value, values, and anthropology, p. 165).

[266] This feature is of course derived from Graeber's work. Regarding values and subjectivity, see also: XXXX

[267] To explain how this works, Graeber compares money with its underlying fiction of commensurability and values which are not ultimately commensurable: "The value of "values" in contrast lies precisely in their lack of equivalence; they are seen as unique, crystallized forms. They cannot or should not be converted into money. Nor can they be precisely compared with one another. No one will ever be able produce a mathematical formula for how much it is fitting to betray one's political principles in the name of religion, or to neglect one's family in the pursuit of art. True, people do make such decisions all the time. But they will always resist formalization—to even suggest doing so is at best odd, and probably offensive" (Graeber (2017) It is value that brings universes into being, p. 224). See also: Brennan (1992) Moral Pluralism and the Environment.

[268] A. Sen, *The Idea of Justice*, London, Penguin Books, 2010, pp. 12-15.

> "Three children – Anna, Bob, and Carla – are arguing about who should get a flute. Anna is the only child who knows how to play the flute, and claims ownership of the flute on this basis. Bob is poor and has no toys, and argues out of a sense of fairness that he should receive the flute. Carla built the flute, and claims that her labour entitles her to own it. Each of the three children has a compelling claim on the flute, a claim that can be impartially defended and which conflicts with the claims of the other children."[269]

Value pluralism identifies that each of these children's claims is legitimate and can be sustained without reference to other values. This may be distinguished from value monism which suggests that there is one meta-value (power, money, honour, etc.) which transcends all personal and societal differences and which could be used to settle the children's argument.[270] This kind of monism is evident in economics which assumes that individual preferences can be fully mapped out and ordered in terms of a dominant value (either money or utility).[271] If economics did not make this assumption then it could not, as noted, be an objective science or be able to conceive of one kind of economic rationality as a universal driver of human behaviour.

An important additional point regarding value pluralism, distinctive to our analysis and theory, is that *individuals and societies have a different sets of values on which they can rationally draw*. This *values divergence* is an extension of the above point that value is qualitatively different from an individual and societal perspective, and that the former cannot be aggregated to yield the latter. It relates to our earlier finding that the pursuit of wealth is rational for individuals, due to their financial survival condition and as part of their conception of what is desirable, but irrational for society because money is a social convention and its overall societal value is zero or negative. *This contradiction, that the pursuit of money is rational for individuals but irrational for society, is key to understanding the complicated ethical status of money in our society*. As an aside, it is worth noting that values divergence is not unique to money. It can also relate, for example, to family interests, in that it is rational for an individual to focus on the welfare of their family over the welfare of others, while it would be generally irrational for a society to favour one family more than others.

The final feature of our theory of value which we will discuss is its subjectivity, which manifests in at least two ways. First, an *anthropocentric subjectivity* arises from value and values being embedded in human internal relations. Second, a *personal subjectivity* arises from how we sense and interact with the world as single persons. The consequence of these subjectivities is that *a single, human perspective is unable to perceive and develop more than a partial picture of all of the internal relations in which it is embedded*. This does not give rise to an image of human perfectibility but to a more modest position that we, as humans, only have a limited understanding of the world and our position within it. It follows that instead of trying to perfect individual human reasoning, which we cannot, *we should adopt a two-fold approach which tries not only to cultivate desirable kinds of human agency but also compensates for the limits of its individualism and anthropocentrism.*

In terms of our theory of value, this entails that *we should be concerned with value and internal relations not only from an individual human perspective but also from a social and environmental perspective*. The problem, however, is that the latter are inaccessible to us due to our subjectivities, and that there is no 'society' or 'environment' that can speak and act on their behalf. There is no perfect solution for this fundamental issue, but the argument remains that we should try to include these perspectives to the greatest extent possible if we want to enable the greatest potential for thriving internal relations.

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[269] Paraphrased from my previous work: Van Aartsen, *A journey into causes of corporate misbehaviour*, p. 317-318.

[270] Utilitarianism is a well-known example of value monism. For an overview of value monism and pluralism see: Heathwood, 'Monism and Pluralism about Value' in Hirose and Olson (2015) The Oxford Handbook of Value Theory, pp. 136-157.

[271] [*add reference to values monism in economics*]

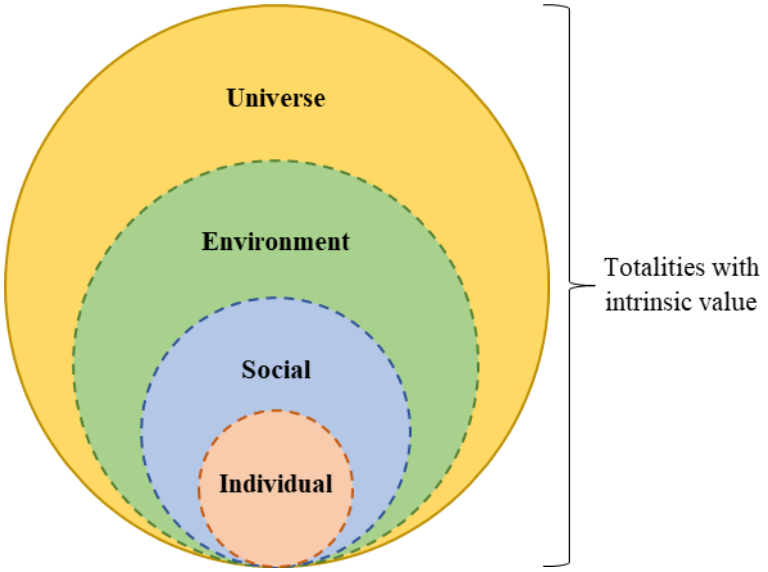
If this argument is correct, then it seems *the best available solution is to empower people on behalf of society and the environment on the assumption that these totalities have intrinsic value*.[272] In practice, this means that some resources in society should be mobilised so that some people can act as direct representatives of society and the environment. To clarify, this is not a claim that these totalities have an objective, intrinsic value, but a claim that we should subjectively assume their intrinsic value since this is our best option to compensate, albeit imperfectly, for the limits of human subjectivity.

Building on these insights, we can make a tentative suggestion that there are *four basic totalities with intrinsic value for which each society should mobilise resources: individuals, society, the environment, and the universe*. To explain this selection, we can note that each single person can be conceptualised as an individual totality with intrinsic value,[273] and can be reasonably treated as one of the many ends which a society should pursue. This is consistent with our earlier finding that the idea of an 'individual' is socially constructed, and, important for the European context, also provides support for liberal values. We already explained the relevance of society and the environment as a totality, but can elaborate that society relates to human collectives, whereas the environment relates to collectives of humans and other species, together with the biosphere. This allows us to be attentive not only the fact that individuals are embedded in society, but also that our societies co-exist on one planet with other species, and that our collective thriving depends on having a liveable planet, vibrant ecosystems, stable climate, clean water, and so forth. The universe is included as a fourth basic totality for several reasons. First, it operates as a catch-all for internal relations which extend beyond our planet and in which we are undoubtedly embedded, for example to the solar system, our galaxy, and beyond. Second, since totalities can be real or imaginary it also includes our beliefs regarding the universe, as may be found in discussions on cosmology or religious ideas such as a belief in God. These beliefs function on a different scale and cannot be subsumed into our ideas regarding individuals, the environment, or society. Third, we cannot access a 'universal' or objective perspective, so we should again assume that the universe has intrinsic value and mobilise resources and people on its behalf.

Each of the four basic totalities is constituted via internal relations and can be nested or subsumed into the subsequent totality, with the exception of the universe which is all-encompassing. The logic is that individuals are part of society, which is part of the environment,[274] which is part of the universe, which includes everything. This gives rise to the following internal relations view of these totalities, as a series of nested circles:

Figure 18: An internal relations view of human totalities

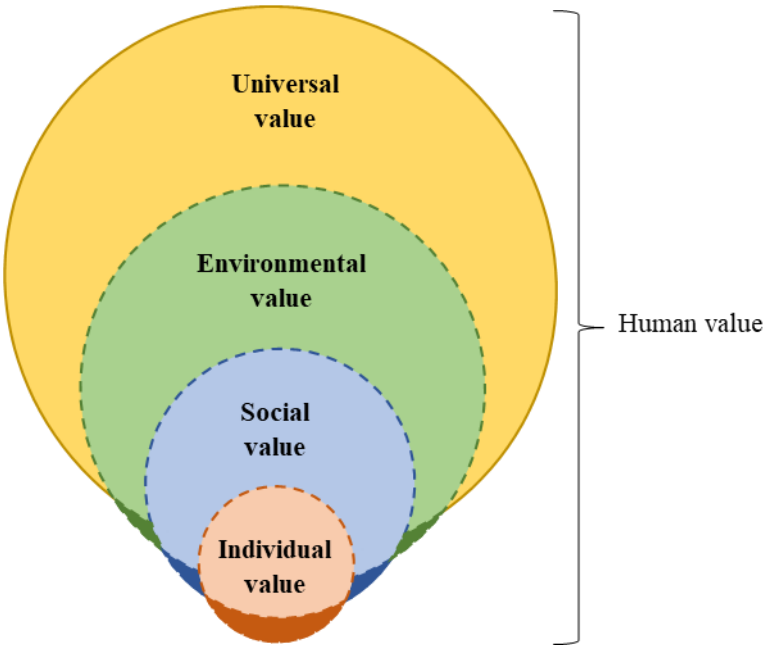
[272] For a discussion on intrinsic value see: Brennan (1992) Moral Pluralism and the Environment. Hirose and Olson (eds.) (2015) The Oxford Handbook of Value Theory.
[273] This is consistent with our earlier finding that the idea of an 'individual' is socially constructed (section 6.2.1).
[274] Human beings are not separate from nature or the environment, but part of it. Put differently, we are as much a feature of this planet and its landscape as all other forms of life and physical features.



This template of relations is only exploratory and intended to facilitate further discussion and analysis. It will, in any case, need be worked out in further detail and in different ways to suit the interests of different people and societies. To this end it may help to identify other basic totalities, relabel them, or sub-divide them into greater levels of detail, for example by dividing a country's environment into different ecosystems and their associated biodiversity, including humans.

Next, we can emphasise that the *internal relations view is not the same as a human value perspective on these totalities*. The reason is that, while the internal relations of individuals can be subsumed into society, the environment, and the universe, it does not follow that the individual, society, environmental, and universal value can be subsumed in the same way. This may seem strange but is consistent with our definition of values as "conceptions of the desirable", and with our identification of values divergence. Since society and individuals do not have the same values set, it follows that there is a divergence between the potential scope of individual value and the potential scope of social value. Analogously, we can identify that there is a values divergence between social and environmental values, and between environmental and universal values. As an example of the former, we can imagine that the pursuit of more human consumer goods is one of many reasonable values which a society can pursue. It does not, however, seem rational for the environment to pursue this same value. Similarly, we can imagine that the pursuit of biodiversity, including the introduction of earth-based lifeforms to other planets, is a reasonable environmental value. This may not, however, be desirable from the perspective of other planets since these may harbour forms of life that are currently unknown. The result of the values divergence between these totalities is that the pursuit of human value does not overlap in the same way as their internal relations (see Figure 19).

Figure 19: A value perspective on human totalities



The discrepancies between the value of the different totalities are highlighted in a darker colour (not to scale!) and can be seen as areas of risk where the pursuit of certain values is more likely to erode internal relations. This does not mean that societies cannot pursue value in these risky areas, only that doing so is unlikely to be sustainable in the long run. This kind of unsustainability is evident in the pursuit of economic efficiency which, as we already noted, erodes internal relations and is unable to enable the sustainable management of resources. A corollary to this insight on value divergences is that *the pursuit of human value is (most) sustainable when it focuses on values sets which are shared by individuals, society, the environment, and the universe*. It is doubtful whether and to what extent this utopian overlap in values sets can be realised in practice, but perhaps it can help guide the generative state's sustainable design of social conventions and mobilisation of resources and people.

In summary, *the main features of our generative theory of value* are its: (1) relational view of value as being embedded in internal relations (2) recognition that thriving internal relations and the pursuit of values are key to human value; (3) attention to the formation of prices for the mobilisation of resources (4) exclusion of money as a source of social value; (5) focus on human value(s) rather than individual value(s) (6) recognition of value pluralism and values divergence (7) premise that we can compensate for anthropocentric individualism by assuming that the totalities with which we are internally related have intrinsic value (8) suggestion that the generative state should pursue values sets which are shared between the four basic totalities of human value: individuals, society, the environment, and the universe.

Together, these features lead to an essential shift in emphasis relative to economic theories. Instead of asking how our societies can maximise value via the efficient formation of prices, we can ask instead how prices should be socially constructed to optimally contribute towards the fulfillment of conceptions of the desirable and thriving totalities of internal relations. *In terms of the generative state's pursuit of the collective interest, this entails that people are enabled, within limits, to exercise human agency so that they can pursue their values, and that resources and people are mobilised to promote the ends of real or imagined totalities with intrinsic value.* What this means will vary for each society, and there is no way to determine, once-and-for-all, how it should be organised. It follows that the generative theory of value can only be used pragmatically, as a tool to understand where we are now and to guide where we need to go.

In practice, this entails that states and societies should first identify the specific totalities that are relevant for their current functioning, issues, and priorities, and try to map out the values sets for each of them. Second, they can estimate what extent of their current profile of human agency and available resources

and money is being dedicated towards each of these totalities. Using this information, states can assess potential divergences between values sets and evaluate which of these totalities should receive a greater or lesser portion of society's human agency and resources. States can implement these redistributions in different ways, for example by changing social conventions such as law, property, money, markets, and firms. Our analysis is unable to identify, *a priori*, what states should do in each situation, but we can reiterate that they have an ultimate responsibility and authority to ensure that human agency and resource use are consistent with the collective interest. In this regard they have full scope to adopt any 'logical and human solution' which is necessary for the pursuit of human value.

An important feature of these solutions is that they do not need to be economically efficient, value-maximising, or sufficiently profitable. Nor is it necessary that the state already has enough budget to implement them. Instead, as we saw in our analysis of the generative state, it only matters that there is overall monetary integrity and that a given society has enough people and resources available.[275] This departure from economic reasoning makes it possible for states to mobilise people and resources for activities which are socially necessary, such as providing good education or addressing climate change and biodiversity loss, but which cannot be economically justified or only justified suboptimally, for example through inclusive measures of wealth and approaches such as valuations of nature.

To clarify, this does not mean that prices, markets, and firms are unimportant for the (re)distribution of human agency and resources. Quite the opposite; our analysis has shown that the use of money as a social convention is central to mobilising resources and granting reward agency, and that the effects of this convention are crystallised in the activities of markets and firms.[276] We identified, moreover, that the regulation of prices and potential monetary reward opportunities is one of the main methods which states can use to reorganise human agency and resource flows. Some examples of this regulation include fixing prices, imposing taxes, extending credit, and banning certain kinds of exchange.

The aim of these measures is not, once again, to promote economic efficiency or free market conditions. Instead, they act upon the monetary realm's potential reward opportunities and mould it as a social infrastructure to guide the flow of money, people, and resources towards the realisation of human value. Put differently, they create a pattern of price differentials which makes it possible to direct the flow of economic activities so that it is consistent with the collective interest. We can encapsulate this practice and its scientific foundation in one word: *marketecture*. It provides us with an alternative to economics that we can use to develop diverse solutions for our societies' particular needs, interests, and values.

Marketecture is not inherently sustainable but does create opportunities for societies to dedicate people, resources, and money towards the pursuit of values, such as fairness and sustainability, without seeing this as economically inefficient or needing to justify it with an underlying, profitable business model. Marketecture does not claim, moreover, that there is a single kind of utopia which all societies should pursue. This is quite different from economics which drives all states and societies to pursue a liberal free market utopia and grants only a limited, suboptimal scope of action to pursue non-economic values. In this regard we can say that marketecture enables the imperfect but direct pursuit of human values, whereas economics requires direct faith in free markets and only enables the suboptimal, indirect pursuit of non-economic values. Neither approach is perfect, but the former at least tries to directly bring people and resources to where they are needed and wanted, as opposed to the latter which tries to emulate an allegorical state of pre-social individual exchange and asks us to hope for the best. Given this difference, it seems reasonable to conclude that marketecture provides a more effective potential framework for the wise management of scarce people and resources than is provided by economics.

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[275] See section 9.3.
[276] See sections 9.3, 9.4, and 9.5.

Turning to firms, we can discern that they *provide an important contribution to human value through their actual and potential fulfillment of our conceptions of the desirable*. These contributions include not only goods and services, but also employment opportunities, other effects on human agency, their relations to other firms, technology used, and so on. We can identify, moreover, that these contributions will be primarily, but not only, directed towards individual value rather than social, environmental, or universal value. This reflects their financial moral impairment and the fact that their income comes mainly from people spending their reward agency (i.e. most firms will satisfy their financial survival condition by addressing consumer needs).

Our analysis also shows that there is *significant potential to make firms more ethical and sustainable than is currently the case*. We found, for example, that the purpose of firms should be to focus on non-financial values, and that we do not need for firms to make money and generate taxable income for the state. The problem, however, is that these findings cannot be implemented by people or firms alone and that we need two further, supporting conditions. These are (1) an end to the hegemony of economics; and (2) effective action in favour of sustainability by the generative state, such as through marketecture.

The first condition is necessary because *the hegemony of economics is a barrier to the sustainability of firms.* The idea that it is an objective science, its market fundamentalist foundation, and its false utopian pursuit of free markets, together with its influential position in society, sustains the counter-productive pursuit of economic efficiency. This is reflected, for example, in the ideal of the value-maximising firm and the universal standard of measurement and reward. One result of this hegemony is that there is no level playing field for firms which prioritise non-financial value or are not organised around the idea of economic efficiency. The result of this crowding out is that it is difficult, if not impossible, for people or firms to transform the market if they try to base their exchange relations on our ideas of the generative state.

The second condition is necessary because *marketecture and the generative state are not inherently sustainable, and because firms are unable to create the price differentials that are needed to make their activities ethical and sustainable*. The first part of the problem relates to value pluralism and the way that our analysis grants space for different societies to pursue their own, idiosyncratic set of values. It is likely, but not certain, that these values will include more ethical and sustainable firm activities, and it is possible, but not certain, that the state's pursuit of these values will be sufficiently effective or will depart sufficiently from economics. It follows that deliberate, dedicated, and multifaceted state action is required to promote the ethical and sustainable activities of firms.

The related, second part of the problem is that firms are unable to engage in marketecture to the extent that is required to address issues such as inequality, climate change, and biodiversity loss. They have a limited capacity to create sustainable price differentials, for example by adopting cleaner technologies, paying a premium for sustainable goods, or paying towards the decent treatment of employees in their supply chain. They cannot, however, prohibit consumers from buying unsustainable goods, impose higher taxes on unsustainable products, or prohibit competitors from using cheaper but less sustainable technologies. These latter kinds of measures are necessary to depart from economic ideas on the free market, and to sustainably transform firms and markets; they can only be implemented by the state.

If the above conditions are satisfied, then there are a wide range of creative opportunities which we can use to make the activities of firms more ethical and sustainable. These opportunities are often mutually reinforcing, and generally relate to the creation of *a commercial ecology for values-oriented firms*. The examples below are not exhaustive but are presented as a foundation for further discussion and research.

A first opportunity is *using marketecture to insulate firms from harmful market competition*. Harmful competition can take various forms, including the presence of too many competitors (so that profit margins are too low), the adoption of cheaper, more polluting technologies by competitors, a reliance on labour exploitation, or on business models with an unfair competitive advantage. As an example of

the latter, we can think of digital platform business models which have unparalleled access to data and can charge unfair margins and structurally outcompete other firms.[277] The reigning in of these and other kinds of harmful competition can lead to greater market stability and provide scope for firms to focus less on their bottom line and become more values-oriented. To avoid being misinterpreted, the point is not that competition is always bad, but that it is not an unqualified good which should be promoted as a matter of principle.

A second opportunity which arises from marketecture is that *firms would no longer be expected to take a leading role in addressing issues such as inequality, climate change, and biodiversity loss*. They would not, in other words, need to try and solve the problems of the world while trying to maintain their bottom line and being subject to intense market competition. The result is that firms would no longer need to divert people, resources, and money towards suboptimal, economically inspired sustainability solutions and would be able to focus more directly on their activities as firm. While this could be viewed as a loss of power and prestige, it also *provides more scope for firms to provide goods and services in a values-oriented manner.* Also relevant is that it addresses concerns, expressed not only by Friedman, about the democratic legitimacy of firms to address social and environmental issues.[278]

A third opportunity from marketecture is that the state *can use price differentials to create viable niches for sustainable firms*. Through guaranteed purchases, tax exemptions, subsidies, barriers to entry, and other measures, the state can ensure that socially important, values-oriented business models are sufficiently profitable for them to survive. This can help, for example, with the development of circular supply chains, with supporting socially oriented businesses such as daycare, or with setting up values-oriented firms in key areas such as the digital economy. The creation of niches can also be supported through the development of new funding sources, for example via local governments and communities, so that values-oriented firms can be facilitated to focus on local needs, issues, and interests.

A fourth, related opportunity is the *use of price differentials to support organisational experimentation and diversity*. In general, the idea is that once firms are no longer universally judged for their ability to efficiently maximise value, then they have greater room for organisational experimentation, for example regarding leadership skills, flat hierarchies, and including stakeholders in firm governance. They will also have more scope to use existing, or create new, legal organisational forms and agreements which prioritise values-oriented activities rather than the economically efficient management of risks. As an example, we can think of guaranteed purchase and risk-sharing agreements between sustainable farmers and local purchasers such as municipalities, universities, large firms, consumer cooperatives, etc.[279] These kinds of innovations can be stimulated by the support of a generative state and guided in an ethical and sustainable direction.

A fifth, crucial opportunity relates to *the conscious creation of systems of measurement and rewards to favour value-oriented firms.* In general, values divergence means that these systems will and should be unique for each society, and that we can only describe them in rough detail. In practice, the creation of these systems *will require states to engage in a wide range of activities for the measurement and reward of values-oriented firms*. As before, the state can perform these activities directly or can delegate responsibility for them to other parties, and can include other parties in any number of creative ways. In terms of measurement, these activities can and should include the *monitoring of a wide range of firm dimensions*, including for example their business models, agency profiles, legal form, resource use and ownership, funding sources, monetary flows and profit margins, environmental emissions, technology use, and working conditions. Information on these dimensions is needed, in any case, to enable effective

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[277] On this general issue, see: Zuboff, *Surveillance Capitalism* [*see if I can find a quote*]. Maybe also refer to Varoufakis' new book.

[278] Banerjee (2012) The good the bad and the ugly CSR. Kaplan who is regulating whom.

[279] This is an approach advocated by community wealth building (CLES – find an example).

activities by the generative state. In terms of rewards, we can first note that they *can operate at different levels*. These levels can, for example, be geographic (e.g. local, regional, national), focused on particular firms, particular sectors, or on the interactions between more than one sector. The design and granularity of these levels will vary between states but should be diverse enough to support a wide variety of values-oriented firms. Second, we can note that *support from rewards can be multifaceted*. It can include not only direct support such as subsidies, but also contextual support such as protecting whistleblowers, reigning in harmful competition, or giving a job guarantee to prevent the erosion of working conditions.

In summary, our generative theory of value shows that states and societies can develop unique standards of measurement and rewards to encourage the development of values-oriented firms to serve their needs, issues, and interests. While there is no guarantee, due to value pluralism, that this will result in ethical and sustainable outcomes, the great advantage of this approach is that it at least makes the direct pursuit of these values possible. This may be contrasted with economics which relies on value monism and tells all states, regardless of their circumstances, that they should pursue economic efficiency, liberalise their markets, and trust in market forces. We saw earlier in the book that this trust is misplaced, and can now identify that there are better options.

10.6 Reflection on the limits of economic efficiency for the analysis of firms

This Chapter examined the relation between economic efficiency and firms, explored its limits in terms of economic analysis and sustainability, and outlined an alternative approach that may be better able to provide sustainable outcomes. In its first section, we noted that there is no perfect economic measure for the efficiency of firms and that this has led to the development of various alternatives. Despite this pluralism, we also found that forms of efficiency that are not allocative are, due to the financial survival condition, granted a relatively lower priority in the decision-making of firm agents. A related insight was that firms are structurally driven by this condition to relate to people, money, and resources in an instrumental manner. Importantly, these findings impose a hard limit on how closely we can align the interests of firms with those of society. They also show that we cannot 'perfect' the decision-making of firms in the way that is commonly presupposed by economics. This latter point is neglected by this discipline which presumes, as an ostensibly neutral ideal, that firms should be as economically efficient as possible.

In section two, we discussed economic theories of value since these are key to understanding how firms can, despite their diverse activities, be efficient in the same universal way that is posited by economics. We focused on the currently dominant, utility theory of value and identified from it that all economic value is embedded in exchange and the satisfaction of individual preferences. We found, moreover, that the minimum value of satisfied preferences is reflected in the prices of a given exchange and that only human preferences are relevant for this approach. We next explored the role of the utility theory and confirmed its presence in several central concepts from economics education that are used to promote free markets: supply-demand curves, consumer surplus, and producer surplus. Overall, we discerned that a firm attains maximum economic efficiency when its inputs are used to satisfy the largest possible number of individual preferences, as reflected in its exchange prices. From this we inferred that price increases are the universal, abstract 'value' that is being created by all firms and which enables the universalist analysis of economic science.

Section three analysed the value-maximising firm as an ideal benchmark for the economic performance of firms, in terms of both their efficient financial and non-financial performance. In general, we noted that there is no perfect economic standard for either kind of performance and that this has given rise to various metrics for each. We also found that financial performance indicators are a reliable measure of firm economic performance when there is little or no market failure, and that non-financial indicators are necessary to measure firm performance when there are such failures. The greater the extent of these failures, the greater the economic need for non-financial measures to guide efficient decision-making.

In relation to financial performance, we discussed how a financial mode of perception, commonly used by creditors and investors, suggests that it can be sufficient to look at the financial performance of firms to evaluate their economic efficiency and social contribution. As noted, this mode of perception builds on a premise that markets are either perfect or nearly perfect, and that financial performance indicators offer a reliable proxy for the non-financial value creation of firms. Importantly, we also found that it has come to underpin a universal system of measurement and rewards that drives firms to emulate as closely-as-possible the value-maximising ideal that is 'neutrally' promoted by economics and finance. It is noteworthy for sustainability that this universal system does not grant a level playing field, in terms of access to financial resources, for firms that do not focus on maximising value or economic efficiency. We also argued that, due to this system, the notable success of profit-oriented firms may not be a natural or inevitable feature of economic dynamics but could rather be a performative construction of dominant economic ideas on how to 'best' regulate and reward the activities of firms in general.

In relation to non-financial performance, we argued that the transformative potential of non-financial measures is currently impaired since their primary aim is to help address market failures and promote economic efficiency. In support of this argument, we analysed the materiality criterion that is currently central to business sustainability efforts and identified that it is underpinned by economic theories on market failure and value creation. We also demonstrated that CSR and ESG are shifts within the limits of economics that are not able to transcend or compensate for the sustainability limits of this discipline. Lastly, we saw that due diligence efforts, which often receive praise for their potential to make firms more sustainable, are, even in the best of circumstances, unable to do more than address the market failures of particular firms. We therefore concluded that non-financial measures of firm performance are, since they are currently designed to be consistent with economic efficiency, more likely to expand than displace the financial mode of perception and the universal system of measurement and rewards. It follows that value-maximising firms, even if they consciously focus on both their financial and non-financial performance, are unable to transcend the limits and unsustainability of economics.

Section four explored this issue of firm efficiency and sustainability in more detail, looking specifically at efforts to value nature that are likely to become a mainstream practice among firms in the next years. We focused on these efforts since it is widely thought that they can address corporate short-termism and help our societies transition from shareholder to stakeholder capitalism. For context, it helps to recall that short-termism is the currently leading problem diagnosis for the unsustainability of firms, and that stakeholder capitalism is seen and promoted by many influential voices in business, academia, and civil society as a sustainable alternative to our currently unsustainable political economic system.

In terms of content, we discussed in this section that valuations of nature are part of a broader effort by environmental economists to develop an inclusive measure of wealth that transcends the limits of GDP and can enable sustainable development. This effort imagines that there are different kinds of capital that, when considered together, can provide an inclusive measure of social wealth and offer a foundation for sustainable development. Next, we found that approaches to sustainable development can be classed as strong or weak depending on whether they see these different kinds of capital as substitutable or not. They all share, however, a common focus on economic efficiency and are, as per the utility theory of value, embedded in liberalised exchange and the satisfaction of individual preferences. We inferred this, for example, from the methods used to value nature in terms of willingness to pay, revealed preferences, and shadow pricing. It was also evident from arguments that nature must be valued so that we can enable economic reasoning and 'save' it, and in the premise that there are perfect prices for nature that will yield perfectly sustainable outcomes. Overall, we confirmed that valuations of nature are consistent with the scientific foundation of economics and are unable to transcend its limits.

Turning to firms, we outlined that their use of these valuations has become practicable due to theoretical developments in environmental economics, the development of new tools and databases, and the rise of an extensive network that encourages and provides support for their use. We found, moreover, that

firms are being driven to adopt this practice due to pressure from markets and regulators which assumes that firms can and should help address the loss of ecosystems and biodiversity by efficiently managing their financial and non-financial value. More fundamentally, we discerned that valuations of nature can only be economically efficient or value-maximising when markets are maximally liberalised and there are no market failures. This allowed us to critically infer that there is nothing neutral about valuations of nature and that they are inclined to exacerbate various unsustainable features of economics and 'capitalism' that we previously identified. The first of these was economic imperialism, which is likely to be promoted by valuations of nature, for example via the search for perfect prices, and to crowd out alternative ways of thinking about sustainability issues that might be more effective.

The second unsustainable feature that we noted was the private disposition of economics. We saw that this is likely to impair our ability to recognise or address the effects of economic structures on individual decision-making. This, in turn, leaves us unable to properly regulate large concentrations of economic power and makes our sustainability policies dependent on the ongoing success of large economic actors. The latter dependence arises because the success of valuations of nature, as a form of environmental policy, is contingent on the economic success of early adopting firms, which are almost invariably large economic actors. In general, this entails that adopting firms receive more money and resources from society than they spend on implementing valuations of nature. Expressed critically, we pay commercial firms a premium so that they can implement suboptimal sustainability policies that also buttress their ongoing economic power.

The third unsustainable feature of economics that is promoted by valuations of nature is methodological individualism. In general, we noted that this method assumes away internal relations in the environment so that it can be atomised, commodified, and valued. We also examined four economic assumptions about information which are relevant for the effectiveness of valuations of nature, namely that it (1) is discrete; (2) unambiguous; (3) can be possessed by individuals; and (4) is scarce or finite. Significantly, we found that these assumptions are incorrect insofar as information is ambiguous and not susceptible to one 'right' interpretation. We also highlighted that it is incorrect for economics to assume that more information always leads to better valuations since it is often the things that people are closest to, and know the most about, that are most difficult for them to value. Lastly, we emphasised that the valuation process is not neutral but inherently distorts internal relations between the valuer and whatever is being valued. We argued, moreover, that the intensity of this distorting effect is proportional to the intensity of the internal relations between the valuer and the thing being valued. This suggests that stakeholders with the most intense relations to a certain ecosystem or biodiversity area are likely to suffer most from, and be protected least by, valuations of nature.

A fourth unsustainable feature is an anthropocentric focus on human preferences. This can only provide an incomplete picture of human value since it fails to account, for example, for how we are constituted by internal relations between us and our context. A fifth feature is the continued pursuit of economic efficiency which, as we already discussed,[280] is bound to over-use resources and cannot ensure their sustainable, long-term use. The sixth unsustainable feature is an erroneous premise that the economy is generative and must be liberalised so that people can 'make' money. This turns money into a social end rather than a social means and ensures that valuations of nature can only contribute towards overall human value in a distorted, suboptimal manner.

Overall, we concluded from these issues with valuations of nature that a shift to stakeholder capitalism, since it remains firmly embedded in the scientific foundation of economics, is unable to make our firms and societies sustainable. We also highlighted that it is incomplete and incorrect to imagine that short-termism is a sufficient explanation for the unsustainability of firms. It is incomplete insofar as it does not recognise that it is economics, and not shareholder capitalism, that is at the root of unsustainable

[280] Section 6.2.3.

market dynamics and firm activities. And it is incorrect since its solution, stakeholder capitalism, is more likely to exacerbate than address or transcend the unsustainability of this discipline. In general, the problem is not so much that firms have a short-term focus on their commercial interest, but is rather than economic reasoning is limited, morally impaired, and predetermined to subordinate non-economic concerns to economic objectives. It is this subordination, and not a failure to properly account for time horizons or the interests of stakeholders, that ultimately explains why firms and their agents are unable to reason and decide adequately about the collective interest. It explains, moreover, why we need to abandon the idea of economic efficiency as a neutral, desirable ideal if we want to sustainably transform our firms and societies.

Section five took some exploratory steps in this direction and outlined a new, generative theory of value as a complement to our earlier analysis of the generative state. In terms of starting insights, we identified that we should define value with reference to internal relations rather than in terms of prices, and that we should exclude money from our definition of value. Notwithstanding this exclusion, we noted that it would still be necessary to pay attention to price formation since it influences resource allocation and human agency which, in turn, influences the realisation of value. Moreover, we suggested that value is different from a social perspective as compared to an individual perspective, and that we should try to articulate our theory of value from an overarching, human perspective.

Building on these and other insights, we defined values as 'conceptions of the desirable' and value as 'a contribution towards the fulfillment of conceptions of the desirable as embedded in larger totalities of internal relations.' We showed, moreover, that value and values are embedded in human subjectivity and do not have any kind of objective existence. This helped open the door for value pluralism, i.e. the idea that different people and societies can have different values (conceptions of the desirable) that may interact and overlap but are not ultimately reducible to one another. Crucially, this also creates space for diverse states and societies to reasonably pursue different kinds of value(s), and for them to organise their resource allocation and agency profile in any number of creative ways. This may be contrasted with economics which, due to its scientific foundation, sees money or utility as the dominant value and claims that all societies should strive towards the realisation of a free market utopia.

Lastly, we saw that our approach to human value is limited by anthropocentric and personal subjectivity. These subjectivities arise from all value(s) being embedded in human internal relations and from how we perceive and interact with the world as single persons. Their consequence is that we cannot, as single humans or as an aggregate of single humans, perceive or develop anything more than a deficient picture of all the internal relations in which we are embedded. At the same time, however, it is necessary to try and develop a more comprehensive picture of these internal relations if we want to support their thriving and the realisation of human value. To paraphrase the issue, it is not enough to see how people relate to society and the environment since we also need to consider how society and the environment relate to people and to each other. While we cannot practically develop a full or perfect picture of these holistic relations, we can reasonably identify that dismissing their non-human and non-personal aspects will lead to suboptimal results in terms of human value. In the absence of a perfect solution to this problem, we suggested a next best alternative which is to empower people on behalf of four imaginary totalities on the assumption that they have intrinsic value: individuals, society, the environment, and the universe. As noted before, these basic totalities can be varied and reinterpreted by different societies to suit their needs. The point of our analysis was less about these particular totalities than about the methodological need to compensate for anthropocentric and personal subjectivity when trying to realise human value.

Overall, the generative theory of value showed how our states and societies can use money to mobilise people and resources to pursue the realisation of human value by focusing directly on the fulfillment of their values in the context of four basic, imaginary totalities. Importantly, the aim of this theory was not to promote economic efficiency or free market conditions. Instead, it sought to explain why and how we might, via the conventions of the generative state, ensure that human agency and resource use are

consistent with the collective interest, as defined by different states and societies. One consequence of this pluralism is that our theory cannot be used to define in any objective, once-and-for-all type of sense how states and societies should organise their social conventions in terms of firms, markets, or money. It does, however, provide a pragmatic framework that they can use to reflect on their current approach to organising people, money, and resources, and which allows them to imagine and even implement an alternative way of organising that might be more suited to their values.

A notable contribution of this Chapter was to outline an alternative to economics, named marketecture. This alternative showed that we can use social conventions such as money and markets to create price differentials to guide the flow of people, resources, and money so that it is consistent with the collective interest and the realisation of human value. Prominently, marketecture demonstrates how we can pursue values directly without this being condemned as economically inefficient or needing to justify it on the basis of a profitable business model. The open, creative approach to market engineering that it provides may be contrasted with economics which singularly claims that all markets, in all societies, at all times must adhere to the principles of a liberal free market utopia. One consequence of this openness is that marketecture is not guaranteed to yield sustainable results because it also gives states and societies the option to pursue unsustainable and non-sustainable values. It does, however, make it possible to pursue sustainability directly which, again, may be contrasted with economics which only allows for the pursuit of sustainability in an indirect manner and can provide only suboptimal results. Importantly, we found that, insofar as marketecture does not suffer from the same scientific flaws as economics, it provides a superior scientific foundation that we can use to address the severe sustainability issues that confront our societies today.

In relation to firms, we argued that they provide an essential contribution to human value because they help individuals and societies fulfil their conceptions of the desirable, i.e. to satisfy their values. We also highlighted that they are more likely to satisfy individual values, rather than social or environmental values, due to the commercial orientation of their activities. Additionally we determined, based on our understanding of the generative state, the generative theory of value, and marketecture, that there is significant potential to make firms more sustainable than is currently the case. We showed, for example, that we can create a commercial ecology for values-oriented firms, use marketecture to insulate them from harmful competition, and create more space for organisational experimentation and diversity. We proposed, moreover, to use price differentials and social conventions to create viable niches for sustainable firms, and that societies should aim to develop universal systems of measurement and rewards that favour values-oriented firms.

Significantly, we saw that it is not necessary to try and ‘perfect’ the decision-making of firms along every financial and non-financial dimension of their activities. This economic approach expects them to pursue an impossible objective with the inevitable result that they and their failures are subject to a great deal of social, political, and organisational pressure and criticism. It is incompatible, moreover, with the practical constraints that are placed on firms and their agents by the financial survival condition. Marketecture does not place this kind of pressure on firms and does not expect them to take a leading role in addressing sustainability issues. While this could lead to a loss of power and prestige, it also grants them more creative space to provide goods and services in a values-oriented manner. Put simply, it lets firms do what they are good at in a way that is consistent with the values of their agents and of society more broadly.

It should be stressed, however, that our recommendations to improve the sustainability of firms cannot be adopted effectively while the hegemony of economics is ongoing. One reason is that the acts of firms, investors, and customers are not, absent state background activity, enough to create or maintain the type or scale of price differentials that is needed to make firms and markets sustainable. This means that we need to challenge and subdue the influential role of economics in the decision-making of firms,

government, academia, and elsewhere if we want to make our firms, markets, and societies sustainable. To put the choice in simple terms, we can have economics or sustainability, but we cannot have both.

11. Conclusion

We started this book by identifying that economics is the main science that our societies are using to mobilise money, people, and resources. We also highlighted that we are failing to mobilise enough of these to address escalating sustainability issues such as climate change, biodiversity loss, and inequality. We subsequently asked whether this failure might not, despite its sustainability-oriented sub-branches, be due to an unsustainability within economics itself. As preliminary evidence for this argument, we referred to a recurring pattern of antagonism between economic reasoning and sustainability efforts, the historical failures of economic solutions to social and environmental issues, the disconnect between economic analyses of the severity of climate change as compared to other sciences, and the inability of mainstream economics to reform itself in the wake of scientific failures, for example after the Financial Crisis 2008.

While this evidence provided a reasonable cause for concern, we also noted that it, or more evidence like it, would be insufficient to determine whether economics is unsustainable. One problem was that the selected examples might be unrepresentative bad apples that do not reflect the broader practice of economists. A second problem was that these failures do not, by themselves, rule out the chance that more, or better economics might be able to lead to sustainable results. These problems led us to identify that an assessment of economic unsustainability would require at least two scientific components. First, it would need to overcome the issue of attribution by showing that economics itself is unsustainable and that we are not dealing with mere instances of economic failure. Second, it would require an assessment of antagonism to determine if there is an inherent incompatibility between economics and sustainability.

For the first component, we decided that it would be necessary to examine the scientific foundation of economics. More specifically, we would need to outline the economic worldview or scientific paradigm that is reflected, for example, in its seminal literature and core textbooks. This approach helped reveal the inner workings of economics and ensured that our analysis would be applicable across the economic mainstream rather than focused on a few bad apples. For the second component, we identified that we could assess whether economics is sustainable by looking at the limits of how its scientific foundation conceptualises the world, identifies problems, and tries to address them. These limits would then allow us to identify the reasonable scope of application for economics and whether it is compatible with the effective resolution of sustainability issues.

Importantly, we also decided to complement our assessment of economic (un)sustainability with a third scientific component: an analysis of economic theories of the firm. We did so because firms are central to economic approaches to sustainability, are often linked to sustainability issues, and because they are a concrete social phenomenon that we could use to enrich our analysis. A complementary focus on firms also allowed us to work out the consequences of economic limits in more detail and gave us scope to develop a scientific alternative for the sustainable mobilisation of money, people, and resources.

The structure of the book broadly mirrored the three components described above. Part A provided an outline for both the scientific foundation of economics and for its theories of the firm. Part B focused on the limits of economics in terms of its theories and methods. And Part C examined the consequences of these limits for economic theories of the firm and explored the potential for a sustainable alternative to economics. The remainder of this conclusion will review the main content and findings of each Part before discussing the results of our analysis in a broader context.

Part A provided an overview of paradigmatic developments in classical political economy, neoclassical economics, and modern economics, also in relation to their respective theories of the firm. Importantly, we identified from this overview that economic science is rooted in liberal ideas regarding the economy and the relationship between individuals and the state. More specifically, we saw how economic science came to view the economy as a separate sphere and system of natural liberty where individuals compete

in accordance with their self-interest and are governed by the natural laws of supply and demand. We also examined how this worldview developed, over time, into neoclassical economics after the adoption of a utility theory of value, a change in scientific standards to emulate the natural sciences, the reconceptualisation of supply and demand as a differential equation, and the use of differential calculus. The above changes led to the invention of supply-demand and general equilibrium models which are used by economists to make predictions about the future and provide policy advice.[1] These neoclassical models were augmented, as part of the rise of modern economics, via the integration of game theory and theories on imperfect competition, for example due to transaction costs and uncertainty.

In terms of theories of the firm, we showed that these have always been closely coupled with theoretical developments in the economic mainstream. During the classical political economic period, this coupling entailed that scholars had relatively little to say about firms since their activities were beyond the proper scope of economic analysis as it was understood at the time. During the neoclassical economic period, it explained why economists modelled the firm as a production function and turned its inner workings into a black box. And during the modern period, it explained why economists were able to re-open this black box, to an extent, by modelling firms as a product of imperfect competition between individuals and assuming that there is no essential difference between individuals in firms and markets. In general, this coupling was significant for our analysis since it showed that the currently dominant economic theories of the firm – the principal-agent and incomplete contracts theories – are grounded in the economic mainstream and are therefore also subject to its scientific limits.

The historical work in Part A provided a number of notable insights for our overall analysis. It showed, for example, that the scientific foundation of economics is founded on liberal ideas and metaphors. This is significant since it demonstrates, at a minimum, that it is not enough to merely study economics (but also history, philosophy, and other disciplines) if we want to understand how this discipline works and what it is, or is not, able to do. Also relevant is, as shown by the neoclassical black box approach to the firm, that scientific methods and theories make some things visible even as they obscure others from sight. This helped set the stage for our later discussion on limits and provided a concrete example of why there is no single discipline that can have a complete or sufficient knowledge of reality. Another notable insight was that scientific developments in economics have often been determined primarily by its theories and methods rather than by the nature of the social phenomena under investigation. This helped us to later challenge the common, scientistic view that scientists can and are able to neutrally or objectively research the world around them.[2] Our analysis also provided insight into the complex relationship between neoclassical and modern economics. It showed that while neoclassical economics is widely recognised by economists as deficient and based on unrealistic assumptions, it nonetheless operates as an ideal benchmark and source of inspiration in their search for a new, general economic model that is able to account for market imperfections such as transaction costs and uncertainty.

Part B examined the limits of economics in terms of its methods and objectives. To start, we identified that all scientific practice is subjective and relies on imperfect, unprovable assumptions regarding the phenomena that it seeks to investigate. This is not a 'problem' with science that must be solved, but an inherent flaw and limitation that must be taken into account whenever we use or apply any kind of scientific reasoning. Unfortunately, we also found that this appreciation of scientific modesty is absent from the orthodox view of economics as an objective science that focuses on the optimal, rational, and efficient use of scarce resources. One consequence of this immodesty is that the scientific practice of economists often mirrors the view that it is somehow 'enough' to understand market interactions on the sole basis of economic theories and methods. Another consequence is that economics has, on numerous occasions during its development, fallen into a trap of circular reasoning and become self-perpetuating in its application. This was evident, for example, in our discussions on economic imperialism, in the

[1] Generally, see: Mitchell (2014) Economentality - How the Future Entered Government.
[2] [*add reference to Scientism*]

interpretations of Smith by Ricardo and Mill, in the way that Marshall's work on theories of the firm was misinterpreted, naturalised, and extended by Pigou, Chamberlin, and Robinson, and in the treatment of Von Neumann's work on game theory by prominent economists such as Nash, Becker, Arrow, Debreu, and Lucas. While reflecting on these examples, we noted that it is only subjective judgment, and not economic analysis, which can determine whether it makes sense to apply economic theories and methods to a given social phenomenon. Building on these insights, we examined the limits of economic methods and challenged three central misconceptions in economics: (1) the idea that it is an objective science; (2) the existence of the invisible hand; and (3) the belief that leading mathematical approaches to economic modelling can provide meaningful insights into, and predictions for, market dynamics.

In relation to economic objectivity, we critically analysed the common distinction between positive and normative economics which suggests, at least in the case of the former, that economics can provide a neutral, universal, objective, and value-free approach to describing market dynamics. We showed that this distinction is a false dichotomy, not only due to the liberal roots of economics, but also because any attempt to describe what the economy 'is' comes paired with an assertion about what it 'should be'. This was evident, for example, in the economic premise that the economy is a separate sphere from society since it also implies that the economy and society *should* be separate in terms of their theoretical and actual dynamics. Overall, we concluded that the scientific practice of economists is not objective, and that they do not have any kind of privileged or neutral access to economic facts. This runs opposite to both the state of the art in economic education and the elevated view that is often granted to the 'rigour' of economics relative to other social sciences. Put critically, we might say that our analysis has shown that economists are largely unaware of the scientific foundation of their discipline, and that their reliance on obsolete notions about the nature of science has resulted in pervasive issues in their scientific practice.

In relation to the invisible hand, we showed that its presumed existence is conditional on the earlier noted premise that the economy and society are separate since this is the only way that supply-demand dynamics can be examined in isolation from social factors. It is, in other words, only by assuming *a priori* that the state, society, and the environment are not responsible for constituting or co-creating market activities that it becomes possible to imagine that the economy is governed by an invisible hand. It follows that the invisible hand, as a mechanism with an autonomous effect, is an imaginary projection of the scientific foundation of economics. To clarify, this does not mean that there is no equilibrating tendency between supply and demand but only that it does not exist as a purely economic phenomenon that operates independently from society. A corollary to this point is that there is no sense in which the dynamics of the invisible hand can be 'perfected' via the pursuit of free markets; this posits and chases a utopian ideal which does not exist. An important, related point was that the creation of the invisible hand via an artificial division between the economy and 'non-economy' ensures that non-economic factors such as the state, society, and environment are not granted a level playing field in economic analysis as compared to economic factors such as efficiency and prices. This prejudice is a problem for the sustainability of economics since it shows, at a fundamental level, that liberalised markets and the invisible hand (as ideal models of economic dynamics) are unable to effectively integrate non-economic factors, i.e. they are unable to balance economic and non-economic concerns in a way that is consistent with the collective interest. We subsequently concluded that there is no scientific basis for the utopian promise of economists that sustainability objectives can be achieved within the ambit of an open, free market economy. Stated simply, there is no reason to believe that economic approaches can provide an effective solution to sustainability issues.

In relation to economic modelling, we identified that a belief in economic objectivity and reliance on mathematical standards has given rise to a Platonist belief that the economy is a kind of natural system that is 'out there', waiting to be discovered and described like gravity, or a rock. We also showed that this belief has been integrated into formal economic models, neoclassical and modern, which assume

that the underlying mathematical structure of the economy is, or should be, consistent with the ideal expression of an autonomous invisible hand. One consequence of this approach is that mathematical standards and economic premises became a reference point and standard of proof in economic models as opposed to the real-world phenomena of market exchange. This was evident, for example, in the way that economic models assume away competitive interactions between individuals, are designed to yield deterministic results,[3] and have, in terms of the labels that they use, only a nominal connection to actual market phenomena. To evaluate the usefulness of economic models and their predictions, we juxtaposed the way that physicists have analysed the three-body problem with the way that economists have tried, using the same mathematical foundation, to develop their general equilibrium models. In general, we saw that physicists have been unable to identify a general solution for three-body problems, even if they know the positions and masses of these bodies and assume that there are only gravitational interactions between them. Three-body interactions are inherently chaotic and are only solvable under a narrow set of specific and implausible circumstances. This may be contrasted with the standard view of economists that general equilibrium models are, despite their determinism and fundamental flaws, able to provide meaningful predictions for entire economies with a potentially infinite number of agents. Overall, it is difficult to imagine that market dynamics, with all their commodity, human, social, and environmental diversity, might be less complex than three mutually attracting spheres in an empty void. A last issue that we discussed in relation to economic models is their performativity, i.e. that the ideas of economists about the economy contribute in a self-fulfilling way towards the actual way that the economy operates. This was evident, for example, in our discussion of the Black-Scholes-Merton (BSM) model, which showed that economists are inherently and performatively entangled with the economy that they are purporting to describe as neutral, objective observers. This confirmed again that there is no natural, independent economic structure that can operate as a conceptual foundation for economic models.

Ultimately, our discussion on the limits of economic methods showed that economics is subjective, that the invisible hand does not really exist, that it is prejudiced against non-economic phenomena, that the economy has no 'natural' mathematical structure, and that the relevance of formal economic models is highly overstated. None of these limits are evident in the standard claims of economists about the nature of their scientific practice, as reflected for example in their leading textbooks and seminal literature. Especially troubling is that these limits are not simply missing from mainstream economic discussions, but that this mainstream adopts, in every case, a position that firmly denies their existence. Where we saw limits, they saw that economics has an unlimited potential for scientific analysis. Overall this makes it difficult, if not impossible, for specialists in economics to realise that the economy is a methodological projection of their subjective theories and methods, and that it does not exist independently from their scientific practice. It also makes it unsurprising that economics has, as noted in the introduction, failed to respond adequately to social and environmental issues, or to structurally adapt in response to decades of scientific anomalies and failures. The tragic finding is that the scientists whose work created the economy, and who have tried to explain it to us, have done so in a manner that compels us to surrender to its autonomous, law-like nature, and have thereby impaired our ability to use markets and exchange practices in the collective interest.

Part B subsequently discussed the limits of the free market and efficiency objectives that are central to the scientific foundation of economics. Our starting point was to examine the way that these objectives developed out of liberal ideas on the relationship between individuals, society, and the state. With this aim in mind we discussed the liberal allegory that people once existed, as free individuals, in a state of nature and that they signed a social contract to create state and social structures. This led to an important methodological insight, namely that individuals are posited as conceptually prior to state and society. We identified, moreover, that this pre-social view of individuals dovetails nicely with the utopian ideas outlined by Smith in his *Wealth of Nations*. The resulting vision is that people who are free in the state

[3] This also applies to stochastic models (section 5.2.3).

of nature will pursue their 'natural' (read: pre-social) propensity to truck, barter, and exchange, and will have their free exchanges regulated by the beneficent, natural laws of supply and demand (the invisible hand). The wealth generated by these exchanges can subsequently be taxed and used for state and social purposes according to the rules set out in the social contract. It is noteworthy that, within this vision, markets play a fundamental and preliminary role by generating resources for the existence of state and society. In this regard it is not only individuals who are prior to the state and society, but also markets.

A corollary to this market fundamentalist perspective is that the wealth of a nation is maximised when people and markets are liberalised so that the invisible hand can operate without interference. A second corollary is that the state plays an appropriative, rather than a constitutive or co-creative role, in relation to the economy. A third corollary is that we need to be careful with taxation since, if it is set too high, this can undermine invisible hand dynamics, stifle market activity, and 'undermine the economic goose that lays the golden eggs.' Another important insight was that economics can be seen as the scientific discipline that tries to explain, within this market fundamentalist framework, how the economy is driven by competition between self-interested individuals and regulated by supply and demand. A related key insight was that this discipline does not need to explain economic dynamics on the basis of social or state activities since these are conceptually posterior to free market exchange among individuals. This absence of state and social involvement in the constitution of market dynamics is readily apparent in the economic assumption that there is a fundamental separation between the economy and society. It can be identified, moreover, in the way that economic textbooks explain economic phenomena such as markets, prices, firms, etc. in terms of dynamics between free individuals and without reference to any kind of *a priori* creative role by states or societies. A last insight to mention here was that we identified how, at least in part due to misconceptions about economic objectivity, the market fundamentalist model was universalised so that it could be seen, not as a liberal economic utopia, but as a universal blueprint for the rational economic arrangement of every society. This made it possible for us to outline a global market fundamentalist model which suggests that every state should promote liberalised trade in- and outside of their borders, and thereby enable a wealth-maximising, global 'return' to the state of nature. These aims and design are readily apparent in the development of economic globalisation.

The above analysis also provided important insights in relation to capitalism, namely that it is no more than a false belief in the inevitability of market fundamentalism. As we discussed, this belief is evident in both Marxism and orthodox economics insofar as both posit that we have no choice but to align the exchange practices of our societies in a way that is consistent with their respective interpretations of individual behaviour and natural economic laws. A notable consequence of our finding that capitalism does not exist is, first, that we have much more creative choice regarding the organisation of our exchange practices than is commonly assumed, and second, that there is no reason to imagine that the end of the world is more likely than the end of capitalism.

The remainder of Part B discussed the limits of economic objectives as reflected in the limits of market fundamentalism. More specifically, we challenged the idea that individuals are pre-social, that markets are pre-social, and demonstrated that the pursuit of economic efficiency is unsustainable. In line with this aim, we examined the role of methodological individualism in economics, i.e. the idea that all social phenomena are explainable, and must be explained, in terms of actions by individuals. In particular, we discussed the liberal roots of this methodological approach in the idea that individuals are conceptually prior to state and society, and outlined how, by using ideas on methodological atomism from physics, it was developed further for use in neoclassical and modern economics. Importantly, we stressed that economic individualism relies on an assumption of radical separation; i.e. a factual premise that there is no kind of shared culture, geography, education, language, history, family, or any other relationship that helps to constitute us as individuals. Put differently, individuals have no history and simply 'appear' in a void with certain innate characteristics. These characteristics then determine how they interact with other individuals, like two atoms colliding in a vacuum. In general, we noted that this approach is unable to provide an adequate account of market exchange since it assumes away the various relationships that

are necessary to constitute us as single humans. Specifically, we outlined that people are embedded in a web of internal relations where they are co-defined not only by other people but also by social factors such as history and culture, and by environmental factors such as climate and geography.

In relation to economics, we outlined how the creation of GE models was enabled by assuming away internal relations. We also detailed how this approach required economists to assume away competitive interactions, model people as passive automata, and to attribute an intelligence to the 'void' in the form of a market mechanism that allocates goods and services in the market. We can recognise this projection of intelligence onto the void, onto the 'market' itself, as an iteration of the 'natural', Platonic structure of the invisible hand. The fact that it operates outside of human control, as a force of nature, is an echo of the capitalist view, discussed earlier, that sees market fundamentalism as inevitable. An important final insight from our discussion on pre-social individuals was that individuals and collective structures such as the state, society, and environment are internally related; they are not separate but are mutually constitutive. This led us to remark that individuals did not come first, they came together with. This is significant for sustainability since it is consistent with the first principle of ecology, that everything is connected with everything else.[4]

We next challenged the market fundamentalist premise that markets are pre-social. We identified that there is no anthropological or historical evidence for this premise, and that no pre-state society has ever been found that is mainly governed by liberalised exchange. We also highlighted that economics is, due to its liberal origins, an extension of Anglo-European scientific and cultural beliefs and is not simply a neutral, objective, or universal approach for examining exchange arrangements. Moreover, we explored how economic misconceptions about its objectivity and scope of its application have made it difficult for economists to imagine that exchange arrangements or their scientific practice could reasonably have developed in different ways in different societies. To stress this point, we explored historical examples of market arrangements in the Islamic Empire, China, Persia, and even among the Aztecs. Overall, these examples showed that while exchange practices are ancient and diverse, they are certainly not pre-social. They also showed that there is no evidence for the conventional economic narrative which claims that capitalism emerged as a unique and singular transformation out of the European feudal system.

The final section in Part B argued that economic efficiency, as reflected in the idea of Pareto optimality,[5] is an inherently unsustainable concept. It examined the origins of this standard of efficiency and showed that it is satisfied where there is maximum intensity of beneficial exchange without redistribution, i.e. it is satisfied when all trade occurs that provide any degree of utilitarian benefit. We realised, moreover, that the absence of additional trade opportunities corresponds to a perfect outcome in Smith's utopia. This led us to identify that Pareto optimality was being used as an indirect proxy in economic models to identify the attainment of ideal, liberalised conditions. This is how these models are able to identify an efficient outcome without examining any actual competition between individuals, or asking whether they are free, or investigating if they have made maximal use of their available exchange opportunities. In effect, we found that Pareto optimality is useful for economics because it enables the use of economic models without needing to examine what, exactly all of the various individuals are doing. On realising this, it becomes unsurprising that General Equilibrium models are able to predict outcomes for imagined economies with any number of representative agents; the maths is not about the agents, but about the boundaries of maximum trade intensity.

In terms of sustainability, we identified that Pareto optimality tends towards the overuse of resources since, in order to attain an efficient result, it requires that every trade, everywhere that can lead to a marginal increase in utility for anyone, anywhere should take place. We also stressed that economics

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[4] [*add reference to Commoner*]

[5] Pareto optimality is usually stated as being satisfied when you cannot make anyone better off without making anyone else worse off.

is, due to its liberal origins, methodologically committed to minimising interference with economic interactions and, due to economic imperialism, also committed to converting non-economic factors into economic factors. This led to a crucial finding, namely that the standard economic explanation for social and environmental issues – which sees them as market failures caused, for example, by externalities and information asymmetries – is no more than a claim that they are being caused by a failure to achieve Pareto optimal conditions. If this is true, then the solution to sustainability issues is to enable perfect market conditions and maximise economic efficiency.

Critically, we established that this diagnosis is tautological, indiscriminate, and ideologically driven. It is a snake oil panacea that claims it can solve all problems but actually has no regard for their particular, non-economic features. It fails to recognise that economic efficiency is predicated on the immediate and maximum use of resources to generate utility, and that this is incompatible with their wise, long-term, and sustainable use. It also fails to see that economic efficiency is contingent on radical separation between individuals, i.e. on the severing of their internal relations so that they can make 'free' decisions. This latter point entails that economics can only 'solve' the market failures that, it claims, are the cause of sustainability issues by eroding internal relations between people, society, and the environment. It follows that economic 'solutions' cannot help but isolate, oversimplify, and degrade the various aspects of a given sustainability problem. Overall, we concluded from these issues that 'economic efficiency is inclined to overuse the resources of our planet and erode the internal relations which sustain our societies and living environment, all justified by a market fundamentalist illusion that this is objectively necessary and socially beneficial.' This reaffirmed our earlier finding that economics and sustainability are incompatible, and that economics is unable to provide an effective solution to sustainability issues.

Part C examined the consequences of economic limits in relation to theories of the firm and attempted to outline a sustainable alternative to this discipline. We started with a critical discussion on economic objectivity and explored its political effects on the legal role and regulation of firms. We identified, for example, that the economic assumption that individuals and markets are pre-social has given it a private disposition, meaning that it cannot help but 'discover' that firms are private actors. We demonstrated, moreover, that this conclusion, coming from an 'objective' science, has had notable consequences for corporate regulation and the balance of power between firms, individuals, society, and the state. It has, for example, given rise to a presumption of political innocence that gives firms a strong, scientifically legitimated degree of protection against state intervention to address collective interest issues. Another consequence of this private disposition is that economic solutions are relatively easy to integrate into liberal legal systems with a public-private divide. This is due to the shared liberal roots of economics and law that, at least in Anglo-European jurisdictions, gives them a notable scientific affinity.

Our discussion in Part A identified that modern economic theories of the firm are grounded in a premise that there is no essential difference between the behaviour of individuals in firms and markets. This, in turn, makes it possible for them to model firms as an endogenous outcome of bargaining between free individuals under imperfect economic conditions. In Part C we showed that this approach is consistent with market fundamentalism and the private disposition of economics. We also showed that economic theories of the firm are not, due to the limits of their scientific foundation, able to develop an adequate understanding of firms. They are, for example, unable to identify that organisational structures in firms (such as roles, hierarchies, and committees) have a negative impact on the ability of individuals to make 'free' moral decisions. A corollary to this point was that firm agents with economic expertise cannot, because of this moral impairment and the prejudice of economics against non-economic concerns, be expected to reason adequately about the collective interest. A second corollary was that the application of economic solutions to governance issues is likely to further impair the moral capacity of firm agents.

In Part C we also examined how the idea that individuals are pre-social has influenced modern economic approaches to corporate ownership and good governance. In general, we noted that modern economics is only able to explain the corporation as an efficient economic phenomenon if it assumes that it is some

kind of maximising, pre-social individual. We identified that this is pregnant with political implications and leads, for example, to an inevitable 'finding' that shareholders are corporate owners. This finding is inconsistent with the legal construction of corporations and has, like the private disposition of economics, had significant implications on the balance of power between corporations, individuals, society, and the state. In the US, for example, it undermined the scientific support for New Deal-type regulation of corporate activities.

We also demonstrated that shareholder ownership is embraced by every modern economic perspective on good corporate governance, and that it underpins the way that these perspectives try to optimise three dimensions of corporate efficiency (efficient control, efficient ownership, efficient contracting). As an aside, we showed that these three dimensions are a better way to conceptualise the agency problems of corporations that are commonly viewed as the central issues in corporate regulation and governance. In relation to sustainability, we described how economic approaches to good governance have, over time, adapted their definitions of efficiency in order to grant corporate leaders an economic 'safe space' that allows them to economically justify their sustainability-related activities. Critically, however, we noted that this safe space can only be created by assuming that sustainability issues are essentially economic and by seeing how they can create financial or non-financial value for the firm. This promotes economic imperialism and impairs the effectiveness of corporate approaches to sustainability that are inspired by economics. Another relevant point is that these approaches further buttress the private status of firms and the privileged position of shareholders, showing that they are neither neutral nor adequate in their application and results.

We subsequently challenged the market fundamentalist premise that markets are pre-social. We did so by outlining a scientific framework which shows that the state has a generative rather than appropriative role in relations to markets and firms. In general, we examined how the state can use social conventions such as law, property, money, and markets in order to mobilise money, people, and resources in a way that is consistent with the collective interest. We also discussed how and why it might want to create firms.

We started our analysis by looking at legal theory and identified that the public-private divide that is foundational to liberal legal systems is actually incompatible with the view that individuals are not pre-social but are constituted by internal relations. It followed that we would need to develop an alternative to this divide. We did so by adopting an embodied view of human cognition, described by Crawford, that sees us not as 'a 'free' atom or disembodied intellect but [as a self that is] situated in the world, lives and acts in that world, and learns about it through experience.' This alternative view made it possible for us to think about the way that human agency – 'the experience of seeing a direct effect of your actions in the world, and knowing that these actions are genuinely your own' – can be shaped by social conventions that are adopted by a generative state. An important consequence of this other view on human cognition is that it leads to a shift in the purpose of state activities. Rather than focusing on the realisation of individual freedom, which is a liberal ideal that underpins the public-private divide, it is instead concerned with the creation and organisation of human agencies in ways that are consistent with the collective interest. One benefit of this shift in state purpose is that it creates space for the values of non-liberal societies; in this regard it is much more consistent with human cultural diversity. Overall, we outlined that the generative state is the apex authority in society that is responsible for its profile of human agency and, by extension, its mobilisation and use of resources. We also highlighted that the social conventions of the generative state have a 'possibility conferring' potential that does not simply limit human freedom but is also creative and enabling since it allows people to experience different kinds of human agency. An important, related point is that each social convention has an intractable nature which is at least partly beyond the state's effective control. In relation to law, we ultimately defined it as written conventions which the generative state uses to enable and constrain different kinds of human agency.

We also discussed the relation between the generative state and property, money, markets, and firms. Regarding the first, we examined the history of Anglo-European ideas on property and identified that economic property theories, which see them as an endogenous result of imperfect market exchange, are inconsistent with the notion of a generative state. We subsequently built on anthropological literature to develop an internal relations model of property which sees property as a relationship between owners, non-owners, and a real or imaginary thing that is designated as property. In general, we specified that the generative state is responsible for the realm of property that is created by adopting property as a social convention. This included, but was not limited, to the enforcement of property, the kinds of acts which are recognised as property creating, and the theories of property that are present in society.

Turning to money, we discussed how theories on money play a central role in economics because they frame how we think about prices, the creation of wealth, and value different kinds of economic activity. We also identified that there are two leading economic theories in this area that are deeply opposed in their views on the role of the state. The orthodox, commodity theory of value posits that money emerged as an endogenous result of private bargaining in a primitive barter economy. The competing, convention theory argues that money was originally adopted as an administrative tool by central authorities such as temples and palaces. Importantly, we demonstrated that only the latter, convention view is supported by archaeological and anthropological evidence. We also argued that the commodity theory, which has no historical support, is primarily designed to be consistent with the market fundamentalist premise that economic activities are pre-social. Put differently, it serves the methodological needs of economics as opposed to shedding light on the actual role and development of money.

Building on the convention theory, we proposed that 'money is a convention which the generative state can adopt to administer the mobilisation of resources, goods, and services in accordance with the collective interest.' It follows from this view is that the state is fundamentally related to, and responsible for, all market exchange in society. A number of implications followed from our discussion on money: First, states are currency issuers which means that it is wrong to draw a parallel between state finances and those of individuals or firms. It also means that the state should be more concerned with the integrity of the monetary system as a whole rather than whether it has enough budget. Second, the state does not need to appropriate money from market actors in order to finance its activities; it can always create more money within the limits of intractability that are imposed by monetary integrity. Third, the main purpose of taxation is to animate currency and influence human agency and resource use, not to generate financial wealth for the state. Fourth, individual exchange does not create money but only redistributes it. A corollary to this point is that profitable firms and sectors, if they are populated by currency users rather than currency issuers (such as banks), do not create financial wealth for society. Fifth, we stressed that it is wrong to draw a social similarity between financial and non-financial wealth since, at a societal level, the total value of money can only be zero or negative. A final implication was that prices, since they are the result of a social convention adopted by a generative state, are unable to reveal any objective truths about the nature of economic dynamics throughout the universe.

We subsequently used the convention theory of money to outline the relationship between markets and the generative state. In general, we identified that the adoption of money leads to the social construction of a monetary realm that can be used as an administrative tool to mobilise people and resources so that they contribute towards the collective interest. We subsequently defined that markets are 'the interface between the monetary realm and human agency; they are where the incentives of potential reward opportunities are crystallised, and where resources are mobilised and turned into an experience of reward'. Our discussion on markets also identified that money, after it is created by a currency issuer, always mobilises more human agency and resources than the original purposes envisioned by the issuer. This extra mobilisation is part of the reward incentives which are provided by money and is needed, alongside taxation, to ensure that a currency is usable and generally accepted by the population. It is also an important, intractable feature of money which entails that the state only has a limited ability to control market activities. Overall, we saw that markets and the monetary realm contribute towards the

creation, alteration, and discouragement of different kinds of human agency and resource use in society. We also saw that orthodox economics, which relies on a commodity theory of money and sees it as a scarce resource that needs to be created through market exchange, is inclined to encourage rather than limit human agencies which mobilise additional resources for the mere sake of monetary value. This is an issue for sustainability since it wastes human agency and resources on the false premise that societies need to make money via exchange.

In relation to firms, our discussion on the generative state showed that they are not, and cannot be, pre-social. In this regard we outlined how they can be directly created, directly enabled, or indirectly enabled by generate state conventions. A notable corollary to this point was that we should not refer to firms as private actors since this implies, due to the liberal roots of these terms, that they are pre-social. Another important insight was that firms are an instrument that is provided by our societies so that people can experience certain kinds of agency, e.g. to make a living as a baker and business owner. This showed that the generative state is eminently responsible for firms while also confirming that personal initiative is an unmissable element of firm activities. Like musicians, every person will 'play' their instrument differently. It follows that there is no fundamental antagonism between state regulation of firms and the use of firms by people. This is contrary to economics which, due to its view of firms as pre-social, cannot help but see non-economic state activities as an actual or potential threat to firms and markets. To be sure, we also stressed that 'the absence of a fundamental antagonism does not mean that there is no creative, political, social, or other tension between states, firms, and people', only that there is greater scope for desirable synergies between these parties.

In Part C we also explored the relationship between firms and the generative state. For this purpose, we introduced the concept of 'dimensions of the firm' and defined them as 'any actual or potential feature of firm activity which the generative state can modify to shape its profile of human agency and resource use'. We also used this concept to create an original, topographical model of the firm that 'sees its nexus of internal relations as a peak in an imaginary, social landscape.' One benefit of this model is that it solves a long-standing analytical problem in the legal and economic analysis of firms, namely where to place their internal-external boundary. A second benefit is that it makes it both possible and reasonable for firms in different societies to have different dimensions based on their particular needs and wishes. An important, political insight from our internal relations model of the firm was that people in firms need stability if they are to experience a genuine sense of human agency in firms. This means, in a way that is consistent with liberal values, that there are reasons to protect firms from excessive state activity even in the absence of a public-private divide.

After outlining our model of the firm, we examined five dimensions of the firm in more detail: property, governance, agency profile, business model, and funding sources. One notable insight from our analysis was that we cannot infer, from either property or governance structures alone, what kind of influence their arrangement will have on a firm's profile of human agency or resource use; there is simply too much variation in the creative potential of these dimensions when different people are involved under different circumstances. A second insight was that the purpose of a firm, formulated at either the societal level or that of individual firms, can have a performative effect on the decisions of its people. In detail, we showed that purposes may help to reduce the effects of voluntary financial moral impairment which arises from the pursuit of money as an end in itself. It cannot, however, address involuntary financial moral impairment which occurs due to the adoption of currency as a social convention. Overall, we showed that the decision-making of firms cannot, via the adoption of purposes or any other means, be perfected in pursuit of socially optimal outcomes. This contradicts an influential argument, promoted for example by Mayer and Edmans, that a change in corporate purposes can promote the sustainable transformation of capitalism. A third insight was that the generative state should also investigate human agencies which emerge from interactions between firms, sectors, and professions. We demonstrated that this information can be used to constrain exchange opportunities in order to promote, for example, the integrity of professions such as accounting or medicine, of special sectors such as the media, or to

promote circularity within a certain sector of the economy. A fourth insight was that the profitability of a business model is not, in and of itself, a sufficient argument for its use or discontinuation. Instead, the more salient issue from a generative state perspective is whether it enables kinds of human agency and resource use that are consistent with the collective interest. This is consistent, moreover, with our earlier point that societies do not need to 'make' money and therefore do not need to enable as many profitable business models as possible. A fifth and final insight, related to funding sources, is that the generative state, as the ultimate authority and currency issuer of society, can provide funding for firms in any number of creative ways, ranging for example from private banks and the use of personal savings to local governments, community banks, and consumer representative bodies. Each of these options has different implications for the human agency profile and resource use of firms since they are likely to provide funding under different conditions. In general, however, it has to be stressed that there is no economic law which holds that firms must be funded through commercial banks, private savings, or the contributions of foreign investors. A corollary to this point is that states do not need to temper their social and environmental regulation of firms for fear that this will reduce the profitability of investors.

Lastly, Part C discussed the limits of economic efficiency in relation to economic theories of the firm. We also critically examined its limits in relation to the sustainability of firms, and outlined an alternative approach to economic efficiency that might be able to provide more sustainable outcomes. Our starting point was to examine economic theories of values in order to see how it is possible for firms across all sectors, regardless of the different kinds of goods and services that they provide, to be economically efficient in the same, universal way. It turned out that this universal analysis is enabled by the utility theory of value which holds that economic efficiency is maximised when a firm uses its inputs to satisfy the largest possible number of individual preferences, as reflected in the prices of its exchanges. This, in turn, allowed us to identify that price increases are the universal, abstract 'value' that is, more or less efficiently, being created by all firms.

We next discussed the 'value-maximising firm', an ideal benchmark for the performance of firms based on the maximum pursuit of economic efficiency. We saw that this ideal applies to both the financial and non-financial performance of firms, noting for each of these aspects that there is no perfect measure which can determine, in practice, whether this ideal has been attained. We also noted that measures of financial performance are reliable measures for the economically efficient performance of firms when there are no market failures, and that non-financial measures are needed to assess firm performance when there are such failures. In terms of economic theory, the greater the extent of market failures, the greater the need for non-financial measures of firm performance to assess whether firms are operating efficiently.

Our discussion on financial performance outlined how a financial mode of perception, commonly used by creditors and investors, is grounded in a belief that it is sufficient to look at the financial performance of firms in order to assess not only their economic efficiency but also their social contribution. It also showed that this mode of perception relies on an assumption that markets operate under (nearly) perfect conditions since this is the only way that financial measures can offer an effective economic proxy for the non-financial value creation of firms. Importantly, we showed that firms are driven to emulate the ideal of the value-maximising firm due to a 'universal system of measurement and rewards' that has been constructed on the financial mode of perception. This system grants privileged treatment, such as better access to credit, to firms that act in 'right' kind of efficient manner, as described by economics and finance. One consequence is that firms which focus primarily on non-economic objectives, such as sustainability, are denied a level playing field within the economy as a whole. This led us to consider that that the success of profit-driven firms might not be an inevitable feature of 'natural' economic dynamics, but might be a performative result of internationally dominant, economic ideas on how firms 'should' operate. Put differently, there is no 'natural' reason for firms with a ruthless focus on profit to dominate the market.

Our discussion on non-financial performance found that these kinds of measures are unable to transform the sustainability of firms since they are primarily designed to promote economic objectives. This was evident, for example, in the concept of materiality which plays a key role in contemporary discussions on business sustainability and was, as we showed, developed out of economic theories on market failure and value creation. It was also evident in our historical discussions of CSR and ESG which highlighted that they are designed to be consistent with economics, subject to its limits, and are unable to overcome its inherent unsustainability. A final piece of evidence was that due diligence approaches, which are often highlighted for their potential to make firms more sustainable, are in fact unable to do anything more, even under the best of circumstances, to tackle the market failures of particular firms. Overall, we concluded that current approaches to the non-financial performance of firms are unable to provide a structural answer to the shortcomings of economics. In fact, they are bound to expand the financial mode of perception and the universal system of measurement and rewards in ways that are consistent with the unsustainable scientific foundation of economics. It follows that firms which focus, even with best intentions, on the balanced creation of financial and non-financial value are unable to achieve anything more than suboptimal sustainability results within the limited framework that is provided by economics.

To shed more light on these issues, we explored and critically analysed efforts to value nature that are likely to become a mainstream practice among firms in the coming years. These efforts are widely seen as an integral part of the transition from shareholder to stakeholder capitalism, and as necessary to tackle corporate short-termism. The latter is the currently leading explanation for the unsustainability of firms, and the former is being advocated by influential businesses, academics, and international organisations as 'the' sustainable alternative to our current political economic system. In general, we explained that valuations of nature are part of an effort by environmental economists to develop an inclusive measure of wealth which can replace GDP and enable sustainable development. We showed, moreover, that these valuations are, due to their theoretical design and methods, embedded in the scientific foundation of economics and are unable to transcend its limits.

In relation to firms, we showed that they have only recently been able to use these valuations in practice. As we saw, this ability has arisen due to recent theoretical developments in environmental economics, the creation of new digital tools and databases, and the international emergence of an extensive support network of commercial and non-commercial parties that encourages and provides support for their use. We also pointed to pressure on firms from markets and regulators which expects them to help address the loss of ecosystems and biodiversity by efficiently managing their financial and non-financial value creation. In terms of critique, we showed that valuations of nature can only be economically efficient or value maximising when markets are free and operate without market failures. It followed that their 'success', as a form of environmental policy, is reliant on the effective implementation of economic ideas which, as we have seen, are inherently unsustainable. These valuations are, moreover, likely to exacerbate the unsustainability of economics insofar as they promote economic imperialism, rely on the pursuit of economic efficiency, buttress the private disposition of economics, extend the application of economic individualism, have an anthropocentric focus on the satisfaction of human preferences, and erroneously assume that the economy is generative and 'makes' money.

Overall, these issues revealed that the promise of stakeholder capitalism to make our societies and firms sustainable is overstated due to its unsustainable economic foundation. We also identified that short-termism, as a diagnosis for corporate unsustainability, is incomplete and incorrect. It is incomplete since it is economic science, and not only shareholder primacy, which is unsustainable. And it is incorrect since the inclusion of stakeholder interests in corporate decision-making and a focus on financial and non-financial value cannot address the economic roots of corporate unsustainability. We subsequently suggested an alternative problem diagnosis, namely that economic reasoning and its concomitant moral impairment, limitations, prejudices, and antagonism towards internal relations are undermining the already imperfect ability of firms and firm agents to adequately understand and decide on the collective

interest. It follows that issues with shareholder primacy, time horizons, and the interests of stakeholders are only a very small part of a larger and more significant puzzle. A corollary to this diagnosis is that economic efficiency needs to be abandoned as a neutral or desirable ideal if we are serious about the sustainable transformation of our firms and societies.

To help facilitate this transformation, we outlined a new, generative theory of value to complement our earlier analysis of the generative state. This was necessary because, as we identified, the latter does not explain why we might want to mobilise money, people, and resources in one way or another. In relation to the theoretical foundation for our theory of value, we identified that we would need to think about value in terms of internal relations as opposed to prices, and that we would need to exclude money from our definition of value. We also noted that we should articulate our theory of value from an overarching, human perspective instead of on the basis of individualism. Next, we defined values as 'conceptions of the desirable', and value as 'a contribution towards the fulfillment of conceptions of the desirable as embedded in larger totalities of internal relations.' A corollary to our theory of value is that value and values are subjective and do not have any kind of objective status. This was necessary to enable value pluralism and recognise that different people and societies can reasonably have different values (conceptions of the desirable), thus making it possible for different societies to mobilise money, people, and resources in a way that is consistent with their needs, wishes, history, environment, culture, etc. This is, of course, rather different from economics which is grounded in value monism (with money or utility as the dominant value) and asserts that every society should emulate the free market utopia that was outlined by Smith and is embedded in economics. An important final point regarding our theory of value is that it advises societies to empower people and mobilise resources on behalf of four imaginary totalities on the assumption that these have intrinsic value: individuals, society, the environment, and the universe. It helps to clarify that this attribution of intrinsic value is not a claim about the 'objective' or independent value of these totalities, but is part of a deliberate effort to compensate for the limits of human subjectivity which prevent us from developing a complete picture of all the internal relations in which our species is embedded, and whose thriving is key to overall human value.

A key insight from our generative theory of value is that it shows how diverse states and societies can use money to mobilise people and resources in a way that is directly consistent with their values. This can again be contrasted with economics which claims that the economy can only support non-economic values in an indirect manner, via the promotion of economic efficiency. A corollary to this point is that our theory of value and framework for a generative state offer no blueprint for an ideal kind of state or society. Another corollary is that our societies have considerable scope for creativity in the organisation of their exchange arrangements, especially since there is no strict need to focus on economic efficiency or market liberalisation. To demonstrate how this creative scope might be used, we developed the concept of marketecture as an alternative to economics. It showed that, rather than focusing on prices as a reflection of natural economic laws, we can use social conventions to create and manage price differentials so that the dynamic flow of people, resources, and money is consistent with the collective interest and the realisation of human value.

A notable caveat in relation to marketecture, our theory of value, and the generative state, is that they are not inherently sustainable insofar as they make it possible for societies to pursue values that are not related to sustainability or are unsustainable. It is nonetheless significant that their combined scientific approach makes it possible to enable the direct pursuit of sustainability as a social value. This is rather unlike economics which, as we have seen, only make it possible to pursue sustainability in an indirect and suboptimal manner. Overall, this difference entails that our generative state framework provides a superior scientific approach as compared to economics for the sustainable mobilisation of money, people, and resources.

In relation to firms, we noted that they help individuals and societies satisfy their values and therefore provide an important contribution to human value. We also noted that they are, due to their commercial

orientation, more likely to satisfy individual values rather than social or environmental ones. Overall, we identified that there are significant opportunities to make firms more sustainable than is currently the case. Options include the use marketecture to create a commercial ecology that can sustain values-oriented firms, the insulation of values-oriented firms from harmful competition, and the enabling of a wide(r) range of organisational experimentation and diversity. We also recommended the use of social conventions and the management of price differentials (i.e. marketecture) to support sustainable firms via the creation of commercial niches, and advised the creation of universal systems of measurement and control that promote the survival and emergence of values-oriented firms.

A related insight was that it is counter-productive to expect firms to optimise and 'perfect' their financial and non-financial decision-making in the way that is being recommended for the economically-inspired transition to stakeholder capitalism. The problem with this approach is that it imposes an impossible burden on firms; they have no way to escape their condition of moral impairment and are therefore unable to perfect their decision-making. This sets them up for failure and exposes them to criticism for responding inadequately to sustainability issues that they cannot, in fact, solve. In the long-run, this can only breed mistrust between firms and the rest of society, and contribute towards the further escalation of social and environmental issues. In this regard it seems that stakeholder capitalism, like other uses of economics, is more likely to exacerbate sustainability issues than to resolve them. This scenario may be contrasted with marketecture which grants firms an important, but not leading, role in the pursuit of sustainability. Rather than making firms responsible for all the problems associated with their activities, it regulates the market context of their operations so that they are, to a greater or lesser extent, precluded from making decisions that are inconsistent with social values. It works with, rather than in ignorance of, or against, their intractable nature as socially constructed actors. This creates space for effective approaches to sustainability and lets firms do what they are good at in a way that is consistent with the values of their agents and of society more broadly. To paraphrase, we might say that firms are free from unreasonable expectations, and that society is free to pursue sustainability. Under economics, only the market would be free.

In general, it should be understood that none of the sustainability options that we identified to improve the activities of firms can be effectively implemented alongside the ongoing hegemony of economics. One issue is that any firms trying to implement these options will be structurally disadvantaged by the universal system of measurement and rewards that is currently grounded in economics. A second issue is that, without state involvement, the cumulative acts of people and firms are unable to create the type or scale of price differentials that are needed to make firms and markets sustainable. These issues entail that we need to repurpose state authority so that it no longer relies on economics for the design of social arrangements and conventions. More broadly, we must contest the legitimacy of economics in the halls of power and the transnational networks of academics, firms, and state agents. The justification for this scientific challenge is clear: we have no hope to effectively mobilise people, resources, and money to address escalating issues such as climate change, biodiversity loss, and inequality if we keep relying on economics.

To be clear, this book does not claim that economics is unable to mobilise money, people, or resources, or that it is incapable of operating as a functional blueprint for the design of social arrangements. Rather, the claim is that economics has outgrown the original purposes of its liberal roots and is, after 250 years of scientific development, no longer scientifically up-to-date or able to address the overarching needs of society. This does not mean that liberal values are inherently wrong or obsolete, but only that the market fundamentalist utopia that was founded in their name is no longer a viable social blueprint for

their realisation, or for the realisation of new, pressing values such as sustainability.[6] Lukes explains the issue well when he writes:

> "[The liberal, abstract] way of conceiving the individual was historically progressive. It was a crucial weapon in the breaking down of traditional privileges and hierarchies, in the dissolution of separate and incommensurable social orders and ranks, and in the establishing of universal human claims in the form of legal rights. The formal legal framework of modern democratic societies is the guardian of the abstract individual. It provides for formal equality (before the law) and formal freedom (from illegal or arbitrary treatment). These are crucial and indispensable gains but, if we are to take equality and liberty seriously [and I would add, sustainability], they must be transcended. And that can only be achieved on the basis of un-abstracted individuals in their concrete, social specificity, who, in virtue of being *persons*, all require to be treated and to live in a social order which treats them as possessing dignity, as capable of exercising and increasing their autonomy, of engaging in valued activities within a private space, and of developing their several potentialities."[7]

Lukes' comment invites us to appreciate the contributions of liberalism and economics to human value while also sensitising us to the need for a better framework which is able to transcend their limits. The issue, as we have seen, is that these disciplines go too far in their attempt to free people, via abstraction, from an 'unfree' social context. They fail to appreciate the fact that we are inextricably interwoven with the world around us and cannot help but erode the human individuality that they intended to protect. It is clear, moreover, from the severity and intensification of sustainability issues, that we have reached a tipping point where their application is creating more issues than they can reasonably solve.

This is apparent not only from the fact that groups as dissimilar as Extinction Rebellion and the World Economic Forum are both calling for system change, but also from our analysis which shows that the market fundamentalist blueprint that was outlined by Smith has become a false utopia. When examined through a contemporary scientific lens, it is easy to see that his design is riddled with inaccuracies about human history and human nature, is wrong about the separation between social and economic dynamics, is ignorant about ecosystems and our environment, and incorrectly assumes that the aggregate economic activity of free individuals is able to give full expression to human value. We have seen, moreover, that the *Wealth of Nations* that was intended to liberate the individuals of our societies has, via the rise of economics, resulted in their domination by a market mechanism that grants them only a limited freedom to act in accordance with their 'natural' propensity to truck, barter, and exchange. In this regard the primary freedom that economics has given us is to obey economic gravity, everything else is secondary.

The inevitability of this domination, as reflected in a belief in capitalism, has made it considerably more difficult to talk about and address actual issues. As Ghosh writes, "Western intellectual and academic discourse is so configured that it is easier to talk about abstract economic systems than it is to address racism, imperialism, and the structures of organized violence that sustain global hierarchies".[8] A prime example of this is provided by Piketty's *Capital in the Twenty-First Century.*[9] This work is certainly well-intentioned and argues, *inter alia*, that states should adopt a progressive wealth tax to address inequality. However, the problem diagnosis that it provides is formulated as a market fundamentalist 'law of capitalism' which dictates that inequality grows whenever rexturns on capital exceed economic growth. This cannot help but propagate the false belief that there are natural economic laws and the underlying belief that there is a Platonist economy which exists 'out there' and dictates how we must organise our societies. The result is that it draws economic abstractions into discussions on inequality which, as our analysis has shown, do not account for the generative role of the state and only make it

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[6] To borrow a phrase from Eulau, "these modes [of thinking] no longer serve the task of adjusting man to his environment and of shaping the environment to man's needs" (Eulau (1966) From utopia to probability - liberalism and recent science, p. 6).
[7] S. Lukes, *individualism* (ECPR Press, 2006), 122.
[8] Ghosh, p. 120
[9] Piketty *Capital in the Twenty-First Century*

possible to pursue non-economic values indirectly via the direct pursuit of economic values. It is the interposition of these abstractions into the discussion which then leads to suboptimal results and makes it easier, as Ghosh points out, to argue about their nature than to focus more concretely on the issues at hand. Piketty's work provides one example, but this interposition is a problem in any discussion which relates to the 'real' nature of capitalism or relies on economic abstractions such as 'the economy' and posits its existence as a real, separate entity. Unfortunately, the pervasiveness of economics both in- and outside of the halls of power means that our thinking on countless topics, ranging from markets and budgets to inflation, poverty, and jobs, has been polluted by abstractions that introduce little more than a corrupting 'Midas touch' in terms of limiting beliefs and suboptimal outcomes.

The evidence for this Midas touch is pervasive and extends well beyond the topics covered in this book. If we look at state policies and governance, we can see its influence for example in the implementation and failure of New Public Management.[10] Its fingerprints are also apparent in the suboptimal results of market-based approaches to healthcare, public transport, water management, and other social services.[11] It explains, moreover, why economics and finance ministries have such influence relative to other state organs, and why state budgets are often viewed more critically than state achievements in the pursuit of non-economic values. It also helps us understand why wealthy billionaires can, with impunity, purchase leading media platforms and turn it into their private kingdoms.[12] Lastly it clarifies why, during the Financial Crisis 2008 and the subsequent European Debt Crisis, states focused on bailouts for private banks and did not restructure debt relations and business models in the financial sector more broadly.[13]

The Midas touch of economics also permeates the design of regulation and legal decisions, and can be seen, for example, in the substance of competition law, trade law, commercial law, property law, tax law, contract law, environmental law, intellectual property law, and elsewhere. Consider, moreover, the EU single market which tries to realise a market fundamentalist utopia, and its Stability and Growth Pact which imposes limits on state budgets with reference to ill-conceived economic ideas about money as a commodity.[14] Economics holds such sway that the EU even imposes an economic consistency test on its legislation via the regulatory fitness and performance programme (REFIT) which "aims to ensure that EU laws deliver on their objectives at a minimum cost for the benefit of citizens and businesses."[15] A similar impairment is evident in the recent ruling of Germany's constitutional court which held, based on laws inspired by economic theories on state debt, that €60 billion which was earmarked for the COVID pandemic could not be reallocated to address the climate crisis.[16]

At the international level, the Midas touch helps to explain why international treaties to promote free trade have been regularly successful, while global efforts to promote non-economic concerns have often foundered in the face of lobbying by wealthy states and businesses.[17] It also helps us understand why economic associations and institutions such as the WTO, G7/G20, WEF, World Bank, and IMF are so influential despite their long-standing failure to effectively realise non-economic values or tackle global issues. If anything, the straitjacket that is provided by their economic reasoning has undermined global multilateralism and made it more difficult, not easier, to imagine that humans can achieve laudable results through international collaboration. A poignant example of this failure was revealed during the

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[10] [*check bookshelf for book on New Public Management*]
[11] [*add literature which criticises market-based approaches in various areas*]
[12] Musk.
[13] [*add critical discussion on Financial crisis*]
[14] [*add earlier reference to EU single market and new reference to the Stability and Growth Pact*]
[15] https://ec.europa.eu/info/law/law-making-process/evaluating-and-improving-existing-laws/refit-making-eu-law-simpler-less-costly-and-future-proof_en
[16] Top court blows €60B hole in Germany's climate financing plans – POLITICO
[17] www.theguardian.com/environment/2023/dec/13/cop28-landmark-deal-agreed-to-transition-away-from-fossil-fuels?utm_term=657b1ac8ff83b4991e2587919b7e6aad&utm_campaign=DownToEarth&utm_source=esp&utm_medium=Email&CMP=greenlight_email

COVID pandemic, when the EU and other wealthy states opted to protect the profits and intellectual property rights of pharmaceutical companies instead of helping to ensure the fair and global distribution of vaccines.[18]

Importantly, our analysis has shown that there is no 'economic' need to follow the advice of economists for the design of social arrangements or the mobilisation of money, people, and resources. Instead, we are at liberty to follow our insights regarding the generative state and to use money, markets, firms, and other social conventions in any number of creative ways to satisfy our individual and social values. If our analysis is correct, and it is true that economics is unsustainable, then states and societies which use a generative state approach should achieve better outcomes in terms of human value and resource use when compared to those which continue to use an obsolete economic paradigm. They should also have greater flexibility and capacity to tackle not only sustainability issues, but also problems related to democratic governance, industrial policy, disinformation and fake news, ethnical and cultural conflicts, international diplomacy, education, and healthcare. It is, for example, implausible to think that the EU would have opted to protect its pharmaceutical companies rather than promote universal vaccination if it had looked at this dilemma from the perspective of marketecture and the pursuit of values rather than in terms of economic concerns, especially given its commitment to human rights. It is also easier to visualise the success of diplomatic efforts to address global crises such as biodiversity loss and climate change when states can openly discuss their promises in terms of values, goals, people, and resources, without also needing to worry about false economic imperatives such as limited budgets, international competitiveness, and the 'need' to create money through trade and free markets.

A corollary to the above is that there is no need to engage in the rat race of economic globalisation that is predetermined to waste global resources, impair the realisation of human value, and undermine the open expression of human cultural diversity. A second corollary is that there is no need for societies to permit or enable the widespread use of marketing and advertising.[19] The cultural pollution that is created by these practices in terms of consumerism and psychological issues, and the resource waste that they create through planned obsolescence and excessive consumption, is wholly unnecessary.[20] Since trade does not make money, state budgets do not depend on economic activity, and markets are not the only reasonable way to mobilise people and resources, it follows that there is no fundamental link between economic growth and human prosperity. By extension, there is significant potential to redirect human agency and resources away from unnecessary activities that are purely driven by economic reasoning, towards those that are more effectively able to realise human value. Less people in marketing, more ecologists and farmers. Fewer bankers and commercial lawyers, more artisans and artists.

A third corollary is that the implementation of technology, such as robots and AI, does not need to be primarily governed by economic concerns or the interests of private actors. Instead, the generative state approach makes it possible to regulate these technologies according to their effects on human agency, human value, and resource use. More specifically, marketecture makes it possible, via the careful tuning of price differentials, to alter the financial viability of these technologies' business models so that their implementation is not primarily determined by those who are able to own and profit from them. This allows us to transcend the conflict between the private benefits and social costs of using technology – we would no longer need to ask whether technology will 'replace' people or what it 'means' for the unemployed, especially in light of our earlier advice that states should offer a job guarantee.

A similar transformation in thought about the role and regulation of firms is also enabled by our analysis of the generative state. Since the point of firms is not to 'make' money for society, it follows that there should be less concern about the financial impacts of regulation, or of liability or prosecution following

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[18] [*add reference to failure of solidarity regarding COVID vaccines*]
[19] [*add critical reference to there being no need to do marketing / advertising*]
[20] [*add references to (un)planned obsolescence*]

unethical behaviour. Put differently, it is not a problem for society if, for example, the prosecution or removal of unethical managers results in decreased financial performance for a firm due to reputational loss. Instead, it is more important to ask a different question, namely whether this kind of intervention will undermine the provision of goods and services that are necessary for the collective interest. If there is such a risk, then the state intervention can still be enacted but in combination with additional measures such as subsidies or guaranteed purchases in order to secure the continuity of firm activities. This makes it easier to address ethical problems in firms while at the same time allowing more tailored interventions in the collective interest. These kinds of counterpodal interventions, which simultaneously 'punish and protect' or 'regulate and reward', are incompatible with economic reasoning insofar as they run contrary to its private disposition, focus on economic efficiency, and commitment to free markets. They are also incompatible with legal approaches to intervention that are grounded in the rights of private actors and individualist ideas on moral responsibility and punishment.[21] In general, these approaches try to ensure that the punishment or reward of individuals (and firms) is proportionate to the extent of their blameful intent or behaviour.[22] They are inconsistent with the suggestion that it might be desirable for different dimensions of the firm to be, in the wake of problems at firms, simultaneously subject to both positive and negative responses. A notable benefit of counterpodal interventions is that they make it possible to address and transcend typical concerns about the broader 'economic' impacts of state regulation and intervention, such as reputational losses for the sector, declines in manufacturing capacity, decreased employment opportunities, etc.[23]

For context, we can note that these interventions are enabled by our internal relations model of the firm which does not model them on the belief that they are either an individual 'whole' or consist only of the individuals therein, but instead posits that they have different dimensions which can, in principle, be modified in accordance with the collective interest. The result is that, instead of needing to think separately about the regulation or liability of 'the firm', or of 'the individuals' in a firm, we can consider them simultaneously, alongside other firm dimensions, in order to achieve collective interest outcomes. Critically, this approach makes it possible to consider the moral responsibility of individuals, and of firms as artificial persons, without succumbing to the liberal premise that their moral failings need to be solved within the public-private divide or through the optimising logic of 'free' moral individualism. The overall, counterintuitive result is that, by zooming out and looking at the bigger picture of the firm in terms of its ontology as a social construct, its different dimensions, and the context of its activities, it becomes possible to zoom in more effectively and develop better interventions that are both locally and socially relevant. The results will never be perfect, but at least they will not be impaired-by-design as we saw with the shortcomings of economics and the public-private divide.

Another insight regarding firms is that our societies are likely to benefit from decoupling the structural dependence of firms on profit-oriented sources of funding such as commercial banks, stock exchanges, hedge funds, etc. While economics suggests that these sources are able to impose the right incentives for market discipline, we have seen that their demands for profitability are likely to encourage firms to see money as an end in itself, and to increase the extent of their voluntary financial moral impairment. This is an issue not only for funding sources that focus primarily on financial value, but also for those which try to balance financial and non-financial value creation. The result is that firms are, in general,

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[21] Wolgast, *Ethics of an Artificial Person*.

[22] This is reflected, for example, in the modern criminal legal concept of 'responsive regulation'. See, for example, John Braithwaite, The Essence of Responsive Regulation, 44 U.B.C. L. REV. 475 (2011). I think Foucault also says this, but check. It should be noted that this same individualist approach is not evident in economic approaches to regulation which are more concerned with the overall, deterrent effect of punishment as a combination of its severity and the likelihood of being caught (the seminal text is: Becker, Gary S. "Crime and punishment: An economic approach." *Journal of political economy* 76.2 (1968): 169-217).

[23] Generally, see: John C. Coffee Jr, "'No Soul to Damn: No Body to Kick': An Unscandalized Inquiry into the Problem of Corporate Punishment" (1981) 79:3 Mich L Rev 386 at 389-93.

driven away from being values oriented. This effect is especially pronounced for large firms since their ability to become large firms, i.e. to attract funding and scale up their activities, is usually contingent on profit-oriented sources of funding. Overall, the result is that our societies are unlikely to develop large, values-oriented firms so long as we allow investors to take the main decisions about which firms 'deserve' to become successful. This is especially problematic given the structural significance of large firms in many markets and sectors. As evidence, consider the market power of supermarkets relative to other actors in the value chain, and the use of this power to squeeze profit margins and affect the viability of values-oriented business models.[24] Problems with profit-oriented sources of funding are also apparent in the development and dissemination of new technologies. This is clear from the research of Mazzucato which shows that investor-led approaches result in lower degrees of technological innovation and make it more difficult for firms with new business models and technologies to scale up for societal impact.[25] In terms of possible alternatives to profit-oriented sources of funding, we already mentioned community banks, local governments, and consumer representative bodies. There are, in fact, any number of other options. The fact that money is not a commodity but an administrative tool means that we are limited only by our imagination and the intractability of social conventions.

At this point it is fair to ask: what remains of economics? To start, we can reiterate that there is nothing wrong, in principle, with the use of imperfect and subjective assumptions in scientific practice. In this regard it can be reasonable to use individualist theories and methods, or to advocate the use of liberalised markets as part of the repertoire of policy approaches that can be used by a generative state. It may also be useful to think about market dynamics in terms of equilibrium theory, to examine a given situation on the basis of individual incentives and self-interested rationality, or to study statistics and prices for various markets, goods, or services. It does not, however, follow from these considerations that there is a scientific 'baby' in the economic bathwater that must be kept and cherished. The heart of the issue is that the theoretical and methodological core of economics, based on market fundamentalism, cannot be reformed so that it overcomes the limits that we identified in this book. It is inherently unsustainable, misconstrues the nature of scientific practice, is grounded in historical untruths, and relies on harmful reductionism. It is predetermined to achieve economic objectives and make it more difficult to pursue non-economic values. Additionally, if we abandon central economic concepts such as capitalism, the idea of an economic system as separate from society, the invisible hand as a natural economic structure, a Platonist view of prices, free markets and economic efficiency as universal benchmarks, and the use of GE models, GDP, and representative economic agents, then little remains as a scientific paradigm that would be recognisably 'economic'. The very name of the discipline refers to an artificial separation that is challenged by our analysis of the generative state. This suggests that the contemporary scientific practice of economists will only play a marginal, if any, role in future discussions on the mobilisation of money, people, and resources.

To put the decline of economics in context, it helps to recognise that its marginalist revolution, which also gave birth to its universalist scientific foundation, was enabled by the work of Jevons, Mengers, and Walras – three leading economists from three pre-eminent European empires at the end of the 19th century. The view of these economists, that the exchange practices of their empires were universal rather than particular to their societies, was consistent with imperialist culture which justified expansion and the domination of other societies on the presumption that European civilization, science, and races were universally superior.[26] Given this history, it is not wrong to view the current limits of economics as being, at least in part, a product of 19th century European imperial culture that was adapted and promulgated by the US following its rise to power after the Second World War, and which gained global hegemonic status after the fall of the Soviet Union in 1991. Seen this way, economic globalisation is

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[24] [*add critical reference to the market power of super markets*]
[25] [*add reference to Mazzucato*]
[26] [*add reference to European imperial culture*]

little more than an apogee of an imperial culture that relied on market fundamentalism to scientifically legitimate the global dissemination of its ideas on the 'right' way to organise the economy.[27] We have discussed the failure and political bias of these ideas throughout this book, and identified them as a primary cause of economic disembedding and of our inability to mobilise money, people, and resources to address escalating global crises. This means not only that these crises can only be effectively tackled alongside a decline in economics but also that this is likely to go hand in hand with a decline in what Ghosh refers to as "the absolute geopolitical dominance of the West."[28] Fortunately, a central insight of our analysis is that it is possible to use the generative state to manage these declines in in a gradual way, through a positive transformation of global exchange and diplomatic relations, instead of them needing to occur catastrophically via the inevitable implosion of unsustainable economic globalisation.

In closing, I want to emphasise the hopeful message that this book provides for the future alongside its fundamental criticism of economic unsustainability. It tells us that we have a creative capacity to make our societies, firms, and markets sustainable, and that there is an infinite diversity of possibilities that we can use to mobilise money, people, and resources to address human problems. This is very different from the conventional narrative which suggests that we can only address sustainability issues through economic suffering and hardship, with less enjoyment and lower employment: no more jobs, no more flying, no more meat, no more modern lifestyles. Missing, however, from this discouraging narrative of economic abstinence is that our societies do not need to serve the economy, and that human agency and resources – currently being wasted on an epic scale – can be reoriented to serve the realisation of human value. As we have seen, we can directly pursue social values such as fulfilling jobs, sustainable travel, healthy and delicious meals, quality healthcare and education, and thriving ecosystems, without first needing to sacrifice people and resources on the altar of economic efficiency. We have yet to start exploring the full potential of the generative state, but it is readily apparent that its long-term prospects are far richer and more interesting than what is provided by economic globalisation. And while it is true that escalating sustainability issues will require a constraint of contemporary lifestyles, it is equally true that new experiences of human individuality are possible with the potential to surpass anything we have experienced thus far. A future is available with thriving ecosystems, full employment, more enjoyable jobs, fewer working hours, more time with friends and family, more time for ourselves, and more time to explore the world. And once we start to use the generative state to turn this future into reality, then we can also leave behind the pessimistic view of human nature that underpins economics, and can spark a new conviction that people, alone and in concert, can be a beneficial force, not only for our future, but for that of all species and our planet.

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[27] B. Allan, *Scientific Cosmology and International Orders*, p. 205.
[28] Ghosh, The Nutmeg's Curse, p. 120.