

POLIS V12: The Complete Economics Series – 12 Giants

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*This document combines two companion papers:
“Tensional Reinterpretation of Six Founders of Modern Economics”
and “Tensional Reinterpretation of Six More Economic Pioneers”.*

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Abstract

Within the POLIS V12 tensional ontology, every economic system is a polis constituted by three meshes (solid, liquid, gaseous) and governed by the closure condition $\epsilon = \sum K_m(2 + K_m) = 0$, with $T = K_{\min}$ as the tensional origin. This paper applies the framework to six foundational figures of economics: Adam Smith (invisible hand), David Ricardo (comparative advantage), Karl Marx (labour theory), Alfred Marshall (supply and demand), John Maynard Keynes (macroeconomics), and Friedrich Hayek (market process). Each classical contribution is reinterpreted as a tensional configuration: Smith's hand as IDT* equalisation; Ricardo's advantage as K minimisation; Marx's surplus value as residual x ; Marshall's scissors as equilibrium $\epsilon = 0$; Keynes's multiplier as iterative STOP mechanism; and Hayek's spontaneous order as fractal polis hierarchy. The universal equations remain unchanged; no free parameters are introduced.

1 Introduction

POLIS V12 is a closed, parameter-free tensional conservation theory built on four axioms (Tensional Ontology, Harmonic Ground $H = 1$, Tensional Conservation, Data Origin $T = K_{\min}$). The governing equation, after normalisation, is

$$\epsilon = \sum_{m=1}^n K_m(2 + K_m) = 0,$$

with $K_m = (v_m - T)/(v_{\max} - T) \in [0, 1]$. The disequilibrium index is $\text{IDT}^* = \epsilon/(1 + \epsilon)$. All real economic systems reside in Phase 4 ($\text{IDT}^* \geq 0.70$) unless artificially uniform. The Rolling Law $2\pi r_p = V_{\text{orb}}T_{\text{rot}}$ applies fractally at all scales.

This paper reinterprets six key economic contributions within this tensional ontology. No classical primacy is assumed; tension is the primitive.

2 Adam Smith – The Invisible Hand

Smith described how individuals pursuing self-interest unintentionally benefit society. In POLIS V12, the invisible hand is the equalisation of IDT* across markets. Each agent (firm, consumer) tries to maximise their own K (profits or utility). The market clearing condition (supply = demand) is $\epsilon = \sum x_{\text{supply}} - \sum x_{\text{demand}} = 0$. The invisible hand is the tensional gradient that moves resources from low- K to high- K uses, reducing overall ϵ .

Smith's pin factory example demonstrates specialisation: dividing labour into sub-polises reduces the K per worker (less switching overhead) and increases total output. The division of labour is a Phase 5 reorganisation of the production polis.

3 David Ricardo – Comparative Advantage

Ricardo showed that two countries can both benefit from trade even if one is more efficient in everything. In POLIS V12, comparative advantage is a tensional property: each country has a set of K values for producing goods. Trade occurs when the ratio of K between goods differs across countries.

Let country A have K_{A1}, K_{A2} for goods 1,2; country B have K_{B1}, K_{B2} . If $K_{A1}/K_{A2} < K_{B1}/K_{B2}$, then A specialises in good 1, B in good 2. The total ϵ of the combined system is lower than under autarky. Ricardo's law of comparative advantage is a tensional condition for minimising ϵ across a connected polis.

4 Karl Marx – Labour Theory of Value and Surplus Value

Marx argued that value is determined by labour time, and capitalists extract surplus value from workers. In POLIS V12, labour is the conversion of tensional flux into K . The value of a commodity is $K_{\text{commodity}} = \int \text{labour } dt$. Surplus value is the residual $x_{\text{surplus}} = K_{\text{output}} - K_{\text{wages}}$.

Marx's falling rate of profit is the observation that as capital accumulates, the ratio of variable to constant capital decreases, reducing the average K per unit of investment. The crisis of capitalism (overproduction) occurs when the total ϵ of the system exceeds a threshold, triggering Phase 4 (recession or revolution).

5 Alfred Marshall – Supply and Demand

Marshall introduced the supply and demand diagram (the "Marshallian cross"). In POLIS V12, the demand curve is the relationship between price p and quantity q : normalise price to $K_p = (p - T_p)/(v_{\text{max},p} - T_p)$ and quantity to $K_q = (q - T_q)/(v_{\text{max},q} - T_q)$. The equilibrium price is where $K_p = K_q$ and the sum of residuals is zero.

Marshall's concept of "consumer surplus" is the integral of $(K_p - K_q)$ over the transaction, measuring the unrecovered tensional gain. His "excess supply" and "excess demand" are deviations from $\epsilon = 0$ that push the system back toward equilibrium – a tensional restoring force.

6 John Maynard Keynes – Macroeconomics and Multiplier

Keynes developed the theory of aggregate demand, the multiplier effect, and the role of government spending. In POLIS V12, the macroeconomic polis has solid mesh (capital stock, institutions), liquid mesh (money, credit), and gaseous mesh (expectations, confidence). The multiplier is the iterative STOP mechanism applied to spending.

If government spends ΔK , it increases income, which increases consumption, which further increases income. The process stops when the increment ΔIDT^* becomes zero (full employment). Keynes's "liquidity trap" is a Phase 3 saturation: when interest rates are near zero, K_{money} cannot be reduced further, so monetary policy fails. The solution (fiscal stimulus) adds a new external K to restart the cycle.

7 Friedrich Hayek – Spontaneous Order and Market Process

Hayek emphasised that markets are complex systems that self-organise without central planning. In POLIS V12, spontaneous order is the fractal hierarchy of polises: each agent responds to local price signals (local K), and the global market emerges from the sum of these interactions without a central controller.

Hayek's critique of socialism is that a central planner cannot compute the full K distribution of a modern economy – the informational requirements are too large. The price system is a tensional communication network that aggregates millions of local K values into a single scalar (the price). Any attempt to replace it with a central polis would increase ϵ and lead to Phase 4 collapse.

8 Conclusion

The six foundational contributions to economics are coherently reinterpreted within the POLIS V12 tensional ontology. The invisible hand, comparative advantage, labour theory, supply and demand, macroeconomics, and spontaneous order all become natural consequences of the closure condition $\epsilon = \sum K_m(2 + K_m) = 0$ and the fractal hierarchy of economic polises. No free parameters are added.

Zenodo references (pending)

- Main treatise: [Zenodo DOI pending]
- POLIS Bible: [Zenodo DOI pending]

Abstract

This paper extends the POLIS V12 tensional reinterpretation to six additional economic giants: François Quesnay (Tableau Économique), Leon Walras (general equilibrium), Vilfredo Pareto (optimality), John von Neumann (game theory), Wassily Leontief (input-output), and Milton Friedman (monetarism). Each is re-read as a tensional configuration: Quesnay's table as flow of K between sectors; Walras's tâtonnement as iterative IDT* adjustment; Pareto's optimum as condition where no K can be increased without decreasing another; von Neumann's minimax as tensional equilibrium in games; Leontief's matrix as linear transformation of K ; and Friedman's permanent income as normalisation over a moving window. The universal equations remain unchanged; no free parameters are introduced.

9 Introduction

As in the companion paper, POLIS V12 rests on four axioms. After normalisation the mother equation is

$$\epsilon = \sum_{m=1}^n K_m(2 + K_m) = 0,$$

with $\text{IDT}^* = \epsilon/(1 + \epsilon)$. All real economic systems are in Phase 4 ($\text{IDT}^* \geq 0.70$) unless artificially uniform. The Rolling Law $2\pi r_p = V_{\text{orb}}T_{\text{rot}}$ applies fractally.

This paper reinterprets six more foundational contributions to economics.

10 François Quesnay – Tableau Économique

Quesnay's Tableau Économique (1758) traced the flow of money and goods between classes (farmers, landowners, artisans). In POLIS V12, it is a tensional flow diagram: each sector is a node with input K_{in} and output K_{out} . The sum of inflows equals sum of outflows (circular flow). Quesnay's "net product" (surplus from agriculture) is the residual x generated by the agricultural sector.

The Tableau is an early input-output model where the closure condition $\epsilon = 0$ corresponds to a stationary state of the economy. Quesnay's single tax on land (impôt unique) is a proposal to adjust K_{land} to minimise ϵ .

11 Leon Walras – General Equilibrium Theory

Walras developed a system of simultaneous equations for all markets. In POLIS V12, general equilibrium is the solution of $\epsilon = 0$ for all n markets simultaneously. Walras's

"tâtonnement" (groping) is an iterative algorithm that adjusts prices until excess demands are zero – exactly the iterative STOP mechanism applied to a price vector.

At each iteration, compute IDT* from excess demands. When IDT* stops decreasing, equilibrium is reached. Walras's law (sum of excess demands = 0) is a necessary condition for $\epsilon = 0$. However, Walras required a central auctioneer; in a decentralised polis, prices emerge from local interactions without an auctioneer – a tensional self-organisation.

12 Vilfredo Pareto – Pareto Optimality

Pareto defined an allocation as optimal if no one can be made better off without making someone worse off. In POLIS V12, a Pareto optimum is a point in K space where the gradient of ϵ is zero: any small change increases the sum of residuals. The Pareto frontier is the set of allocations where ϵ is minimal given the distribution constraints.

Pareto's law of income distribution (power law) is a tensional scaling relation: $K_{\text{income}} \propto \text{rank}^{-\alpha}$. The exponent α is determined by the IDT* of the economic polis. Pareto's "circulation of elites" is the observation that high- K individuals eventually lose their position (Phase 4) to lower- K newcomers who reorganise the system (Phase 5).

13 John von Neumann – Game Theory and Minimax

von Neumann (with Oskar Morgenstern) founded game theory. In POLIS V12, a two-player zero-sum game has payoffs a_{ij} . Normalise the payoff matrix to $K_{ij} = (a_{ij} - T)/(v_{\text{max}} - T)$. The minimax theorem states that there exists a mixed strategy (probability distribution over actions) such that the value of the game is the saddle point where ϵ is minimised.

The game's equilibrium is the point where neither player can improve their expected K unilaterally – a local minimum of ϵ in the strategy space. Von Neumann's concept of a "stable set" solution for cooperative games is a set of payoff distributions that are in tensional equilibrium (no coalition can deviate to a lower ϵ).

14 Wassily Leontief – Input-Output Analysis

Leontief created the input-output table, representing the interdependence of industrial sectors. In POLIS V12, the input-output matrix A (with coefficients a_{ij}) transforms input K into output K . The Leontief inverse $(I - A)^{-1}$ gives the total K required to produce a unit of final demand.

The condition for a viable economy is that the spectral radius of A is less than 1 – equivalent to the tensional closure $\epsilon = 0$ when all sectors operate at steady state. Leontief's "iron and steel" example (1941) showed that tensional restrictions (energy, materials) limit the achievable K of the whole system.

15 Milton Friedman – Monetarism and Permanent Income

Friedman revived the quantity theory of money and proposed the permanent income hypothesis. In POLIS V12, the quantity equation $MV = PY$ becomes:

$$K_M + K_V = K_P + K_Y \quad (\text{in log normalised form}).$$

The permanent income hypothesis states that consumption depends on long-run average K rather than current K . Consumption smoothing is a Phase 5 behaviour: agents borrow (increase K) when current income is low and save (decrease K) when current income is high to keep $K_{\text{consumption}}$ constant.

Friedman's "natural rate of unemployment" is the IDT* of the labour market when expectations are rational – a baseline K that cannot be reduced by monetary policy. His critique of the Phillips curve (that inflation and unemployment are not permanently tradeable) is the observation that ϵ cannot be pushed below its natural minimum without causing Phase 4 (stagflation).

16 Conclusion

Six additional economic pioneers are reinterpreted within the POLIS V12 tensional ontology. The Tableau Économique, general equilibrium, Pareto optimality, game theory, input-output analysis, and monetarism all become natural consequences of the closure condition $\epsilon = \sum K_m(2 + K_m) = 0$ and the fractal hierarchy of economic polises. No free parameters are added; the same equations that describe a physical system or a biological organism also describe the dynamics of economies.

Zenodo references (pending)

- Main treatise: [Zenodo DOI pending]
- POLIS Bible: [Zenodo DOI pending]

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