

RISIS



RESEARCH INFRASTRUCTURE FOR SCIENCE
AND INNOVATION POLICY STUDIES

**FAST GROWING MID-SIZED FIRMS IN EUROPE.
EVIDENCE FROM THE RISIS-CHEETAH DATABASE**



RISIS Policy Brief Series
Issue #1 | October 2019

CONTENTS

- 01 Introduction
- 02 Methodology and data
- 03 Findings
 - Distribution of Cheetah firms*
 - Regional variation in the emergence of Cheetah firms*
- 04 Implications

PRESENTATION

This policy brief presents **new evidence** on a policy relevant category of firms, **fast growing mid-sized firms** which have received limited attention in the academic and policy debate so far. Adopting a classification of firms often cited in the literature (Acs et al., 2008) that defines categories of firms using animal analogies (e.g. mice, gazelles, and elephants) we label these fast growing mid-sized firms as “**Cheetah firms**” (based on the RISIS-Cheetah dataset). The evidence presented here suggests that Cheetah firms can play a key role for economic growth and job creation, and thus they represent an important policy focus for the future. Specifically, the analysis shows that **fast growing mid-sized firms are quite widespread** but not evenly distributed both across European countries as well as within those countries. These firms present different characteristics compared to the other mid-sized firms, in terms of geographical localization and sectoral specialization. The analysis also suggests that even though these firms manage to be fast growing, they find it **hard to maintain such performance over time**. Finally, several economic, demographic, and knowledge-related regional factors are associated to the emergence of clusters of fast growing mid-sized firms in European regions.

The analysis of these firms in Europe provides some **useful implications for policymakers**. For instance, specific geographic areas seem to play a particularly important role, e.g. the Baltic and Eastern European countries, or other regions that are characterized by certain agglomeration dynamics and the presence of skilled human capital. Future developments of RISIS-Cheetah and a further integration within the RISIS data infrastructure will open new avenues for research and provide novel insights for evidence-based policy making.

1. INTRODUCTION

In recent years, fast growing (or high-growth) firms have received considerable attention by academic scholars and policymakers (Coad et al., 2014). One of the reasons for this increased interest is the fact that these firms play a crucial role in creating new jobs and employment (Acs and Mueller, 2008).

The literature on firm growth has pointed out that firm performance appears to be highly skewed and that most firms do not experience fast growth (Bottazzi and Secchi, 2006), that the determinants of firms' growth are difficult to predict, (Coad, 2009), and that high growth tends not to persist over time (Coad, 2007; Daunfeldt and Halvarsson, 2012). In addition, this literature has focused on several characteristics of these firms, including: their size, age, sector, or country (Bravo-Biosca, 2010; Delmar and Davidsson, 1998; Delmar et al., 2003; Haltiwanger et al., 2013; Schreyer, 2000).

Quite surprisingly, one category of firms received somewhat less attention by the literature: **mid-sized firms**, as most studies tend to focus on either small entrepreneurial fast growing firms or large ones.

At policy level, SMEs (small and medium-sized enterprises) have been relevant for numerous European Union (EU) policies such as competition, state aid, structural funds, entrepreneurship, research and innovation.¹ SMEs are in fact considered the backbone of European economy, representing 99% of all firms in the EU, and a key to ensuring economic growth, job creation, and social integration in the EU. However, according to the SME definition, small and medium-sized firms are considered as a unified group rather than separate categories in EU policy initiatives.²

This policy brief addresses this issue by providing some evidence on the specific role of **fast growing mid-sized firms in Europe** (or Cheetah firms), based on an original dataset made available by the EU funded project RISIS (Research Infrastructure for Science and Innovation Policy Studies).

RISIS-Cheetah is a dataset featuring geographical, industry and accounting information of European mid-sized firms that experienced fast growth performance in sales or employment during the periods 2008-11, 2009-12 and 2010-13.

The RISIS-Cheetah firms are defined by combining the EUROSTAT definition of mid-sized firm and the French definition of *Entreprise de Taille Intermédiaire* (ETI). The uniqueness of this approach lies in the specific focus on this category of firms and on its coverage in terms of countries and sectors.

1. A relevant example is the EU programme for the Competitiveness of SMEs (COSME). https://ec.europa.eu/growth/smes/cosme_en

2. https://ec.europa.eu/growth/smes_en



RISIS-Cheetah dataset currently includes 42,249 fast growing mid-sized firms, which are located in 30 European countries.

In what follows, we first describe the methodology for data collection. We then move to the main findings obtained when analysing the RISIS-Cheetah dataset. We performed a descriptive analysis on the distribution of fast growing mid-sized firms in Europe, including a comparison with the distribution of mid-sized firms that did not experience fast growth, and an analysis on the regional-level factors that are associated to the emergence and agglomeration of fast growing mid-sized firms in European regions. In the final section, we discuss the implications of our analyses.

2. METHODOLOGY AND DATA

The criteria for inclusion of firms in the RISIS-Cheetah dataset are:

- 1) Firms are established in Europe (28 countries belonging to the EU, plus Switzerland, and Norway).
- 2) Firms were mid-sized at the beginning of each observation period: 2008, 2009, 2010. The identification of the mid-sized firms is based on a broader definition which combines the Eurostat definition³, and the *Entreprise de Taille Intermédiaire* definition.⁴
- 3) Firms experienced fast growth in at least one of the three observation periods (2008-11; 2009-12; 2010-13).

We consider fast growing those firms with an **average annualized growth rate greater than 20% over a period of three years**. Growth can be measured using either number of employees or turnover.

We used Bureau Van Dijk's ORBIS as main source of data and we obtained a dataset including 42,249 European fast growing mid-sized firms.

For these firms, we downloaded from ORBIS accounting information (balance sheet, income statement and cash-flow) for the period 2008-14, and data about their ownership in order to distinguish between independent and not independent firms, and we retrieved the geographical coordinates of their location using Google API.

In addition to the data regarding Cheetah firms, we also collected information on **all the European firms available in ORBIS that could be classified as mid-sized** (both fast growing and not) according to our definition.

This complementary dataset includes information on more

than 300,000 firms and has been used to compare Cheetah firms with all the other mid-sized firms.

Finally, we obtained European regional-level data from Eurostat, including detailed information about several factors which may explain the location and agglomeration patterns of the fast growing mid-sized firms in our sample

3. FINDINGS

Distribution of Cheetah firms

The descriptive analysis of the RISIS-Cheetah dataset allowed us to obtain four main findings:

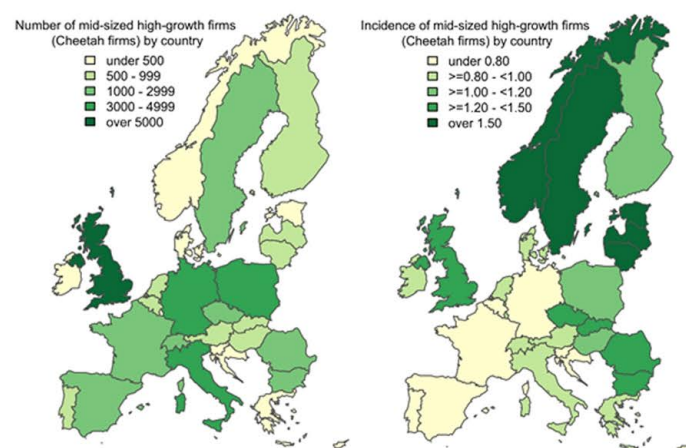
1) Cheetah firms are quite widespread in Europe, though not evenly across countries (Figure 1). In particular, we identified **3 groups of countries** based on the number of Cheetah firms, both in absolute terms and in terms of incidence (i.e. whether Cheetah firms in a certain country are over-represented compared to all mid-sized firms in general).

The first group includes **large countries** for number of Cheetah firms but with **low incidence** (France, Germany, Italy, Netherlands, Spain).

The second group comprises countries with relatively **less Cheetah firms but with a higher incidence** (Baltic countries, Eastern European countries, and Scandinavian countries).

Finally, the last case includes the UK, which is the only country **combining high number and high incidence** of Cheetah firms.

Figure 1. Number and incidence of Cheetah firms by country

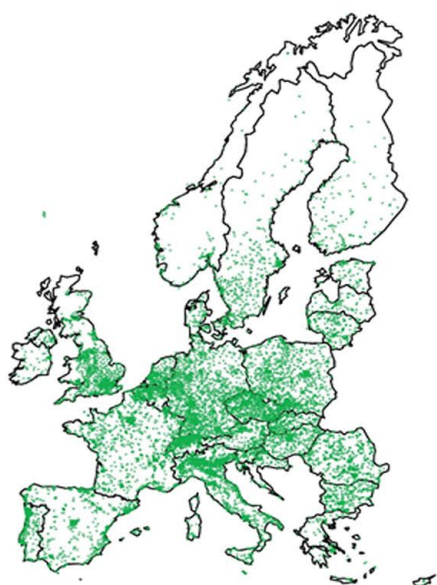


3. Firms with between 50 and 249 employees and with either a turnover not exceeding €50 million or a balance sheet total not exceeding €43 million.

4. Firms with between 250 and 4,999 employees and either a turnover not exceeding €1.5 billion or a balance sheet total not exceeding €2 billion.

2) If we look at the distribution of these firms based on their geographical coordinates, we observe that **Cheetah firms are not very evenly distributed within countries**, and that in the majority of the cases, these firms tend to cluster in specific regions within countries. From a more general perspective, our data highlight the existence of a well-established concentration of economic activities stretching from Northern England to Northern Italy, as well as the **emerging role of a new concentration of firms in Eastern Europe** (Figure 2).

Figure 2. Distribution of Cheetah firms based on geographical coordinates



3) Cheetah firms differ from other types of mid-sized firms in several dimensions. Specifically, Cheetah firms tend to be younger and smaller than the average. In addition, these firms tend to be more active in certain industrial sectors (e.g. Manufacturing; ICT; Professional, scientific and technical activities; Administrative and support services; and Agriculture and mining). Quite interestingly, fast growth is not limited to high-tech sectors, even though in these sectors we observe a higher incidence of Cheetah firms. We also find that different countries tend to display different relative sectoral specialisations.

4) Persistence of growth seems to be an issue for Cheetah firms. Even if a firm manages to experience fast growth in a certain period, it finds it hard to maintain such growth over time. Almost 70% of the firms do not maintain fast growth after the first observation period. While the firms that manage to grow for two or three periods are 23.8% and 7.1% respectively. However, this situation is not uniform across countries. Countries with a higher incidence of Cheetah firms (Baltic, Eastern and Scandinavian countries – with the only exception of Poland), in fact, display a higher proportion of persi-

stently growing firms compared to the largest countries in terms of number of Cheetah firms, which have on average less persistently growing firms.

Regional variation in the emergence of Cheetah firms

We analysed factors that might be associated to the emergence of fast growing mid-sized firms using multivariate econometric analysis. Specifically, we related the number of fast growing mid-sized firms in a certain region/sector to country-, regional- and sector-level factors.⁵ These explanatory factors include regional size (area in square km), density of mid-sized firms in the region/sector, regional population density, regional GDP per capita, regional human capital (share of people with a higher education degree), private and public regional R&D spending, and fixed effects at sectoral and country level (Northern countries, Southern countries, Eastern countries, UK).

The main results can be summarized as follows:

1) The number of fast growing mid-sized firms is **significantly higher in regions located in the Eastern countries** (including the Baltic countries) **and in the UK** with respect to Western countries, *ceteris paribus*, which confirms the descriptive evidence previously.

2) **Institutional factors at country level** (e.g. related to taxation, access to credit, investment protection and international trade) **explain differences in the number of fast growing mid-sized firms across countries.**

3) The number of fast growing mid-sized firms is **positively related to regional population density and GDP per capita**. This evidence seems to suggest the presence of **agglomeration effects** that make highly populated and richer regions a better environment to stimulate growth. These positive associations appear to be stronger in high-tech sectors.

4) **Regional private R&D spending is positively associated to the emergence of these firms, while the public R&D spending exhibits an inverted-U shape relationship.** In other words, a moderate level of public R&D spending seems to be positively related to fast growth; however, there are regions with very high levels of public R&D that exhibit lower performance.

5) On average, **regional human capital does not play a significant role** in the emergence of fast growing mid-sized firms in the different sectors. However, in high-tech manufacturing and services sectors we observe a positive and statistically significant relationship between the regional presence of skilled human capital and the emergence of these firms.

5. Regions are defined according to the level 2 of the NUTS 2016 classification.



4. IMPLICATIONS

The findings based on the analysis of the RISIS-Cheetah dataset provide some useful implications for policymakers, which also represent interesting areas of further research.

Fast growing mid-sized firms represent a policy relevant and a so far unexplored phenomenon in Europe.

We identified a policy relevant category of high-growth firms, which have received less attention so far. These firms present great variability in terms of geographical and sectoral coverage. In particular, fast growing mid-sized firms operate in a variety of sectors, both in manufacturing and service industries, and are highly differentiated in terms of technology level and knowledge intensity. Furthermore, these firms have different characteristics compared with the other mid-sized firms.

This has implications for the European Commission which has recently engaged in a public consultation in preparation for a possible revision of the SME definition.⁶ If we consider the prominent role that high-growth firms play in creating new jobs and economic development, Cheetah firms, because of their larger size and market power, are likely to play an even more important role compared to fast growing entrepreneurial start-ups. We therefore suggest to adopt a broader definition of mid-sized firms, similar to the one adopted in this document, and to pay particular attention to the role that these firms may have in the economic development of Europe.

Areas of further research: It would be interesting to investigate what factors may have contributed to the growth of these firms (e.g. innovation activities), and whether their growth was mainly due to organic factors or was the results of mergers, acquisitions or delocalization processes.

Fast growing mid-sized firms are unevenly distributed within Europe, with Baltic and Eastern European countries playing an important role.

Baltic and Eastern European countries seem to deserve particular attention. These countries have in general a higher incidence of Cheetah firms. Moreover, Cheetah firms in these countries are on average less likely to be subsidiaries of other firms, and more likely to experience high growth over time than firms in other countries in Europe.

One of the hypotheses that could explain the higher incidence of Cheetah firms in Baltic and Eastern European countries is that this phenomenon may be the result of a delocalization process of industries to countries with relatively lower labour costs.

This speculation does not find clear empirical validation in our data. In general, in fact, most of the Baltic and Eastern European countries display above the average shares of independent Cheetah firms, compared to other groups of countries such as the Scandinavian ones and the largest countries which, instead, have below the average rates of independent Cheetah firms. This suggests that countries that have a higher incidence of Cheetah firms also tend to have a higher proportion of independent Cheetah firms than the average. This does not rule out the conjecture that foreign direct investments (FDI) might be one of the factors explaining the presence of Cheetah firms in certain European countries, but seems to suggest that there are definitely other explanations behind this phenomenon, such as the ones presented below.

Areas of further research: It would be interesting to estimate the role of these firms in creating employment opportunities in Baltic and Eastern European countries, as well as whether and how they facilitated the economic cohesion in Europe in the last decade.

Local and regional factors play a relevant role in the localization of fast growth mid-sized firms in Europe.

Our analysis suggests that institutional factors at country level (e.g. related to the level of taxation, access to credit, investment protection and international trade), could influence the emergence of Cheetah firms. However, besides these institutional and economic factors at country level, the localization of fast growing mid-sized firms also depends on agglomeration effects which play a role at sub-country or regional level. These regional factors include: demographic (population density), economic (GDP per capita), and knowledge-related (human capital, private and public R&D spending) factors. These effects are even more important in the case of high-tech sectors.

These results have significant implications for regional and cohesion policies at national and EU level aiming at improving the attractiveness of certain regions and reducing regional disparities, especially if we consider the potential benefits in terms of employment creation that the presence of these fast growing mid-sized firms may bring to the regions in which they are located.

Areas of further research: It would be interesting to compare the sectoral specialization of Cheetah firms with the strengths and comparative assets of the region in which they are located as described by the EU Smart Specialization Platform.⁷

Overall, future developments of RISIS-Cheetah dataset and a further integration within the RISIS data infrastructure will open new avenues for research and provide novel insights for evidence-based policy making.

6. https://ec.europa.eu/info/consultations/public-consultation-review-sme-definition_en

7. <https://s3platform.jrc.ec.europa.eu>

REFERENCES

- Acs, Z.J. & Mueller, P. (2008). Employment effects of business dynamics: mice, gazelles and elephants, *Small Business Economics*, 30(1), 85-100.
- Acs, Z.J., Parsons, W. & Tracy, S. (2008). High impact firms: Gazelles revisited, Office of Advocacy Working Paper. U.S. Small Business Administration.
- Bottazzi, G. & Secchi, A. (2006). Explaining the distribution of firm growth rates, *Rand Journal of Economics*, 37(2), 235-256.
- Bravo-Biosca, A. (2010). Growth dynamics: exploring business growth and contraction in Europe and the US, NESTA: London, UK.
- Coad, A. (2007). A closer look at serial growth rate correlation, *Review of Industrial Organization*, 31(1), 69-82.
- Coad, A. (2009). The Growth of Firms: A Survey of Theories and Empirical Evidence. Edward Elgar: Cheltenham, UK.
- Coad, A., Daunfeldt, S.O., Hölzl, W., Johansson, D. & Nightingale, P. (2014). High-growth firms: introduction to the special section. *Industrial and Corporate Change*, 23(1), 91-112.
- Daunfeldt, S.O. & Halvarsson, D. (2012). Are high-growth firms one hit wonders? Evidence from Sweden, HUI Working Paper No 70, HUI Research: Stockholm, Sweden.
- Delmar, F. & Davidsson, P. (1998). A taxonomy of high-growth firms, in P. D. Reynolds and W. D. Bygrave (eds), *Frontiers of Entrepreneurship Research*. Babson College: Wellesley, MA, pp. 399-413.
- Delmar, F., Davidsson, P. & Gartner W.B. (2003). Arriving at the high-growth firm, *Journal of Business Venturing*, 18(2), 189-216.
- Haltiwanger, J., Jarmin, R.S. & Miranda, J. (2013). Who creates jobs? Small versus large versus young, *Review of Economics and Statistics*, 95(2), 347-361.
- Schreyer, P. (2000). High-growth firms and employment, OECD Science, Technology and Industry Working Papers. No. 2000/03.

RISIS2 - European Research Infrastructure for Science, technology and Innovation policy Studies aims at building a data and services infrastructure supporting the development of a new generation of analyses and indicators on STI fields.

To develop a deeper understanding of knowledge dynamics and policy relevant evidence, RISIS goes beyond established quantitative indicators, developing positioning indicators, in order to reduce asymmetries in actors producing new knowledge, in places where knowledge is generated, and in themes addressed.

RISIS community is dealing with sensitive issues as social innovation, non-technological innovation, the role of PhDs in society, and portfolios of public funding instruments, studying both universities and firms.

RISIS Policy Brief Series aim at disseminating key results coming from RISIS2 to improve the use of data for evidence-based policy making. The outcomes are presented through short documents pointing out the main policy issues at stake, demonstrating the contribution provided by RISIS, and what new avenues for research are now open.

Copyright RISIS Consortium 2019

AUTHORS OF THE CURRENT ISSUE:

Roberto Camerani | University of Sussex

Massimiliano Guerini | Politecnico di Milano

EDITORIAL BOARD:

Philippe Laredo – | UPEM

Emanuela Reale | CNR

Grazia Battiato | CNR

Benedetto Lepori | USI

Massimiliano Guerini | POLIMI

Sybill Hinze | DZHW

Patricia Laurens | IFRIS

Thomas Scherngell | AIT

Jakob Edler | ISI-FGh

GRAPHIC DESIGN:

Serena Fabrizio | CNR

Grazia Battiato | CNR



www.risis2.eu



This project is funded by the European Union
under Horizon2020 Research and Innovation
Programme Grant Agreement n°824091

