Drivers of High-Growth Firms: Strategic Modes of Growth and Knowledge Processing Capabilities

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Outline

- Purpose
- Existing knowledge-Motivation
- Data and methodology
- Empirical results
- Conclusions and policy implications

The topic addressed

- Objective

  Explore whether and in which way
  - *strategic modes of growth* and
  - *knowledge processing capabilities of firms*

  affect the probability of being high-growth in Greece during crisis.

- Contribution
  - ✓Shift emphasis from "how much" to "how" high-growth firms (HGFs) grow in an attempt to open the black-box.
  - ✓Use alternative growth measures (relative growth, absolute growth, birch index).

HGFs: Origin and importance

- Inspired from the pioneer work of Birch on the so-called 'gazelles' (Birch, 1979).
  - Various labels: fast-growing, rapid-growth, high-impact, high-growth firms
- But why is there so much interest in HGFs?
  - Industrial dynamics literature shows that firms' growth rates are extremely skewed
  - A rather small number of HGFs drives a disproportionately large amount of job creation (Henrekson & Johansson, 2010; Acs et al., 2008; Delmar et al., 2003).
- HGFs are the main engine of economic development and not just new ventures or small firms in general (Shane, 2009; Wong et al. 2005; Stam, 2010).

HGFs: from academic to policy interest

- Support all new start-ups or SMEs or just those with a high-growth potential?
  - Shane (2009) questions policies targeting the quantity of start-ups since most have limited growth ambitions, capabilities, or chances of survival.
  - Holzl (2010) distinguishes between SMEs policy, which seeks to support all SMEs, and *entrepreneurship policy*, which seeks to support only firms with growth ambitions.
- Policymakers change their focus
  - European Commission lists support for high-growth SMEs as a political objective in its Europe 2020 Strategy report (2010).
  - OECD explores means and mechanisms that are used by governments to promote high-growth enterprises (OECD, 2010).

HGFs: What do we know ?

- Extant research explores whether HGFs
  - are small (Delmar, 1997; Delmar and Davidsson, 1998; Weinzimmer et al., 1998; Delmar et al., 2003; Shepherd and Wiklund, 2009)
  - are young (Delmar et al., 2003; Haltiwanger et al., 2013)
  - belong to a certain industry (Delmar, 2003, 2006; Halabisky et al., 2006; Acs et al., 2008)
  - belong to a certain region (Stam, 2005; Acs and Mueller, 2008)

Defining HGFs

- Empirical rule
  - The share of firms in a population that see the highest growth during a particular period, for instance, the 1%, 5% or 10% of firms with the highest growth rate.
- Eurostat and OECD recommendation:
  - Firms with at least 10 employees in the start-year and annualized employment growth exceeding 20% during a 3-year period (Eurostat-OECD, 2007).

Firm growth indicators

- Most commonly used indicators are based on:
  - Sales
  - Number of employees
- The use of different growth indicators selects a different set of firms.
- Sales and employment growth measures are only modestly correlated (Shepherd and Wiklund, 2009; Coad, 2010).
- However, most studies suggest that the results do not seem to be sensitive to which one is chosen (Daunfeldt et al., 2013).

Measuring growth: relative vs. absolute change

- Relative measures → percentage changes or log-differences
- Absolute measures → raw changes in size between two time points
- Measures of relative (absolute) growth are biased toward smaller (larger) firms.
- More popular are indices that combine absolute and relative changes into one number like the Birch index which is used to measure *employment* (E) growth: $(E_t - E_{t-1})*(E_t / E_{t-1})$

Data used

- 2 extensive surveys in the context of a wider research project funded by the Federation of Greek Industries (SEV) and undertaken by IOBE and LIEE/NTUA.
  - Target/Participants: Largest (in terms of employment) Greek firms at the national and regional level
  - Two waves with a structured questionnaire
  - CATI approach, but also some face to face interviews

1st wave	2nd wave
Year: 2011	Year: 2013
Total number of firms: 2025	Total number of firms: 2048

- **1500 firms participated in both waves**

Growth metrics used in this study

- Relative employment growth (REG):
  - ln(Employment2013)-ln(Employment2011)
- Absolute employment growth (AEG):
  - (Empolyment2013)- (Employment2011)
- Birch indicator of employment growth (BI):
  - [(Empolyment2013) - (Employment2011)]* (Employment2013 / Employment2011)
- Relative sales growth (RSG)
- Absolute sales growth (ASG)

Percentiles of firm employment growth

	10% percentile	25% percentile	50% percentile	75% percentile	90% percentile
Relative Employment Growth	-0.76	-0.36	-0.10	0.06	0.37
Absolute Employment Growth	-40	-13	-3	2	20
Birch indicator	-19.80	-7.97	-1.89	2.08	24

Independent variables: strategic modes of growth

- **Mergers and acquisitions**: Firms were asked to estimate on a Likert scale ('not used' to 'high') the extent to which mergers and acquisitions is a part of their strategy in the last two years
- **Diversification strategy**: Firms were asked to estimate on a Likert scale ('not used' to 'high') the extent to which they have penetrated in different industries from their primary activity in the last two years.
- **Internationalization strategy:** Measured by a binary variable taking the value of 1 when the firm is an exporter and 0 otherwise

Independent variables: knowledge processing capabilities

- **Participation in research projects**: Firms were asked to estimate on a Likert scale ('not used' to 'high') the extent to which they have developed joint research projects with universities and research institutes in the last two years
- **In-house R&D department**: binary variable (1=yes, 0=no).
- **Training**: Taking the value of 1 if the firm declares that it has trained its employees through internal or external training procedures, and the value of 0 otherwise.
- **Specialized knowledge of employees**: Measured by the share of employees with a PhD and/or a master.

The model

- **Dependent variable**: a binary variable taking the value of 1 if the firm belongs to the upper 10% of the firm growth distribution in our sample, and 0 otherwise
- Probit regression to estimate the driving forces of the probability of being a HGF.
- *Pr(HGFs=1)=f {mergers & acquisitions; diversification strategy; internationalization strategy; in-house R&D department; participation in research projects; specialized knowledge of employees; training; firm size}*

Results: Probit estimations

Pr(HGFs=1)	REG (Model 1)	AEG (Model 2)	BI (Model 3)	RSG (Model 4)	ASG (Model 5)
Mergers & Acquisitions	0.0554 (0.0437)	0.0744* (0.0430)	0.0735* (0.0426)	0.0652 (0.0521)	0.0344 (0.0563)
Diversification	**0.1060***** **(0.0398)**	0.0646 (0.0411)	0.0483 (0.0402)	-0.0391 (0.0440)	-0.0751 (0.0501)
Internationalization	**0.3211**** **(0.1627)**	**0.4297***** **(0.1586)**	**0.4499***** **(0.1554)**	**0.5197***** **(0.1817)**	**0.3883**** **(0.1992)**
In-House R&D Department	**0.3120**** **(0.1443)**	0.1585 (0.1323)	0.2355* (0.1298)	0.1951 (0.1566)	0.2112 (0.1605)
Participation in Research Projects	0.2852* (0.1715)	0.2307 (0.1560)	0.2135 (0.1553)	-0.4171* (0.2155)	**-0.5393**** **(0.2194)**
Specialized Knowledge of Employees	-0.0078 (0.0053)	-0.0072 (0.0056)	-0.0041 (0.0052)	**0.0099**** **(0.0049)**	**0.0145***** **(0.0052)**
Training of Employees	0.0724 (0.1180)	0.2463* (0.1350)	0.2162* (0.1305)	0.0993 (0.1398)	0.0509 (0.1732)
Firm Size	-0.3225*** (0.0456)	0.1466*** (0.0389)	0.0981** (0.0384)	-0.1529*** (0.0455)	0.3889*** (0.0504)

Notes: The estimations include sector dummies. Marginal effects are presented.
***, **, * denote significance on p<1%, 5%, 10%. Standard errors are reported in parentheses.

Conclusions

- Firms which adopt an export-oriented strategic mode of growth have increased probability of growing fast irrespective of the growth metric employed.
- Firms which diversify their activities by penetrating in different industries seem to increase their likelihood of achieving high relative employment growth.
- Internal sources of knowledge (specialized knowledge of employees and in-house R&D activities) are found to be important for the occurrence of HGFs in some cases.

Policy implications

- It is necessary to support and facilitate the export activity of entrepreneurial ventures
  - tax motives, lifting administrating barriers to exports (costs, time, paperwork), networking, participation in business trade fairs etc.
- *Ex ante* identification and targeting of HGFs is not an easy task for policy makers.
- Structural reforms are required for example in product and labour markets in order to shape a more dynamic growth distribution and a higher share of fast growing firms.

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Thank you for your attention!

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SPECIAL SECTION: HIGH-GROWTH FIRMS

- High-growth firms: introduction to the special section (Coad; Daunfeldt;Hölzl; Johansson; Nightingale)
- Muppets and gazelles: political and methodological biases in entrepreneurship research (Nightingale; Coad)
- Gazelles and industry growth: a study of young high-growth firms in The Netherlands (Bos & Stam)
- Job creation and the intra-distribution dynamics of the firm size distribution (Huber; Oberhofer; Pfaffermayr)
- Persistence, survival, and growth: a closer look at 20 years of fast-growing firms in Austria (Hölzl)
- The role of alliances in the early development of high-growth firms (Mohr; Garnsey; Theyel)
- High-growth firms and technological knowledge: do gazelles follow exploration or exploitation strategies? (Colombelli; Krafft; Quatraro)
- Whom do high-growth firms hire? (Coad; Daunfeldt; Johansson; Wennberg)