

Business Dynamism and the Life Cycle of Firms in Spain

Carolina Villegas-Sanchez
ESADE, URL, ECB and CEPR

3rd Banco de España-CEMFI-UIMP Conference on the Spanish Economy
Santander, 05 July 2024

- * The views expressed are those of the author and do not necessarily reflect those of the ECB.
- * Thanks to Andrea Caggese (UPF) for sharing Spanish firm-level data.

- Poor productivity performance of **advanced economies** since the 2000s.
- The US productivity **slowdown** spurs intense debate among economists, with several **potential sources** identified:
 - **Top of innovation frontier**: This “ideas getting harder” hypothesis suggests that maintaining previous rates of productivity growth requires ever-increasing research efforts (see Gordon (2016) and Bloom et al 2020)).
 - Deterioration in the **efficiency** with which labor and capital are combined (managerial ability, resource allocation, institutional environment). (see Syverson (2011)).
 - Loss of **market “dynamism”** (Decker et al. (2016)): importance of business churning, “creative destruction,” startups, and young firms in generating productivity gains through more resource allocation and greater innovation.

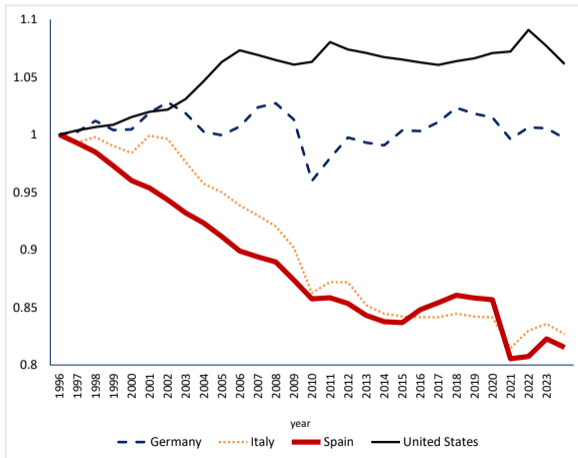
- **Akcigit and Ates (2021)** document **ten stylized facts related to declining business dynamism** in the US and discuss some of the existing attempts to explain them:
 - Increase in market concentration, firm markups and profit rates.
 - Decline in the labor share and negative correlation between industry concentration and the labor share.
 - The labor productivity gap between frontier and laggard firms has widened.
 - Firm entry rate and the share of young firms in economic activity have declined.
 - The dispersion of firm growth rates has gone down.
- Propose a hypothesis consistent with these facts: potential driver of the slowdown in US business dynamism, and consequently productivity, has been a reduction in knowledge diffusion between frontier and laggard firms.

This paper

- Extensive literature has focused on these aspects for the US however, less is known about the situation in **Spain** and whether similar patterns emerge.
- In this paper, I follow the same approach and document a similar set of **facts related to business dynamism** for the Spanish economy, making comparisons to other European countries and the US when possible.
- In addition, the lack of consistent findings suggests alternative explanations, including an assessment of the **life cycle** of Spanish firms.

TFP Evolution (normalize to year 1996)

- Slowdown in productivity growth in the US. Drop in productivity growth in Spain.
- Inefficient allocation of resources (see Gopinath et al (2017), Garcia-Santana et al (2020)).

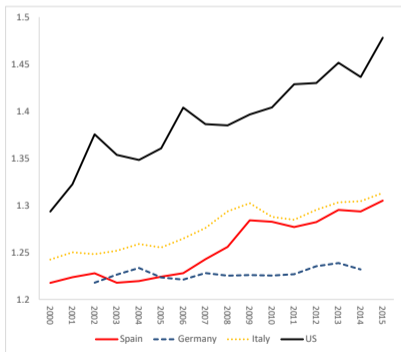


Note: Source: Conference Board.

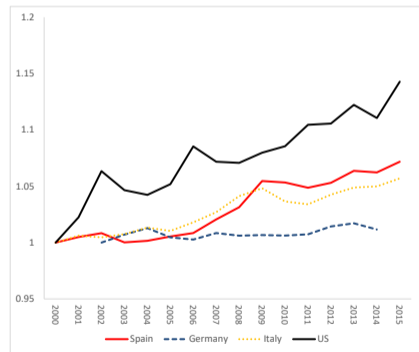
Empirical Trends in Business Dynamism

Fact 1: Firm Markups modest increase

- Europe: Average markup growth stagnant from 2000 to 2006.
- Increased from 2006 to 2009 in Spain and Italy, while remaining constant in Germany.
- US: 1980 to 2016 increase of approximately 33%.



(a) Markup Levels

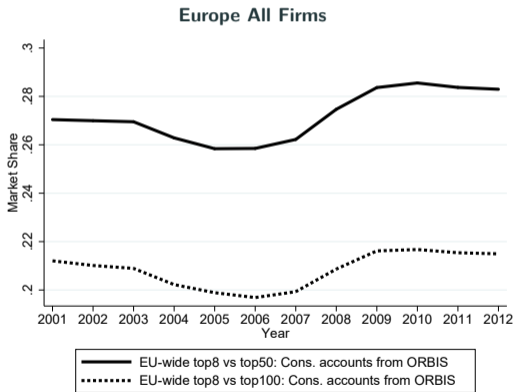


(b) Markup Growth

Source: Diez, Fan and Villegas-Sanchez (2021).

Fact 2: Average market concentration unchanged

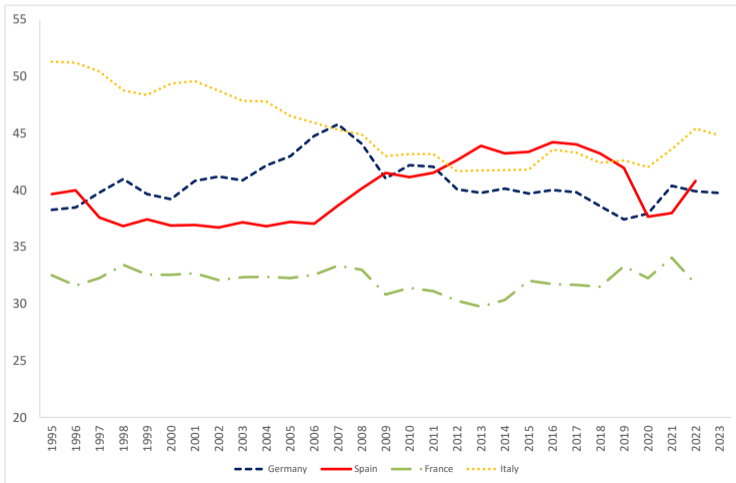
- Increase in 2007 due to an accounting change (new accounting rules on the requirements to report consolidated and unconsolidated accounts).



Source: Kalemlı-Ozcan et al (2024).

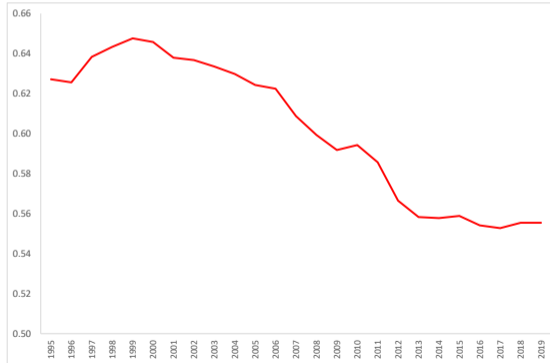
Fact 3: The Profit share is flat

- Gross profit share of non-financial corporations (share of GDP %). Source: Eurostat.



Fact 4: The labor share in Spain declined and recently stagnated.

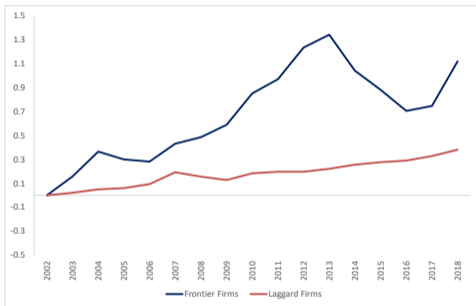
- Drop in the labor share from 2006 to 2012; the share stabilized at around 0.56 from 2013.
- Oberfield and Grossman (2022) potential causes: (1) technological advancements that favor capital over labor, (2) globalization and China's rise, (3) increased industry concentration and market power, (4) changes in unionization rates, and (5) demographic shifts (population growth).



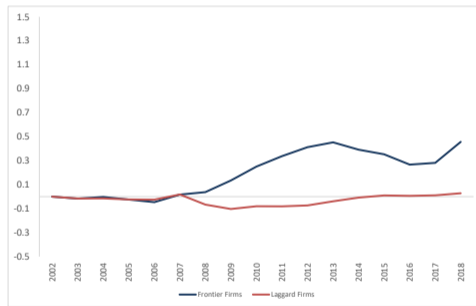
Source: FRED St. Louis Fed. University of Groningen; University of California, Davis.

Fact 5: Labor Productivity Gap between Frontier and Laggard Firms Widened

- Frontier (top 5% of the labor productivity distribution in a year and industry).
- In Spain, the widening gap is mainly evident after 2008. Source: SABI.



(a) VA over Employment

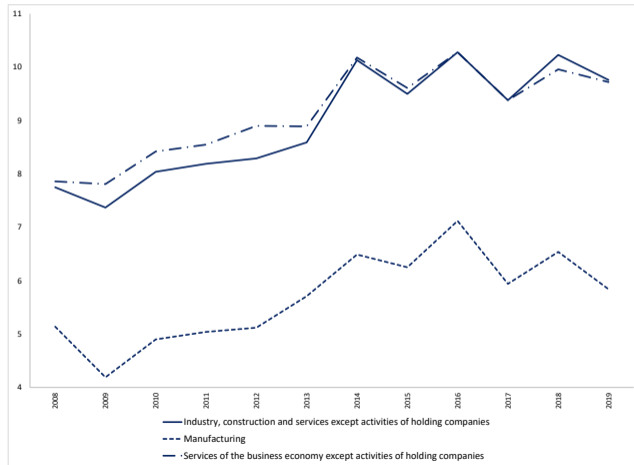


(b) VA over Wagebill

Source: Own calculation using SABI data and following Andrews et al (2015).

Fact 6: Firm Entry Rates in Spain

- Entry rates decreased until the 2008 financial crisis but have increased since then.



Note: Source: Eurostat.

- US: superstar firms increasingly dominate the market, driving productivity differences between the top and bottom firms.
 - This dominance is reflected in lower business dynamism: lower firm entry rates and reduced growth dispersion.
 - Akcigit and Ates (2021) argue that a potential mechanism for the productivity slowdown in the US is that top firms have greater incentives to innovate due to larger profits, while bottom firms lag behind due to a slowdown in technology diffusion.
- Spain: No clear evidence of increasing market concentration and firm entry rates have increased since the 2008 financial crisis.
 - In Caggese et al (2024) we explore the role of entrants in driving the observed dispersion in productivity trends between frontier and laggard firms.
 - Today, I would like to explore the role of firm life cycle dynamics and the obstacles to firm growth.

The Life Cycle of Firms

The Life Cycle of Firms

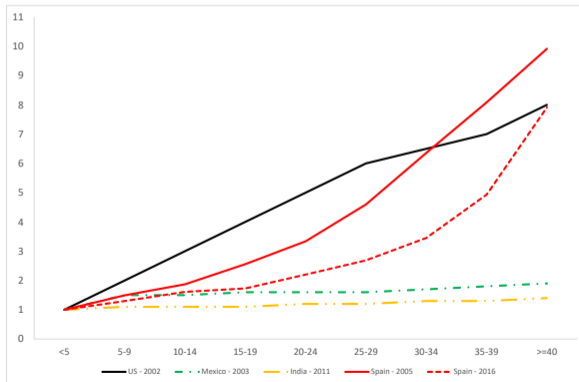
- It is well-established that **new firms typically start small and grow as they age.**
- Some researchers argue that this growth is largely driven by **increasing demand** for the firm's products over time, highlighting the importance of developing a solid customer base (see Foster et al (2016) and Gourio and Rudanko (2014)).
- Others suggest that growth is more broadly due to the **accumulation of establishment-specific intangible capital throughout the firm's life cycle**, such as plant-specific organizational capital or technological advancements.
 - Firms expand as they invest in new technologies, explore new markets, and produce a diverse range of higher-quality products (Atkenson and Kehoe (2005)).

- Find that 40-year-old plants in the US manufacturing sector are more than seven times larger than 5-year-old plants.
- In India and Mexico, this size increase is much lower, with older plants being only up to two times larger than younger ones.
- Why might it be more challenging for firms in India or Mexico to invest in organizational capital?
 - Higher taxes or higher labor costs;
 - Difficulties in hiring skilled managers;
 - Higher financial constraints and;
 - Greater difficulties in accessing foreign or distant markets.

The Life Cycle of Firms: Empirical Evidence

- In 2005, a 40-year-old firm in Spain was, on average, 10 times larger than a 5-year-old firm. By 2016, older firms were about 7 times larger than younger firms in terms of median employment.
- Firms between 25-40 much smaller than their US counterparts.

Figure 3: MEDIAN EMPLOYMENT BY AGE

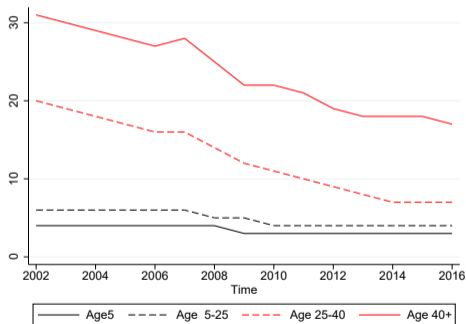


Note: Replication Hsieh and Klenow (2014). Source: Own calculation based on SABI.

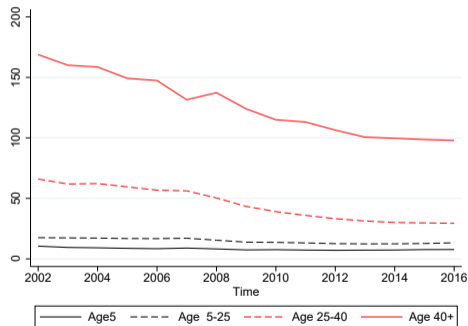
Mean and Median Employment by Age Category (Unweighted)

- Is it that over time older firms have reduced their median employment or rather younger firms have increased their median employment? Or a combination of both?

Figure 4: MEAN AND MEDIAN EMPLOYMENT BY AGE CATEGORY



(a) Median



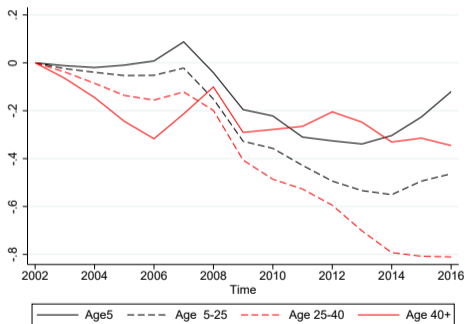
(b) Mean

Note. Unweighted median and mean across all sectors. Source: Own calculation using SABI.

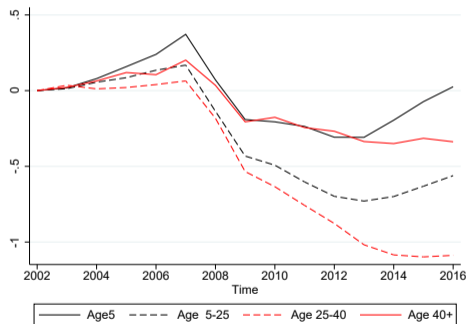
Weighted Average Median Employment and Sales by Age Category

- Yearly average of the median firm size by four-digit industry and age category using sectoral value added as weights to compute the mean. The figure plots the log difference relative to year 2002

Figure 5: AVERAGE MEDIAN EMPLOYMENT AND REVENUE BY AGE CATEGORY



(a) Employment



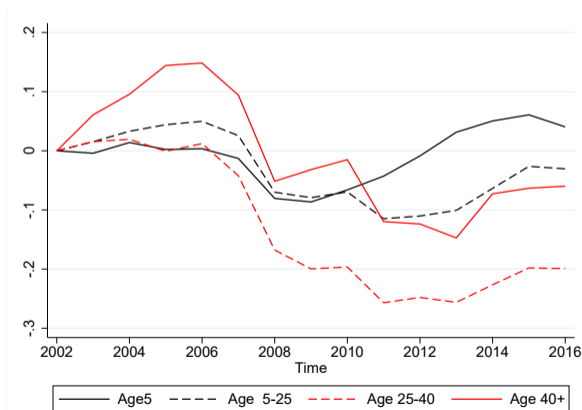
(b) Revenue

Source: Own calculation using SABI data.

Weighted Average Median Labor Productivity by Age Category

- Decline in labor productivity (value added over wage bill) in mature group of firms and relatively better performance of young firms since the crisis.

Figure 6: AVERAGE MEDIAN LABOR PRODUCTIVITY BY AGE CATEGORY



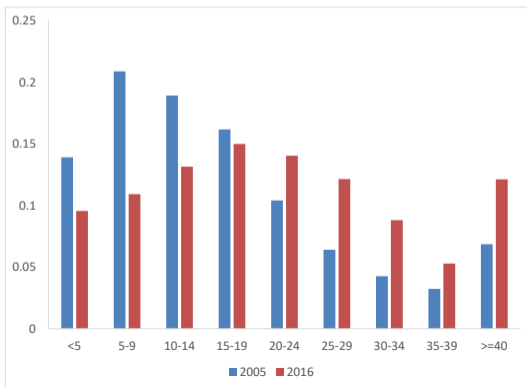
Potential Culprits

1. Factor relocation towards more productive firms.
2. Higher capital investment
3. Lower innovation, technology adoption, skilled labor force.
4. Institutions and regulation: size-dependent constraints, financial frictions, labor reform....

Culprit #1: Factor relocation

- Mature firms could be less efficient prior to the crisis, leading to a reallocation of resources towards more productive younger firms.
- The weight of younger firms has decreased, while the employment weight of older firms increased.
- Mature firms gain weight and decrease productivity: drive aggregate productivity down?

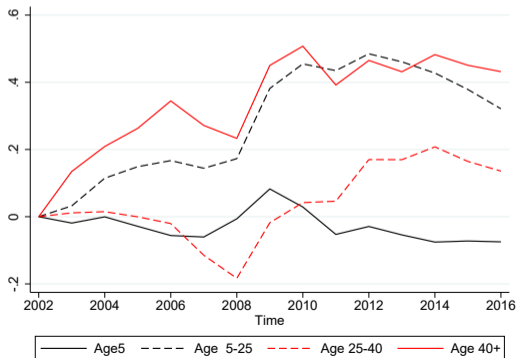
Figure 7: EMPLOYMENT SHARE BY AGE IN THE CROSS-SECTION



Culprit #2: Capital Deepening

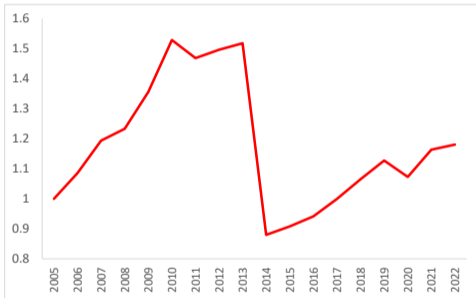
- Mature firms invested more in capital and substituted labor with capital.
- The capital-to-wagebill ratio for mature firms slightly increased in the post-2012 period, this trend has not been consistent for the majority of the period.

Figure 8: AVERAGE MEDIAN CAPITAL TO LABOR RATIO BY AGE CATEGORY

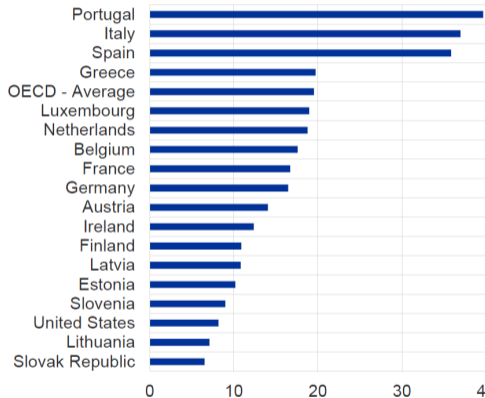


Culprit #3: Intangibles

- Lagging due to lower technology adoption or insufficient human capital.



(a) Patent application growth



(b) Share of Adults without upper secondary education

Culprit #4: Institutions

- Mature firms might have faced greater challenges rolling over debt after the financial crisis, leading them to initiate restructuring processes that required rescaling or downsizing.
- Size-dependent policies
- Labor Reform

Key Points on Productivity and Business Dynamism in Spain

1. Productivity Trends in Spain:

- Decline since the 1990s. Pre-crisis evidence of significant factor misallocation.
- Productivity slowdown not isolated to Spain; advanced economies phenomenon.

2. Theories for Productivity Slowdown in the US:

- Innovation frontier reached makes new ideas harder to find.
- Inefficient resource allocation.
- Slowdown in business dynamism due to market dominance by superstar firms.

3. Spain evidence on decline in business dynamism?

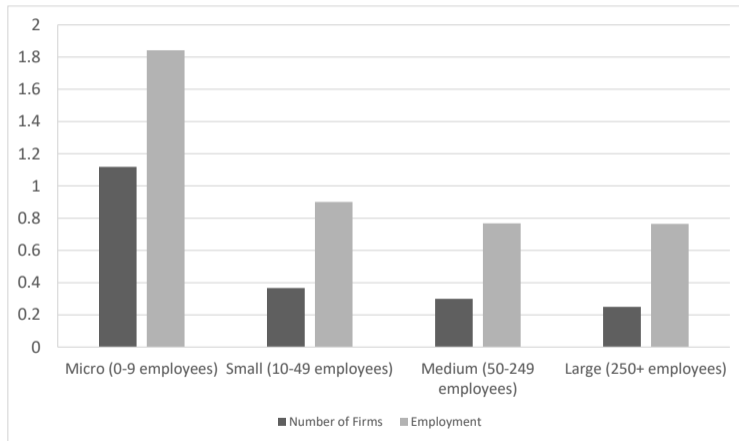
- Recent increase in entry rates in Spain.
- No clear evidence of market power in Spain.

4. Alternative Explanations: life cycle of firms

- Mature firms in Spain have shrunk over time and show lower productivity growth.
- Understanding barriers to firm growth crucial for aggregate productivity dynamics.

THANK YOU

Appendix: Firm size contribution to Employment (Spain relative to Germany) 2022



← te: The figure refers to all sectors in the economy. Source: Own calculation based on Eurostat.