

*Knowledge for Growth – Industrial Research & Innovation (IRI)*

# A look at business growth and contraction in Europe

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NESTA

Contributed paper

to be presented at the 3<sup>rd</sup> European Conference on Corporate R&D and Innovation  
CONCORD-2011, October 6<sup>th</sup> 2011, Seville (Spain)

Conference title

*The dynamics of Europe's industrial structure and the  
growth of innovative firms*

❖ Industrial dynamics & the role of R&D and innovation for Europe's competitiveness

<b>File name:</b>	Bravo-Biosca - A look at business growth and contraction in Europe
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<b>Status:</b>	Draft
<b>Last updated:</b>	05/10/2011
<b>Organisation:</b>	NESTA

## Abstract

We use a new database on business growth dynamics across countries developed in partnership with researchers and statistical agencies in 11 countries to examine the distribution of business growth in Europe and compare it to that in the US. We find that differences in growth dynamics go beyond the much documented gap in high-growth firms. Specifically, the data shows that European countries have both fewer growing and shrinking firms than the US. Instead, Europe has a much larger share of firms that remain static. This gap is not explained by differences in industry composition, and it arises across all sectors. Similarly, it is common across different size classes (although there is some evidence suggesting that it is particularly difficult for medium-sized firms to challenge large firms in Europe). Given their current policy relevance, we also explore the characteristics of Europe's high-growth firms (3-6% of firms), which we find account for between a third and a half of jobs created by all surviving firms with ten or more employees. Young firms are more likely to achieve high-growth, but most high-growth firms are older than 5 years old. They also emerge in all sectors of the economy, and can be of all sizes. Finally, we discuss the links between a dynamic growth distribution and productivity growth. We find that there is a positive correlation between the share of high-growth and fast shrinking firms. Moreover, it is this 'creative destruction', rather than the share of high-growth firms per se, what is associated with faster productivity growth, particularly as countries get closer to the technology frontier. We conclude with some policy recommendations.

**Key words:** growth, firm dynamics, productivity

**JEL classification:** D92, L11, O49

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## 1 - Introduction

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Which are the firms that matter most? This is a question that has occupied, or preoccupied, policy makers, academics and business advocacy groups for decades. Many consider SMEs to be the most important source of jobs. Others point out that it is entrepreneurs who account for all new jobs. A third group highlights the disproportionate contribution of high-growth firms to job creation.<sup>1</sup> And, finally, some argue that it will be high-tech or “innovative” sectors that will drive future prosperity.

The evidence shows that there is truth in all these statements. Taking the US as an example, small businesses generated 64 percent of net new jobs over the past 15 years.<sup>2,3</sup> This is mostly because young firms, which normally grow faster, also tend to be small. After controlling for age there is no difference in job creation between small and large firms in the US.<sup>4</sup> In other words, small old firms do not create more jobs than large old firms on average (in fact, many lifestyle businesses do not aim to grow). This suggests that it is important to look instead at young firms. Over the last three decades start-ups have accounted for all US net job growth, in fact in many years they accounted for over 200% of new net jobs.<sup>5</sup> This is possible due to the often forgotten yet important distinction between net and gross jobs. Gross job creation equals to the total number of jobs created in the economy, while net job creation subtracts from this amount the number of jobs destroyed. Since economies create and destroy a large number of jobs continuously, around 10 gross new jobs are created for each net new job in the US.<sup>6</sup> This is how start-ups, as well as high-growth firms, can account for over 100% of net job creation. Start-ups make a very important contribution to job creation (some more than others), but they are not the only group of firms that creates jobs.

Looking at gross job creation also illustrates the disproportionate contribution that a minority of high-growth firms make to job creation.<sup>7</sup> But focusing exclusively on high-growth firms also raises questions. First, targeting firms by their ex-ante growth potential is much more difficult than by their

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<sup>1</sup> High-growth firms are defined by Eurostat and the OECD as all enterprises with ten or more employees in the beginning of the observation period with average annualised employment (or turnover) growth greater than 20 per cent over a three-year period (Eurostat-OECD, 2007).

<sup>2</sup> Source: US Small Business Administration.

<sup>3</sup> SMEs also account for the lion's share of employment in most OECD economies. See for instance Figure A.1 in the appendix, which reports the distribution of employment by firm size for surviving firms in the countries that collaborated with this project.

<sup>4</sup> Haltiwanger, Jarmin and Miranda (2010).

<sup>5</sup> Specifically, from 1980–2005, firms less than five years old accounted for all net job growth in the United States (Kaufman Foundation, 2009).

<sup>6</sup> Source: US Census Longitudinal Business Database.

<sup>7</sup> High-growth firms accounted for half of all gross jobs created by firms with 10+ employees in the UK during 2002-2008 (NESTA, 2009).

size or their age. In fact, it can be misleading to look at high-growth firms as if they were a specific group of firms, since instead it corresponds to a stage in the development of firms with both the ambition and potential to grow. Second, as we discuss in this paper, looking too narrowly at high-growth firms risks missing the full picture.

The aim of this paper is threefold.<sup>8</sup> First, we explore the distribution of business growth in Europe and the US. Policy makers have long worried about Europe's inability to generate an equivalent to Google or Microsoft, those few companies that start small and quickly grow to dominate their respective markets. While both Europe and the US have highly successful companies, European ones tend to be much older.<sup>9</sup> The extant evidence suggests that this is not due to lack of entrepreneurs, but to the barriers to growth that they face.<sup>10</sup> Our analysis reveals that differences in business growth dynamics between the US and Europe go beyond just high-growth firms, with fewer firms in Europe growing moderately or shrinking and more of them remaining stable. Looking at the full distribution of firm growth also highlights an inconvenient truth, typically when some companies thrive, others decline. So if the aim is to have more high-growth firms, this may require letting other firms shrink as well. It is this creative destruction, more than high-growth firms per se, what drives productivity growth. This lack of dynamism may also help to explain why European businesses are less productive than those in the US, a gap that had been widening for over a decade before the recession took hold.<sup>11</sup>

The second aim of the paper is to examine some of the characteristics of European high-growth firms and their contribution to job creation. Many associate high-growth with high-tech, likely due to the large global companies that emerged from the IT revolution. But high-tech sectors represent a relatively small share of most economies and, in fact, much of the benefit from the IT revolution emerged in the "traditional" sectors that adopted it, such as retail. While some sectors offer more opportunities for innovation than others, the potential for disruptive innovation exists in all sectors.

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<sup>8</sup> This paper builds on a report titled "Growth Dynamics" which was published by FORA and NESTA in November 2010.

<sup>9</sup> Even if they have a similar number of companies in the top 500 companies by market capitalisation, only 2 per cent of the European companies in the ranking were founded after 1975, whereas 14 per cent of the US firms were (Veron, 2008).

<sup>10</sup> Bartelsman, Haltiwanger and Scarpetta (2004) show that differences in post-entry growth rather than entry rates represent the main difference between the US and Europe business dynamics. Firms that entered the market in the late 1980s and 1990s grew three times faster in their first seven years in the US than comparable firms in the average western European country (63 per cent in the US vs. 20 per cent on average in Finland, France, UK, West Germany, Italy and Portugal. Note however that US entrant firms were also smaller on average than in most other countries). Consistent with that, surveys of entrepreneurial attitudes show that European entrepreneurs are less likely to expect to have at least 20 employees after five years than their US counterparts (Bosma and Levie, 2009).

<sup>11</sup> Annual labour productivity growth between 1995 and 2006 averaged 1.5 per cent in the EU15, compared to 2.3 per cent in the US. As a result, the EU15-US gap in GDP per hour increased from 2pp to 10pp during this period (Van Ark, O'Mahony and Timmer, 2008).

Consistently with that we find that high-growth firms can be found everywhere, and not only in R&D intensive sectors, as the examples of Ryanair, Ikea, Fedex or Starbucks demonstrate.

The final aim of this paper is to present a new cross-country database on business growth. Despite considerable progress over the last decade, there is limited comparable data on how fast companies expand and contract in different countries.<sup>12</sup> In response to this challenge, we partnered with researchers and statistical agencies in 11 countries across three continents to collect new and comparable data on business growth. The resulting database contains information on business growth in Austria, Canada, Denmark, Finland, Italy, the Netherlands, New Zealand, Norway, Spain, the UK and the US. It describes the distribution of business growth for all established firms in these countries broken by size, sector and, whenever available, age. In addition, it also provides information on a variety of related indicators. The aim is that it will become a useful resource for researchers and policy makers interested in examining differences in growth dynamics across countries, what factors drive them and how they impact on economic performance.<sup>13</sup>

## 2 - A new database on business growth

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Measuring the distribution of business growth consistently across several countries presents a challenge. Official business registers provide the most comprehensive coverage of business activity in a country, since they are assembled from tax, social security or other administrative records for the universe of companies. But due to their nature they are strictly confidential and access is highly restricted. Accordingly, the project required the active participation of each national statistical office or, alternatively, local researchers with authorised access to the microdata.<sup>14</sup>

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<sup>12</sup> Noteworthy exceptions include the recently developed indicators on high-growth firms produced yearly by the OECD and the pioneering program of work led by Eric Bartelsman, John Haltiwanger, Stefano Scarpetta and Fabiano Schivardi who, with support from the OECD and the World Bank, undertook the most comprehensive comparative analysis of firm demography, business dynamics and firm-level productivity performance across countries.

<sup>13</sup> For further information on the database as well as analysis, see Bravo-Biosca (2011).

<sup>14</sup> The data in this paper was collected as a part of a joint FORA-NESTA project in collaboration with Henrik Lynge Hansen, Glenda Napier and Ditte Petersen, and with support from the International Consortium for Entrepreneurship (ICE). This initiative would not have been possible without the generous collaboration of many researchers and statistical agencies in the participating countries that provided the data underlying this database. For this I would like to thank Werner Hölzl (Austria), Sonja Djukic, Chris Johnston and Chris Parsley (Canada), Henrik Lynge Hansen (Denmark), Stavroula Maroulaki and Theano Tyfoxyliou (Greece), Henri Kahonen, Petri Rouvinen and Mika Pajarinen (Finland), Patrizia Cella and Caterina Viviano (Italy), Rico Konen (Netherlands), Geoff Mead (New Zealand), Svein Myro and Christian L. Wold Eide (Norway), Valentín Llorente Garcia (Spain), David Brown and Javier Miranda (US) and, last but not least Michael Anyadike-Danes and Mark Hart (UK). Joseph Alberti and Rodrigo Lluberas provided excellent research assistance. This work contains statistical data from ONS which are Crown copyright and reproduced with the permission

We established collaborations across eleven countries: Austria, Canada, Denmark, Finland, Italy, the Netherlands, New Zealand, Norway, Spain, the UK and the US.<sup>15</sup> Each provided harmonised micro aggregated data on business growth following standard definitions provided at the outset of this project (which built on the Eurostat-OECD Manual on Business Demography Statistics developed by the Entrepreneurship Indicators Programme). The resulting database draws on individual records for six million firms, which employed over 120 million people in 2002. It measures how firms expanded and shrank between 2002 and 2005, after the dotcom bubble but before the height of the boom that preceded the recent financial crisis.<sup>16</sup>

Briefly, average annual employment growth over a three-year period was measured for each surviving private sector firm with at least one employee.<sup>17</sup> Based on their growth rate, firms were placed in one of the 11 growth intervals.<sup>18</sup> This data was then used to compute the percentiles of the growth distribution and produce growth distribution curves. The resulting database contains the full growth distribution and a variety of other indicators on business growth for up to 51 sectors, ten firm size classes and five age groups in 11 countries. In addition, a few countries have been able to provide data for 2004-07 or 2005-08 as well as indicators based on turnover growth, and work is underway to expand the list and update the data.<sup>19</sup>

A few points are worth highlighting regarding the analysis presented in this paper. First, the growth data for the UK is derived from a database still under development, so it may change in future revisions. Excluding the UK does however not change the main conclusions of the analysis. Second, unless otherwise stated, the data and figures discussed here only include surviving firms, defined as those that have survived with positive employment throughout the three-year period. Work is underway to expand the coverage to capture employment creation by entrepreneurs and employment destruction by exiting firms. Third, data was collected for all firms with at least one employee, but unless otherwise stated the data discussed here considers only firms with ten or more employees (firms with more than 250 employees are not included for Canada). See Bravo-Biosca (2011) for further details of the database construction process, the underlying definitions and limitations of this approach, as well as additional analysis.

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of the controller of HMSO and Queen's Printer for Scotland. The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the statistical data. This work uses research datasets which may not exactly reproduce National Statistics aggregates.

<sup>15</sup> In addition, data for Greece was added more recently to the database, and it is not included in this discussion.

<sup>16</sup> The potential influence of business cycles in the results presented in this report is discussed later in the paper.

<sup>17</sup> Non-agriculture business sector, ISIC Rev.3 Sectors 10-74.

<sup>18</sup> Specifically, the 11 growth intervals considered are:  $]-\infty, -20\%[$ ,  $[-20\%; -15\%[$ ,  $[-15\%; -10\%[$ ,  $[-10\%; -5\%[$ ,  $[-5\%; -1\%[$ ,  $[-1\%; 1\%[$ ,  $[1\%; 5\%[$ ,  $[5\%; 10\%[$ ,  $[10\%; 15\%[$ ,  $[15\%; 20\%[$  and  $[20\%; \infty[$ .

<sup>19</sup> Both employment and turnover are commonly used to measure business growth. While they both have strengths and weaknesses, they offer an imperfect proxy for value-added growth, the metric of most interest for policymakers but unfortunately the least available in business registers.

Finally, a note on the coverage of the analysis. The eight European countries in our sample provide good mix of small and large economies as well as Southern and Northern European countries, even if there are some major omissions.<sup>20</sup> When discussing the results we use the terms 'Europe' and 'European countries' interchangeably to refer to the simple average across the participating European countries.

## 3 - Exploring the distribution of business growth in Europe and the US

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### 3.1 The Europe-US gap

This section uses this newly developed database to examine the dynamics of business growth between Europe and the US. The distribution of business growth for private sector firms is summarised in Figure 1. Each column indicates the share of firms with ten or more employees with average annual employment growth rates over a three-year period falling within that growth interval (with the range covering 11 intervals from less than -20 per cent to more than +20 per cent employment growth per annum).

At first glance, the distribution of business growth for the average European country and the US looks broadly similar. It is symmetric with extreme bursts of growth or decline occurring quite regularly. Most companies only experience modest growth, and the number of businesses that decrease in size is similar to the number that increase their size. Significantly the median firm experiences slightly negative growth, and consequently existing firms are somewhat more likely to shrink than grow,

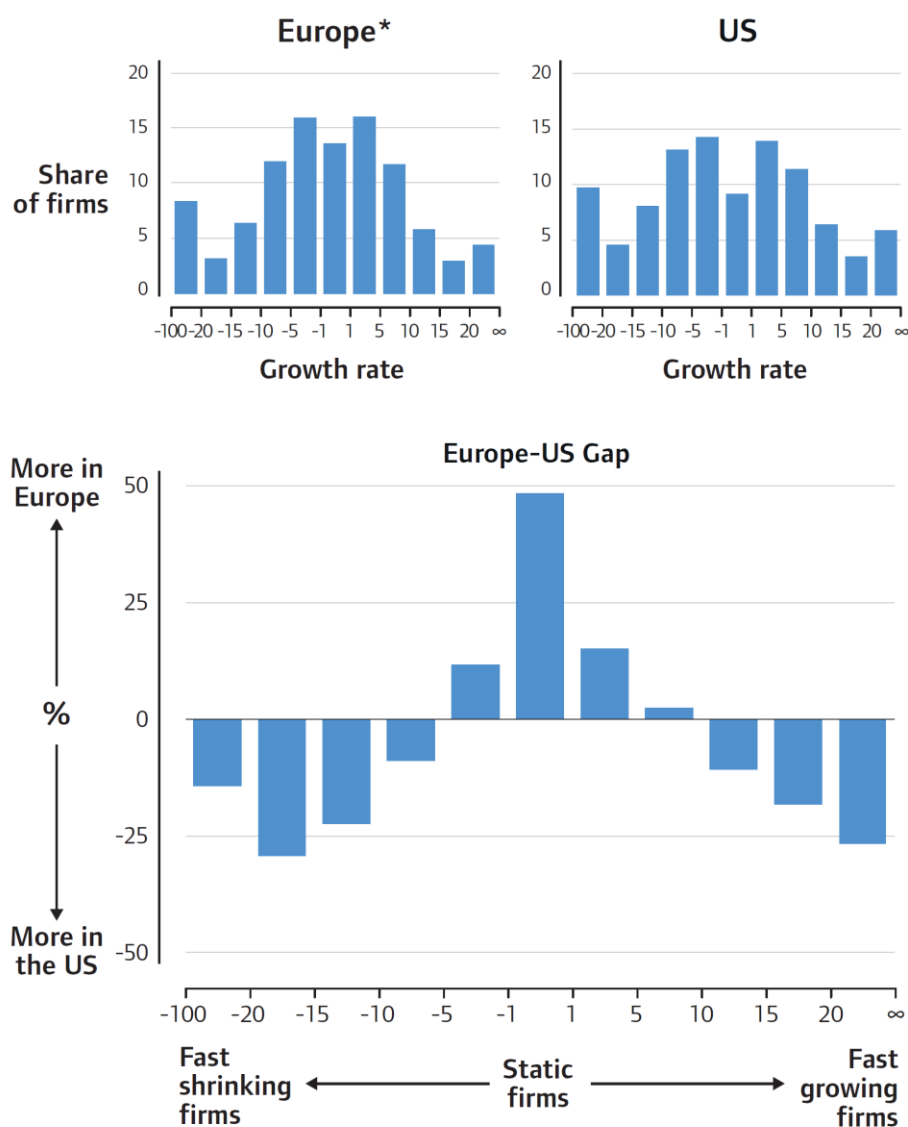
However, closer examination highlights significant differences between Europe and the US. The bottom figure reports the relative difference in percentage between the US and the European average in the share of firms that fall within each growth interval.

The column at the top of the growth distribution corresponds to the share of high-growth firms. The US-Europe gap in high-growth firms is relatively well documented, but Figure 1 clearly shows that focusing exclusively on the top of the growth distribution gives an incomplete picture of business growth dynamics.

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<sup>20</sup> Data has, so far, not been available for France, Germany or the new EU member states. All European Union members and several other countries around the world were invited to participate in this project. Unfortunately, due to a variety of reasons (ranging from data unavailability to budget constraints) so far only some of them have been able to provide data.



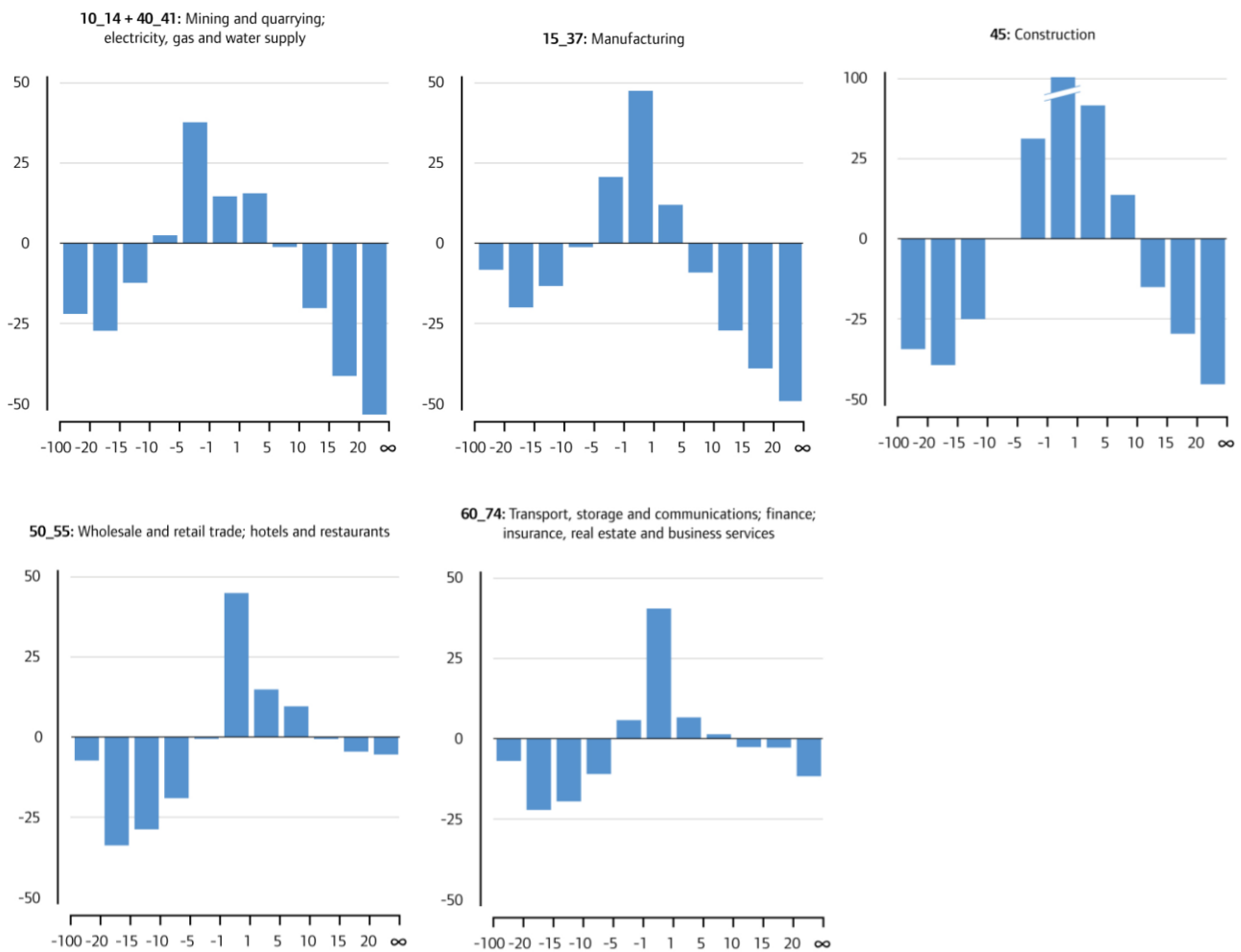
**Figure 1: Business growth distribution**

The largest gap between Europe and the US in all the 11 growth intervals considered, both in absolute and relative terms, is not at the extremes but in the middle of the distribution. A much greater proportion of European firms experience very modest or zero growth. The share of static firms<sup>21</sup> in the US was almost a third lower than in the average European country (9.2 per cent vs. 13.6 per cent). Broadening the definition of stability to include firms that grow or shrink by less than 5 per cent per annum leads to a similar conclusion:<sup>22</sup> 45.6 per cent of European firms were stable on this metric compared to 37.4 per cent in the US. This eight percentage point gap is explained by both a larger share of expanding and contracting firms in the US.

<sup>21</sup> Static firms are defined as those that did not expand or contract. More precisely, firms with a growth rate between -1 per cent and 1 per cent per annum on average over the period, which corresponds to the central interval in the growth distribution (Figure 1).

<sup>22</sup> This corresponds to the three central columns in the growth distribution in Figure 1.

Figure 2: Europe-US gap by sector

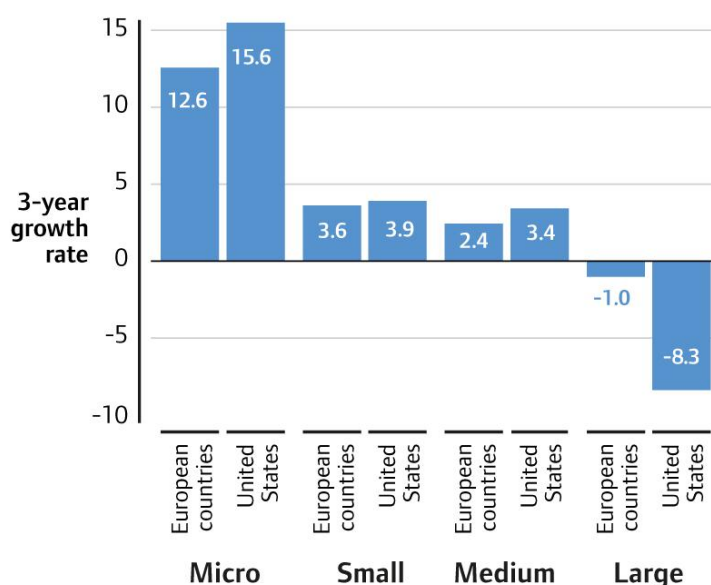


In summary, US firms are more likely to expand or contract, while European firms are more likely to stay the same size. Figure 2 explores whether the sectoral composition is driving the observed differences. When firms in the same sector are compared, European firms still grow and shrink more slowly than those in the US across all sectors.

### 3.2 Small vs. large: business growth by firm size

The US-Europe differences in business growth dynamics vary across firms of different sizes, but size does not explain the differences. European firms are significantly smaller than their US counterparts, with the average surviving European firm employing 14 people compared to an average of 30 people in the US.<sup>23</sup> While the vast majority of firms in both continents have fewer

<sup>23</sup> Note that all the firm size measures discussed here are based on surviving firms (with one or more employees), so they differ from the average size computed using the full stock of firms (which also includes new entrants and firms that do not survive three years).

**Figure 3: Average 3-year growth rate by firm size**

than 50 employees (95 per cent or higher), the distribution of employment across different sizes of firms varies widely.<sup>24</sup> Firms with more than 250 employees accounted for over 60 per cent of employment in the US, but less than 40 per cent in Europe.<sup>25</sup> At the other extreme, firms with fewer than ten employees represented only 8 per cent of employment by surviving firms in the US, less than half their share in the average European country (18 per cent).<sup>26</sup>

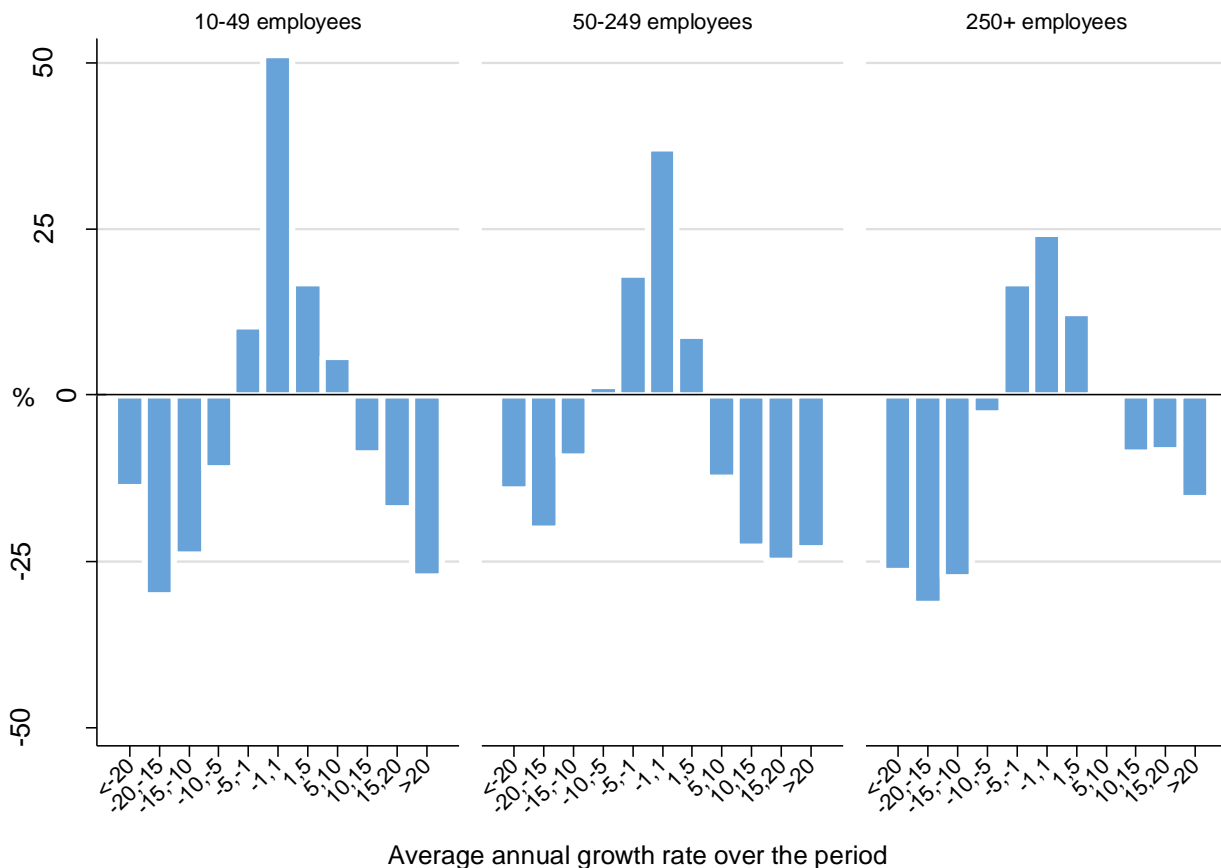
Figure 3 shows the average growth rate over the period for all surviving firms by their size at the beginning of the period. Surviving smaller firms grew faster than larger firms on average, both in Europe and the US.<sup>27</sup> But the comparison between both continents highlights some crucial differences.

<sup>24</sup> Throughout this paper the conventional statistical definitions for firm size are used. Micro firms have between one and nine employees, small firms between ten and 49 employees, medium firms between 50 and 249, and large firms 250 or more employees.

<sup>25</sup> See Figure A.1 in the appendix for data country by country.

<sup>26</sup> Differences are even more striking if the variation within Europe is considered. Spain had the smallest firms on average, with those with fewer than ten employees constituting 25 per cent of employment (vs. 8 per cent in the US), while large firms (250+ employees), traditionally expected to have higher productivity, represented only 30 per cent of employment by surviving firms in Spain (vs. 62 per cent in the US). The average firm size ranged from ten employees in Spain to 30 in the US, with the US far ahead of all the other countries. The picture does not change if micro firms are excluded and only firms with ten or more employees are considered, in which case average size ranged from 47 employees for Italy to almost a 100 for the US. Interestingly, Denmark and Finland had fewer micro firms and more large firms than larger countries like Italy and Spain, so it is not just country size that lies behind these differences.

<sup>27</sup> Note that this data is insufficient to compare the contribution that firms of different sizes make to net job creation. While surviving SMEs create more jobs than larger firms, the database includes no information on the jobs that they destroy through exit. And thus net job creation by firm size cannot be computed (see also section 4 for a discussion of the limitations of the job creation measures used here). For the same reason it is not possible to use these data to compare net job creation by young firms and old firms, nor the interaction

**Figure 4: Europe-US gap by firm size**

Micro, small and medium firms grew more slowly in the average European country than in the US (even if there is significant variation within Europe).<sup>28</sup> On the contrary, large European firms did relatively better, shrinking by significantly less than their US peers. For instance, medium firms grew by 3.4 per cent in the US on average, compared to 2.4 per cent in Europe. On the contrary, large firms shrank by 8.3 per cent in the US, but by only 1 per cent in Europe.<sup>29</sup> As a result, the gap between the average growth rate of medium firms and large firms was almost 12 percentage points in the US, compared to less than four percentage points in the average European country. Thus it appears it is more difficult for European SMEs to grow to challenge larger incumbents.

A look at the full distribution sheds more light on this. Figure 4 displays the Europe-US gap by firm size. Regardless of size, Europe has more static firms and the US more growing and shrinking firms. But look closer and some other patterns emerge. While the gap is roughly symmetric for small firms, it is not for medium firms and large firms. On the one hand, US medium firms grow

between size and age (would small firms create more jobs because they are small, or because they are younger on average?). For a detailed analysis of this question in the US, see Haltiwanger, Jarmin and Miranda (2010).

<sup>28</sup> See Bravo-Biosca (2010).

**Figure 5: 3-year employment growth rate - surviving firms vs. private sector**

much faster than European ones, but only shrink slightly faster. On the other hand, US large firms shrink much faster than in Europe, but only grow slightly faster. Therefore, it appears that, compared to the other firms in their own country, large firms do relatively better in Europe, while medium firms do relatively better in the US.

Due to the large contraction in employment by US large firms and their larger share in the economy, US and European surviving firms also differ in their aggregate contribution to employment growth (Figure 5). On aggregate, surviving firms (including micro firms)<sup>30</sup> created employment in the average European country but destroyed it in the US (3.3 vs. -2.8 per cent on average over the period).<sup>31,32</sup> Surviving firms are only one of the contributors to employment growth. Figure 5 also displays private sector employment growth over the period, which in addition captures job creation and destruction through entry and exit of firms.<sup>33</sup> It shows that overall employment growth in the US was both positive and higher than in the average European country. Given that the contribution of established business to net job creation was negative in the US, the question that arises is who filled the gap? The answer is entrepreneurs. These appear to play a much more significant role in job creation in the US than in Europe, although definitive conclusions would require further data.<sup>34</sup>

<sup>29</sup> Note however that large firms are significantly larger on average in the US than in Europe. The incidence of outsourcing may also vary.

<sup>30</sup> Note that in contrast to the rest of the paper these employment figures refer to all surviving firms with one or more employees, and not only to firms with ten or more employees.

<sup>31</sup> See section 4 for a discussion of the limitations of the job creation measures discussed here.

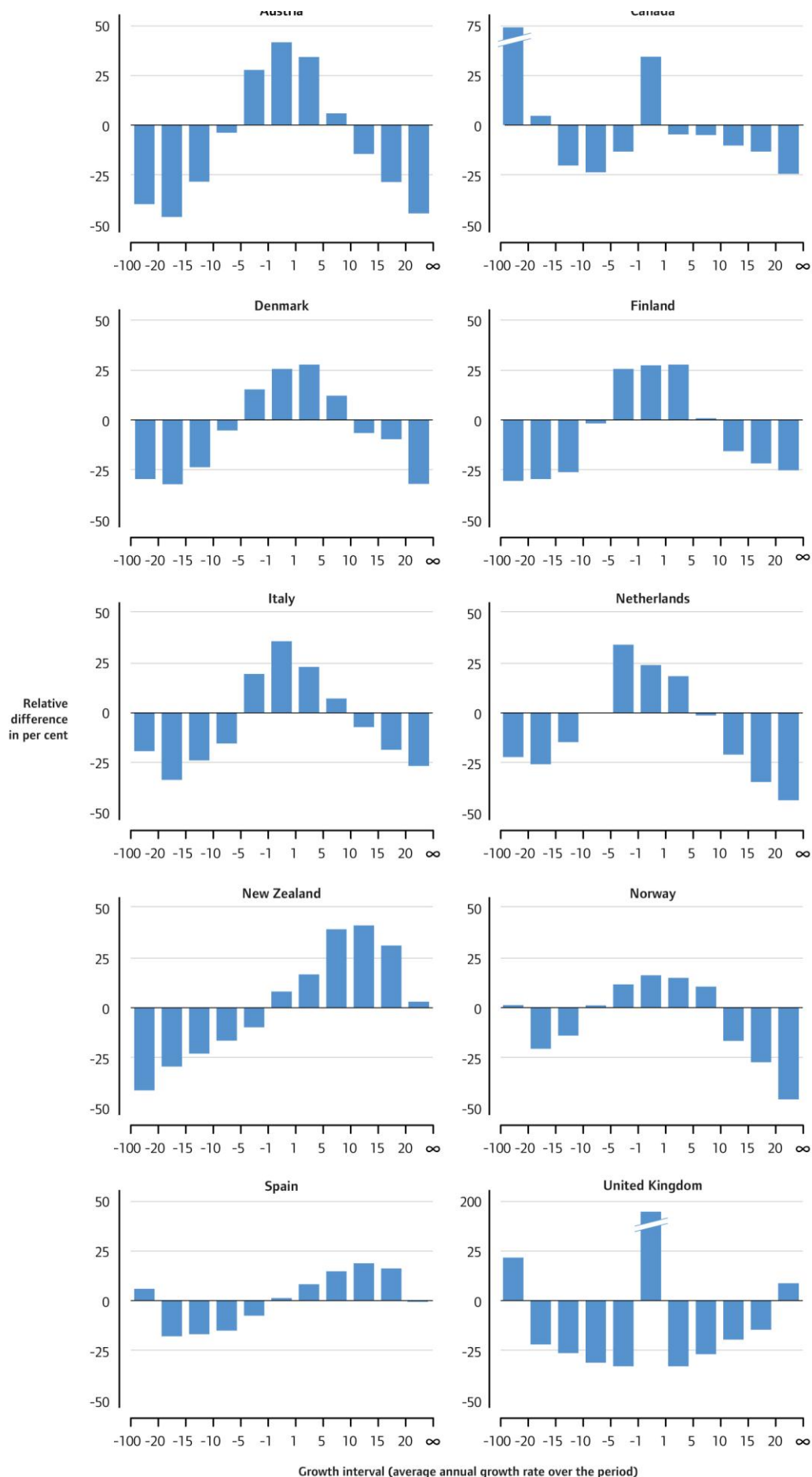
<sup>32</sup> There are however quite significant differences across countries (See Bravo-Biosca 2010).

<sup>33</sup> Private sector employment growth is based on nonagriculture business sector employment as reported by the OECD Structural Analysis Database. Both sources measure employment growth between 2002 and 2005, but the precise time of the year to which the data refer may differ for some countries. UK data do not include self-employment, and so the UK is excluded from the European average for consistency (including it does not change the conclusion). New Zealand data are not available there.

<sup>34</sup> Further data on jobs created by entrepreneurs or jobs destroyed through exit would be required to reach more definitive conclusions. Work is underway to collect this data.

# A LOOK AT BUSINESS GROWTH AND CONTRACTION IN EUROPE

Figure 6: Relative gap with the US by country



### 3.3 Gap by country

Figure 6 displays the share of firms that fall within each growth interval in each country relative to the US.<sup>35</sup> It shows that the main patterns identified hold across most European countries. In summary, the top half of firms grow faster in the US than in Europe while the bottom half shrink faster. As a result, at the end of the period, the gap between successful and unsuccessful firms is larger in the US.

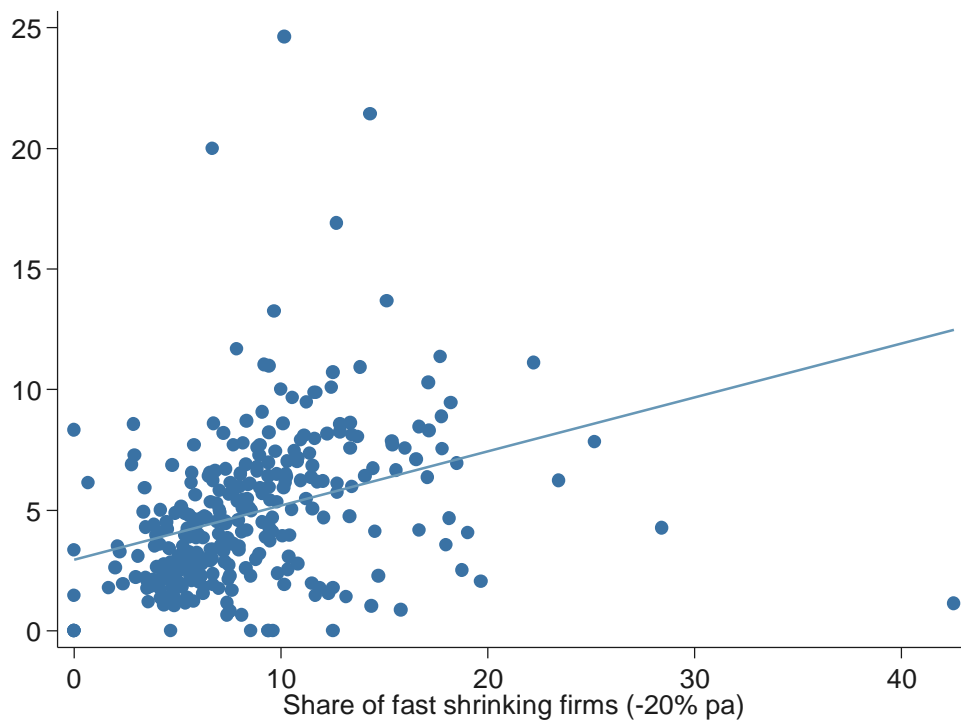
Business cycles could potentially explain the lower dynamism that European firms display. Without time series information it is difficult to accurately examine this hypothesis. However, it does not appear that the cycle fully accounts for Europe's lower dynamism. Although most countries experienced an expansionary phase in the study period, the US economy was growing by 3.1 per cent per annum whereas the European countries considered here grew by only 2.2 per cent on average (although with significant variation within Europe). Thus even when the performance of the US economy was superior, US firms contracted more rapidly than European ones. Therefore, the US-Europe differences in growth dynamics are unlikely to be just the result of the business cycle. There is also a structural component to them.<sup>36</sup>

The business cycle may however have had a notable impact in some of the countries included in the study, particularly New Zealand and Spain.<sup>37</sup> Figure 5 suggests that the full growth distribution for Spain and New Zealand shifted upwards, coinciding with the large economic boom that both countries experienced. Business cycles thus appear to be at least partially responsible for the high business growth that these two countries exhibited, and therefore they played a role in some of the country rankings.

Finally, it is not coincidence that the US has both faster-growing and faster-shrinking firms than the average European country, since the two are correlated. Each data point in Figure 7 represents a specific industry in a particular country, and shows the share of high-growth firms on the y axis and the share of fast shrinking firms in the x axis. This is defined as the opposite of high-growth firms, namely the share of firms with average annual growth of -20 per cent over a three year period. The positive correlation between the share of high-growth firms and the share of shrinking firms indicates that the faster successful companies grow, the faster unsuccessful companies in the

<sup>35</sup> Canada only provided data for firms that have between ten and 250 employees, so the Canada-US comparison in this figure is adjusted accordingly.

<sup>36</sup> The very limited data available for 2004/05-2007/08 also suggest this to be the case. See Bravo-Biosca (2011) for further discussion.

**Figure 7: Correlation between high-growth and fast shrinking firms**

same industry shrink.<sup>38,39</sup> This would be expected since, after all, firms frequently grow at the expense of other firms, by attracting their workers or taking over their markets.

## 4 - High-growth firms in Europe

High-growth firms are defined by Eurostat and the OECD as all enterprises with ten or more employees in the beginning of the observation period with average annualised employment (or turnover) growth greater than 20 per cent over a three-year period (Eurostat-OECD, 2007). While this is a somewhat arbitrary cut-off, it has become a useful indicator for policy makers. So we next discuss a few of their characteristics that can be examined with this new database.

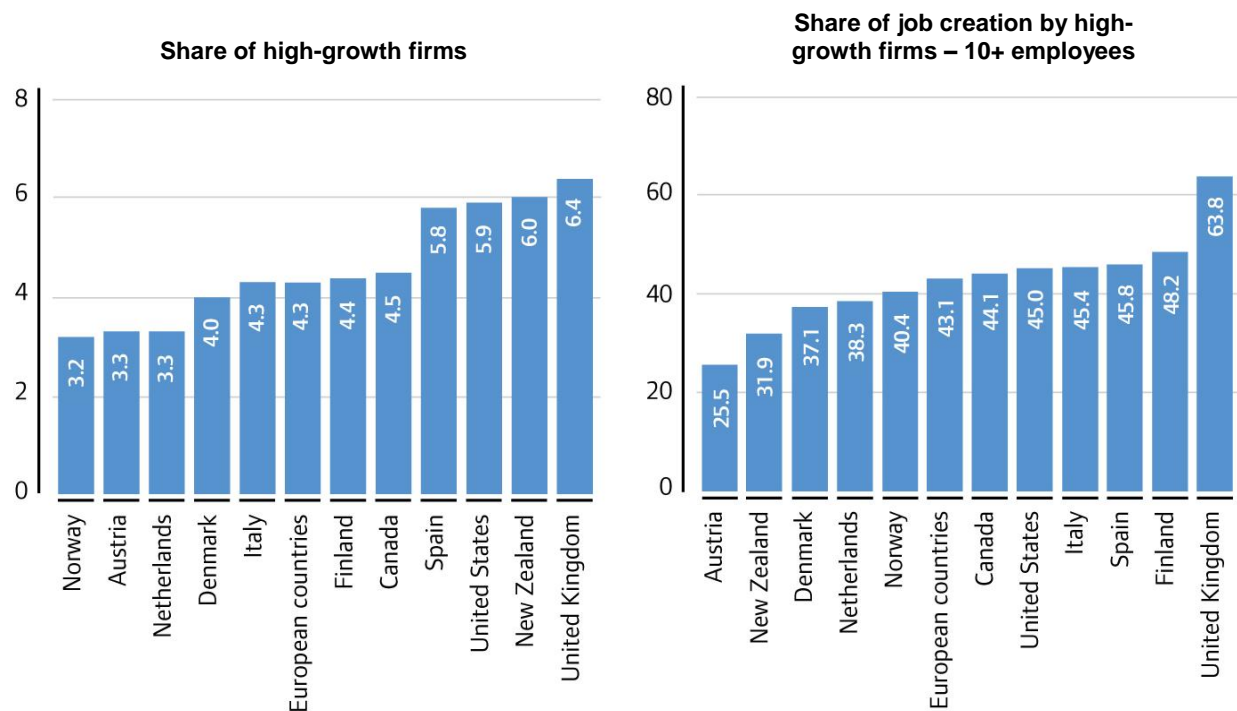
Two precautionary comments. First, it can be misleading to look at high-growth firms as a determined or fixed group of firms. The firms that achieved high-growth in the previous period are

<sup>37</sup> Business cycles may also have played a role in some of the other differences identified here. For instance, the pro-cyclicality of employment creation may vary for firms of different size, and so comparisons of growth rates for firms of different size may be affected as a result.

<sup>38</sup> This correlation does not control for shocks that shift the full growth distribution upwards or downwards. Doing so results in an even stronger correlation.

<sup>39</sup> Employment growth is used here as a shorthand for success. Obviously, a firm's contraction in employment does not necessarily equate to lack of success. For instance, process innovation often involves substituting new equipment for labour, generating efficiency gains as a result. Similarly, firms may decide to re-focus on its core competences in response to changing market conditions, as IBM did when it sold its PC division.



**Figure 8: High-growth firms and job creation**

unlikely to be the same which achieve high-growth in the next period. Instead, high-growth is capturing a stage in the development of firms with the ambition and potential to grow. It is therefore a useful statistical indicator rather than a selection criterion to identify which firms to target for support.

Second, a major caveat on most available measures of high-growth firms and their contribution to job creation regards the treatment of mergers and acquisitions. Specifically, all measures of job creation discussed here capture in principle all jobs gained by surviving firms, regardless of whether they are the result of organic growth or instead are gained through acquisitions of existing firms.<sup>40</sup> Similarly, job destruction counts both jobs lost by firms that dismiss employees but also spinouts that reduce the headcount of the firm. These measures thus capture the restructuring process that firms undertake, regardless of whether this is achieved through acquisitions, spinouts or organic growth. This approach is however far from ideal to measure job creation, but it is a consequence of the challenges that M&As and spinouts present for many business registers. Given that the propensity to engage in M&A activity varies by size, age and sector, the breakdowns of job creation by these different categories need to be interpreted with care. Also, job creation by entrepreneurs and destruction through exit is not yet included here.<sup>41</sup>

<sup>40</sup> Austria and New Zealand are exceptions.

<sup>41</sup> Unfortunately, the database does not yet include data on job creation by entrepreneurs that entered the market during the period considered in this study, which would provide a fuller picture of job creation

#### ***4.1 The disproportionate contribution of high-growth firms to job creation***

High-growth firms represent between 3 and 6 per cent of all surviving firm with ten or more employees, as seen in Figure 8.<sup>42</sup> But they make a disproportionate contribution to job creation, accounting for between a third and a half of all jobs created by surviving firms with ten or more employees. There are however differences across countries in the contribution of high-growth firms to employment creation, even if the US and the European average are quite close. For instance, Finland and Denmark had a similar share of high-growth firms, but they respectively accounted for 48 per cent vs. 37 per cent of job creation by surviving firms with ten or more employees.

#### ***4.2 Young firms grow faster, but most high-growth firms are older than 5 years***

While we only have data on business growth dynamics by age for a subset of countries, a very consistent pattern emerges in all of them. As the top left chart in Figure 9 shows, the share of high-growth firms falls with firm age. It is three times higher for firms aged 5 or less than for firms older than 10 years. Still, as the same figure shows, a majority of high-growth firms are older than 5 years, so start-ups are not the only group of firms that grow fast. Young high-growth firms are however responsible for ca. 40% of the jobs created by high-growth firms.

Figure 9 also shows the job creation patterns among young firms. A minority of surviving start-ups (6-9 per cent) account for around half of all job creation by surviving young firms. So while start-ups matter on aggregate, not all start-ups matter equally. In addition, we can examine as well the concentration of job creation by age group. The contribution of high-growth firms to job creation in the same age group decreases with age, but less than proportionally (i.e., relative to their share of firms), which tentatively suggests that job creation becomes more concentrated in fewer firms as companies mature.

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dynamics. There is also no data available on the sustainability of the jobs they create, whether they remain in the following period or alternatively disappear if there is some reversion to the mean.

<sup>42</sup> Note however that the figures report the share of high-growth firms relative to all surviving firms with ten or more employees, so these figures are not directly comparable to those published by the OECD, which reports the share relative to the total population of active enterprises in the reporting year with at least ten employees (OECD, 2009).

### ***4.3 Most high-growth firms are small, but large firms can also achieve high-growth***

The average European high-growth firms almost triples its employment level in three years, going from 44 to 124 employees and so gaining 80 jobs over the period.<sup>43</sup> But there is a large variation in the size of high-growth firms. As Figure 9 shows, the share of high-growth firms decreases only marginally with firm size. Or, in other words, high-growth firms can be of any size. Therefore, the distribution of high-growth firms across firm sizes mirrors that of the full business population, so over 95% of them are SMEs. But if we look at employment a different picture emerges. There are large differences across countries in the contribution that high-growth firms of different sizes to job creation, although it is unclear the potential role of M&A activity in explaining them.

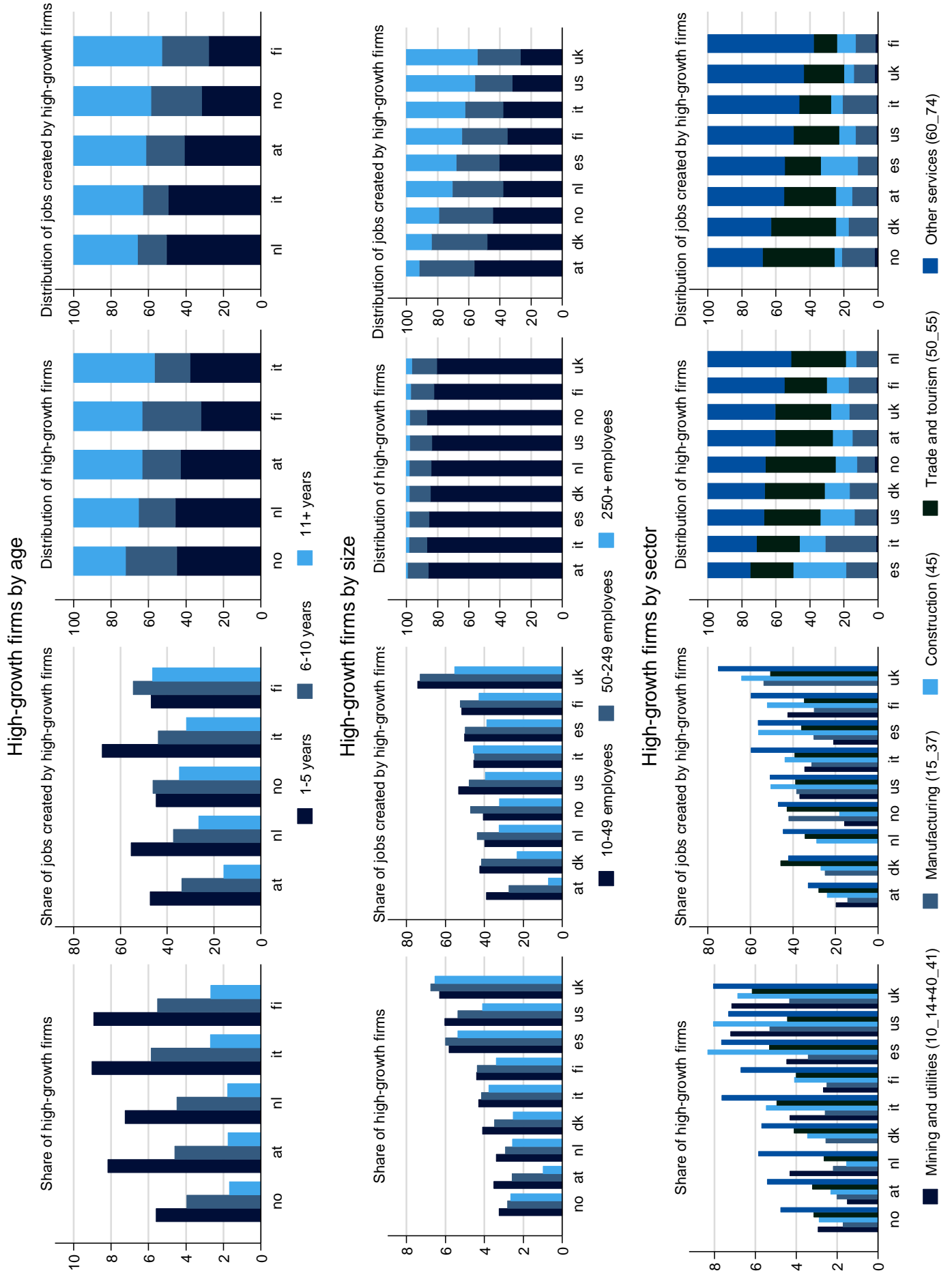
### ***4.4 High-growth firms are everywhere, not only in high-tech or “innovative” sectors***

The bottom row in Figure 9 considers the industrial mix. High-growth firms are not exclusive to so-called high-tech or “innovative” sectors. Instead, they are present in all major sectors of European economies, with a higher share of firms and jobs in services than manufacturing. A majority of European high-growth firms are found in the service sectors, mostly in the other services category (e.g., transport, storage and communications, finance, insurance, real estate and business services). As a result, a majority of the jobs created by high-growth firms are also in services, only less than 20 per cent are in manufacturing. The balance between different sectors does however appear to reflect trends in some of the European economies in the period. For instance, 30% of Spanish high-growth firms over the period were in the construction sector, more than double the level in most other European countries.

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<sup>43</sup> 66 excluding the UK, which as seen in Figure 9 appears to be somewhat of an outlier.

Figure 9: High-growth firms and job creation by age, size and sector



## 5 - Business growth dynamics and productivity growth

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The evidence shows that Europe has a less dynamic growth distribution than the US, with fewer growing and shrinking firms and more static firms. It also has fewer high-growth firms, the small number of firms which contribute disproportionately to job creation. And, since they are correlated, also fewer fast shrinking firms. The question that follows is whether the higher inertia of Europe's business population matters. We argue it does, by hampering long-term productivity growth.

### ***5.1 Why a dynamic growth distribution matters for productivity growth***

A dynamic growth distribution is linked to productivity growth through three different channels: it is evidence of a more competitive environment, it speeds up the reallocation of resources, and finally it signals a higher level of experimentation and innovation. We next discuss them one by one.

Innovation requires experimentation in the real world, going beyond the R&D lab. It is about putting new ideas into practice. Trying a new business model, exploiting a new technology or launching a new product often requires expanding a firm's current capabilities, which may involve setting up a new plant or hiring a new marketing team. But since experimentation is uncertain and market selection harsh, a 'wait and see' approach often replaces risk-taking if failure is too costly.<sup>44</sup> The larger proportion of static firms in Europe suggests that more European firms are following this risk-averse approach. Too many appear either unwilling or unable to experiment and exploit new growth opportunities, and so they fail to innovate effectively.

The benefits of innovation are only maximised when firms build on it. This means expanding and replacing less successful firms, driving productivity growth in the process. The reallocation of resources towards more productive plants directly accounts for about half of total factor productivity growth in US manufacturing.<sup>45</sup> But European firms grow and shrink more slowly than US firms. And, as a result, the process of job reallocation across firms is slower, hampering productivity growth in Europe.

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<sup>44</sup> See for instance Bartelsman, Perotti and Scarpetta (2008).

<sup>45</sup> See Baily *et al.* (1992) and Haltiwanger (1997). Other studies have reached similar conclusions in other countries. For instance, Disney, Haskel and Heden (2003) undertakes a similar study for the UK and finds that entry, exit and the reallocation of resources across existing establishments jointly accounted for 80-90 per cent of TFP growth and 50 per cent of ALP growth in UK manufacturing, while the remaining growth on both measures was attributed to internal improvements within establishments.

A more dynamic business growth distribution also reflects a more competitive market, which in turn impacts on incentives to innovate.<sup>46</sup> An environment with higher levels of entry and growth results in increased competitive pressures, forcing firms either to improve their performance or to shrink and exit.<sup>47</sup> The higher proportion of static European firms suggests lower competitive pressures, potentially damaging long-term productivity growth.<sup>48</sup> This is consistent with research showing that the limited turnover of big businesses, which is quite typical in Europe, damages economic growth.<sup>49</sup>

## 5.2 A test of the relationship

In a separate paper we use this database to test the relationship between a dynamic growth distribution and productivity growth.<sup>50</sup> Our findings are consistent with the wider academic literature.<sup>51</sup> Specifically, we regress total factor productivity (TFP) growth at the industry-country level in 2002-2005 on the share of firms that remain completely static,<sup>52</sup> which is used as a proxy for the dynamism of the growth distribution, and also control for initial productivity and average employment growth as well as for industry and country characteristics.<sup>53</sup> We find that the greater the share of firms that do not expand or contract, the lower the productivity growth observed. Specifically, a 1 percentage point (pp) increase in the share of firms remaining completely static is associated with 0.2pp lower annual TFP growth.<sup>54</sup> When splitting non-static firms between those that expand and those that contract, the estimation suggests that both growing and shrinking firms are associated with faster productivity growth. Given that the difference in the share of static firms amounted to a few percentage points, the magnitude of the

<sup>46</sup> See for instance Aghion *et al.* (2005) or Gilbert (2006).

<sup>47</sup> See for instance Bartelsman, Haltiwanger and Scarpetta (2004).

<sup>48</sup> See for instance Nicoletti and Scarpetta (2003).

<sup>49</sup> See Fogel, Morck and Yeung (2006), which concludes that big business turnover is correlated with (and appears to cause) economic growth. Interestingly, the result is driven more by disappearing behemoths than by rising stars.

<sup>50</sup> Bravo-Biosca (2011).

<sup>51</sup> For a review of the literature, see Ahn (2001). For additional evidence, see also Baldwin and Gu (2006) and Foster, Haltiwanger and Krizan (2006).

<sup>52</sup> Growth rate between -1 per cent and 1 per cent per annum on average over the period.

<sup>53</sup> Specifically, the following model is estimated:  $TFP\ growth_{ij} = \beta_0\ share_{ij} + \beta_1\ distancefrontier_{ij} + \beta_2\ empgrowth_{ij} + countrydummy_i + industrydummy_j + \varepsilon_{ij}$  Distance to the technology frontier at the beginning of the period controls for potential convergence effects while average employment growth controls for industry-country specific shocks (excluding both of them does not affect the results). The coefficient for the share of static firms is -0.194. If instead both the share of growing firms and the share of shrinking firms are included in the regression, the coefficients are 0.252 and 0.172 respectively. All coefficients are significant at the 5 per cent level, with the residuals clustered at the industry and country level. The EU KLEMS Database (O'Mahony and Timmer, 2009) and the GGDC Productivity Level Database (Inklaar and Timmer, 2008) are used for industry-level total factor productivity data. See Bravo-Biosca (2011) for further discussion.

<sup>54</sup> Alternatively, a one-standard deviation increase in the share of static firms is associated with 1.1pp lower annual TFP growth.

coefficients is non negligible. Note that in the decade prior to the financial crisis, Europe's annual TFP growth lagged the US by 1.1pp on average.<sup>55</sup>

Finally, we also test whether a more dynamic growth distribution becomes more important as countries get closer to the global technology frontier. Countries can increase productivity by accumulating capital and imitating what others have invented elsewhere. But once these sources of growth have been exhausted, innovation is the main engine left to drive productivity growth.<sup>56</sup> Experimenting with new ideas, selecting the best ones, and reallocating resources towards successful innovators should become more important as countries converge to the technology frontier, and our analysis confirms this. Far from the frontier, a large share of static firms is not associated with lower TFP growth, while at the frontier it is.<sup>57</sup> This may help to explain why European businesses lower "dynamism" was not a barrier to Europe's convergence with the US during the second half of the 20<sup>th</sup> century, but it became so once Europe started to catch up in the early 1990s. The EU15-US gap in GDP per hour increased from 2pp to 10pp from 1995 to 2006, as annual labour productivity growth averaged 1.5 per cent in the EU15, compared to 2.3 per cent in the US.<sup>58</sup>

### **5.3 Productive vs. unproductive churn**

While a dynamic business growth distribution is generally a positive sign, it is not a sufficient condition for productivity growth if the reallocation of resources is not directed towards the most productive firms. This may occur when less productive firms have better access to finance, better government or supplier contacts, managers who care more about empire-building than improving performance, or when a speculative bubble distorts the allocation process.

The current evidence base suggests that not only is churn low throughout Europe, but also that it is not always productivity enhancing. Recent research finds that there are large differences across countries in the correlation between firm growth and initial productivity levels. For instance, in the UK the most productive 25 per cent of firms grow three times faster than the median firm, while the 25 per cent least productive firms shrink very fast too.<sup>59</sup> In contrast, in other European countries such as Italy, France or Spain, firms in the bottom quartile of the productivity distribution (i.e. the least productive firms) continue to exhibit positive growth, or shrink only marginally.<sup>60</sup> The

<sup>55</sup> Van Ark, O'Mahony and Timmer (2008).

<sup>56</sup> See for instance Acemoglu, Aghion and Zilibotti (2006) or Aghion (2006).

<sup>57</sup> As predicted by Acemoglu, Aghion and Zilibotti (2006).

<sup>58</sup> Van Ark, O'Mahony and Timmer (2008).

<sup>59</sup> These figures are based on growth in value added by quartiles of the multi-factor productivity distribution of firms over 1998-2004 (Arnold, Nicoletti and Scarpetta, 2008).

<sup>60</sup> Spain appears to be an extreme case of unproductive churn, since according to Arnold, Nicoletti and Scarpetta (2008) the growth rates for firms at the top and the bottom quartile of the productivity distribution

consequence is a more inefficient allocation of resources in Europe.<sup>61</sup> While large firms are generally more productive than small firms, the slower expansion of the most productive firms and the limited contraction of unproductive incumbents in many European countries results in a much weaker correlation between size and productivity than in the US.<sup>62</sup> In other words, too often in Europe the more productive companies are not the ones with the largest market share. Consequently, the potential to increase productivity by simply reallocating resources between existing firms is significantly larger in European countries.

## 6 - Conclusions

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This paper began with a question, which firms matter most. Rather than looking only at a particular group of firms, whether the small, the young, the high-growth or high-tech, the data shows that it is important to look at the full picture to identify the right policy mix.

Europe's underperformance in terms of fast growing companies is connected to its lower share of shrinking firms. The less dynamic business growth distribution in Europe, with a much larger share of static firms, points to less experimentation and a slower reallocation of resources from less to more productive businesses, both important drivers of productivity growth. And the analysis of the database supports this link. A more dynamic growth distribution is associated with faster productivity growth, particularly as countries get closer to the technology frontier. Significantly, both a higher share of growing and shrinking firms are correlated with faster productivity growth. The lower dynamism of European businesses – both in terms of growth and contraction – can thus help to explain the widening productivity gap with the US.

The most promising response to reverse this trend is to encourage an environment that rewards experimentation, penalises inertia and reduces the costs of failure: that is, an economy in which innovative firms experiment with new ideas, exploit new growth opportunities and, if successful, supplant less productive firms, which shrink and exit. This creative destruction is not without downsides. A larger share of shrinking firms, even if offset by a group of faster-growing companies,

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are very similar. Several factors, such as the housing bubble, product market regulation or Spain's dual labour market (both extremely flexible and inflexible simultaneously), may lie behind this puzzling finding. But regardless of the cause, it can help to explain why Spain's dynamic growth distribution did not translate into higher productivity growth, experiencing instead one of the worst productivity performances across developed countries, the consequences of which have now become clear.

<sup>61</sup> Bartelsman, Haltiwanger and Scarpetta (2004).

<sup>62</sup> Bartelsman, Haltiwanger and Scarpetta (2009).



can generate significant adjustment costs,<sup>63</sup> so the appropriate mechanisms also need to be in place to facilitate the transition and protect those that lose in the process.

Does the focus on better functioning markets imply that there is no scope for more specific interventions in support of a particular group? The analysis shows that high-growth firms make a disproportionate contribution to job creation. However there is often a tendency to consider these firms as a homogenous and defined group of firms. It is neither. First, the data clearly shows that high-growth firms are everywhere, some are young, some are old, some are in so-called “growth” sectors, other in “traditional” sectors, some are small, others are large. Second, it is not a fixed group of companies but a stage in some firms’ development.

Therefore, rather than targeting interventions to those firms that are growing fast, a more fruitful approach is to create the enabling conditions that allow the minority of firms that have both the ambition and potential to grow to realize it. In some cases carefully designed and evaluated micro-interventions targeted to a group of entrepreneurs or firms may be justified. Other measures indirectly targeted at the firms with the most growth potential, such as improving the climate for venture capital, may also be necessary. However, these measures are unlikely to address the wider failure to thrive and failure to shrink that hampers Europe’s productivity performance. On the contrary, focusing too narrowly on high-growth firms may lead instead to an overemphasis on targeted support interventions, at the cost of the wider reforms which most likely would have the highest impact across Europe, such as deepening the single market, improving product and labour market regulation and reducing a wide array of barriers to growth and exit.

While Europe has made progress on lowering barriers to entry,<sup>64</sup> there is scope to reduce barriers to growth and contraction in several areas. For instance, labour market regulation, if badly designed, can become a major barrier to growth. Inflexible employment protection legislation hampers both firms’ incentives to experiment with uncertain growth opportunities and the reallocation of labour to more productive uses.<sup>65</sup> A better alternative is the much cited but yet not very widely adopted ‘flexi-security’ model, which protects individuals instead of jobs, and so allows for the higher flexibility intrinsic to a more dynamic business structure while providing the stronger safety net for individuals that this higher flexibility also requires.<sup>66</sup> Product market regulation also

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<sup>63</sup> See for instance Mortensen and Pissarides (1994), Hall (1995) or Caballero and Hammour (2000).

<sup>64</sup> Barriers to entrepreneurship have been falling across most OECD countries over the last decade, with European economies making significant progress and converging with the US (Wolfl *et al.*, 2009).

<sup>65</sup> As a result, high-risk innovative sectors are relatively smaller in countries with strict employment protection legislation (Bartelsman, de Wind and Gautier, 2010). See also Saint-Paul (2002) or Bartelsman, Perotti and Scarpetta (2008). The labour regulation-innovation link is however not uncontroversial. Acharya, Baghai and Subramanian (2010) show that stringent labour laws can provide firms with a commitment device to not punish short-run failures and thereby spur their employees to pursue value-enhancing innovative activities.

<sup>66</sup> There also more indirect benefits from favouring labour expenditures instead of employment protection regulation as a mechanism for providing worker insurance, such as stronger private equity activity (Bozkaya

continues to be higher in Europe than in the US, hampering competition and keeping the cost of inaction low.<sup>67</sup> The result is that stagnant firms that should shrink manage to stay afloat, and many with the potential to grow prefer not to take the risk.

The fragmented market that European firms face also constrains their ability to grow, reducing as well competitive pressures across Europe. While the single market has made it easier to sell goods across borders in the EU, the liberalisation of the market for services, where much of the US-EU productivity gap originates,<sup>68</sup> has been slow. And even after ongoing reforms have been implemented, differences in regulation across member states will still make it difficult for firms, particularly SMEs, to operate across different jurisdictions.<sup>69</sup> Current attempts to create a EU-wide corporate tax base, a single European patent, the new European Private Company status<sup>70</sup> or a single EU contract law suggest a potentially valuable third way. A new separate full-fledged 28th regime (e.g., a new single market for entrepreneurs), sitting alongside the 27 national regimes without replacing them, could give new firms the option to operate under the same set of simplified rules and procedures across the EU, while still preserving the rights of member states over specific issues such as tax rates.

Several other factors, internal or external to the firm, could also help explain Europe's underperformance, and should be taken into account when developing the right policy mix. For instance, European firms appear to be much less effective than their US peers at taking advantage of new technologies, such as IT.<sup>71</sup> They are also more likely to be poorly managed, particularly those with second-generation family management or in low competition markets.<sup>72</sup> Europe's less entrepreneurial culture, unforgiving bankruptcy regimes, underperforming research base and weak university-industry links, among others, have also been mentioned as potential barriers to growth

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and Kerr, 2009), which in turn is associated with improved management practices that lead to better firm performance (Bloom, Sadun and Van Reenen, 2009).

<sup>67</sup> The OECD aggregate Product Market Regulation indicator ranks the US better than any other European country (Wolfl *et al.*, 2009).

<sup>68</sup> Van Ark, O'Mahony and Timmer (2008).

<sup>69</sup> Some barriers are the result of differences in culture, tastes, languages or networks, but many others (e.g. regulation, legal frameworks or tax rules) are within the reach of policymakers. For instance, a foreign firm willing to set up a subsidiary in Spain, the worst performer among developed countries, required 13 procedures and 61 days to be able to do so (The World Bank, 2010). Similarly, a business wishing to establish a subsidiary with just two employees in Belgium or Italy would have to pay 2,000-3,000 Euros only in notary costs (Bernecker, 2010). Moreover, set-up costs ignore the substantial costs of dealing with different jurisdictions on an ongoing basis.

<sup>70</sup> Proposed by the Small Business Act, the *Societas Privata Europaea* or SPE is an attempt currently being discussed to create a single legal form for SMEs valid across Europe. This new parallel regime would sit alongside national regimes without replacing them, giving SMEs the choice between both of them. See European Commission (2008) and Bernecker (2010).

<sup>71</sup> Bloom, Sadun and Van Reenen (2009).

<sup>72</sup> Bloom and Van Reenen (2007).

to be addressed.<sup>73</sup> There are however important differences within Europe. While several barriers are common across the continent, policymakers in various countries have been successful at overcoming some of them.<sup>74</sup> European countries have thus much to gain from learning from their neighbours that are further ahead, as well as from experiences elsewhere.

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<sup>73</sup> See for instance Bosma and Levie (2009), Armour and Cumming (2008), Aghion *et al.* (2007) and European Commission (2007).

<sup>74</sup> See for instance McKinsey & Company (2010).

## 7 - References

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## 8 - Annex: Additional figures

Figure A.1: Share of employment by firm size – surviving firms

