

## **2 How do scalers contribute to economic growth?**

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This chapter provides new evidence on scalers' growth dynamics for five OECD countries – Finland, Italy, Portugal, the Slovak Republic and Spain. The evidence is based on a pilot exercise using firm-level microdata and focuses on the scaling of small- and medium-sized enterprises (SMEs). The contribution of scalers to economic growth depends on the employment and value they create during their high-growth phase and on their ability to sustain their new scale beyond that phase. The analysis confirms that the contribution of scalers is crucial for economic and employment growth, and provides new evidence on their ability to maintain the new scale and the role played by different types of scalers.

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# In Brief

**Scalers create the majority of new jobs in the five OECD pilot countries; most scalers remain at their new scale or continue to grow in the three years after scaling up**

**New evidence shows that employment scalers make up only around 15% of SMEs with at least 10 employees (non-micro SMEs) but account for 50% or more of jobs created.** Scalers are firms growing in employment or turnover at an average annual rate of at least 10% per year over a 3-year period. Over the 2015-17 period, scalers in employment accounted for 13% to 15% of all non-micro SMEs and contributed 47% (Italy) to 69% (Finland) of all jobs created by growing non-micro SMEs. Even among scalers, the fastest-growing firms make the largest contribution to job creation. About one-third of scalers are “high-growth scalers”, i.e. they grow faster than 20% per year on average. High-growth scalers contribute 53% to 72% of all jobs created by scalers. New firms entering the market account for most of the other new jobs, while surviving businesses that do not scale up contribute only marginally. In Portugal, for example, around 5 700 SMEs scaled up in employment during the 2015-17 triennium, creating more than 132 000 jobs. Among those, around 1 800 high-growth scalers created about 78 000 jobs.

**The majority of scalers are “mature” SMEs that are at least six years old at the beginning of their growth spell.** On average across the 5 pilot countries, mature scalers represent almost 80% of all employment scalers and they account for more than 70% of new jobs created by scalers over the 2015-17 period. “Young” SMEs (five years old or younger) are twice as likely to scale up than mature SMEs but they account for only about 20% of all (non-micro) SMEs, which explains their smaller share among scalers and the lower contribution to job creation.

**Scalers in turnover contribute disproportionately to value creation.** Scalers in turnover contribute between 51% (in Spain) and 71% (in Finland and Portugal) to growth in total sales by non-micro SMEs. Turnover scalers also create jobs as they account for 40-65% of gross job creation. Such a large contribution to employment growth is due to two main reasons. First, about one-third of turnover scalers are also employment scalers at the same time. Second, turnover scalers are 40% to 66% more numerous than employment scalers.

**The majority of scalers are able to consolidate their new scale or even continue to grow.** About 60% of employment scalers continue to add jobs or at least maintain their new scale in the 3 years after their initial high-growth phase. Scalers in turnover are equally likely to scale up again but they are also slightly more likely to reverse their growth trajectory.

**The share of scalers that continue to grow differs between economic sectors.** At the upper end, between 66% and 75% of employment scalers in high-tech manufacturing maintain their new scale or continue to grow. The typical lower end of rates for successful scalers are in construction but even in this sector around 50% of employment scalers continue to operate at least at their new scale. Importantly, the aggregate contribution to job growth for scalers continues to be positive in the years following scaling up. Support for scalers, therefore, continues to “pay off” beyond the scale-up phase despite some scalers falling “victim to their own success”, i.e. they shrink or even exit the market in the three years post scaling.

**Young employment scalers are more likely to scale up twice over a six-year period than mature firms.** Between 11% (Spain) and 29% (Portugal) of young scalers follow their first high growth phase with a second one. For mature firms, the share of continuing scalers ranges from 11% (Spain) to 23% (Portugal), with an average gap of around five percentage points compared to young scalers across all countries. At the same time, the growth paths of young firms tend to diverge more than for mature firms. Young scalers are more likely to continue to expand but they are also more likely to fail. Around 45% of young firms shrink to go back to a smaller size or exit the market in the three years following their initial high growth. For mature firms, the average is about 7 percentage points lower.

**Employment scalers often become turnover scalers and vice versa.** Between 14% of scalers in employment in Spain and up to one-third in Portugal continued scaling in turnover in the next three-year period. The opposite growth dynamics, from employment to turnover scaling, are also evident: about 10% to 20% of turnover scalers turn into employment scalers. This suggests that for some firms the scaling-up process is an enduring one that involves a transformation of the way the firm operates.

## Introduction

**The contribution of scalers to job creation and economic growth depends on the employment and value they create during their high-growth phase and on whether they can subsequently maintain their new scale.** Scalers are firms growing in employment or turnover at an average annual rate of at least 10% per year over a 3-year period (Box 2.1). While the contemporaneous contribution to job and value creation by scalers has been widely discussed by economic and policy research, there is less evidence available on the role of scalers in supporting growth beyond their high-growth phase. In light of that, the analysis of this chapter combines two sets of indicators to consider both aspects. The first part of the chapter looks at the contribution to net job creation and net turnover creation by different types of scalers; the second part looks at the growth patterns of different types of scalers in the three years that follow their high-growth phase.

**This chapter leverages firm-level data from five pilot countries.** The findings build upon harmonised analysis of confidential firm-level data sources from Finland, Italy, Portugal, Spain and the Slovak Republic. The exploitation of firm-level data is a “gold mine” for policy analysis but access is still a bottleneck. Box 2.2 discusses the main advantages that firm-level data bring to the analysis, which include the possibility to flexibly aggregate firms along many different dimensions, to track firms over time and to analyse the evolution of their growth pattern, and to customise indicators and variables to specific policy questions. The analysis confirms that the contribution of scalers is crucial for economic and employment growth and that the contribution is persistent over time. The chapter provides further evidence on the contribution to job and value creation by different groups of scalers, such as firms in different sectors or of different ages, and goes beyond the high-growth phase by considering subsequent growth patterns. After scaling up, most scalers are able to maintain the new scale and their aggregate contribution to job and value creation continues to be positive.

### Box 2.1. Definitions of scalers

The definition of “scalers” adopted in this report mirrors the Eurostat-OECD definition of “high-growth firms” illustrated in the *Eurostat-OECD Manual on Business Demography Statistics* (2007<sup>[1]</sup>). An exhaustive definition is reported in Chapter 1.

- Scalers are non-micro firms that grow in employment and turnover at a minimum yearly rate of 10% over a period of 3 consecutive years.
- “Employment scalers” refers to firms that scale up in employment.
- “Turnover scalers” are firms that scale up in turnover, i.e. the total sales of the products and services by the firm within a given year.
- “High-growth” (employment or turnover) scalers are firms that grow in employment or turnover at a yearly rate of more than 20% over 3 consecutive years.

For all definitions, there is the additional condition that the firm must have at least 10 employees in the year in which the fast growth begins.

Source: OECD/Eurostat (2007<sup>[1]</sup>), *OECD-Eurostat Manual on Business Demography Statistics*, <https://www.oecd.org/sdd/39974460.pdf> (accessed on 5 August 2019).

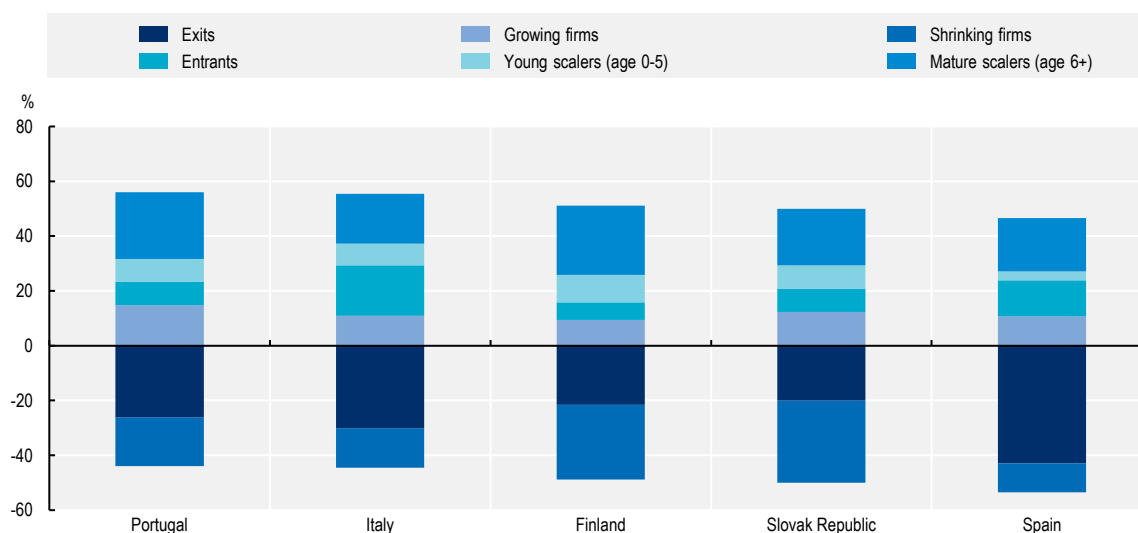
## The contribution to job and value creation by scalers

**Employment growth is concentrated in a few firms that play a crucial role in aggregate growth.** Scalers are firms with 10 employees or more that grow in employment or turnover at an average annual rate of at least 10% per year over a 3-year period (Box 2.1). Over the 2015-17 period, employment scalers account for 13% to 15% of non-micro SMEs (SMEs with at least 10 employees) but contribute 47% to 69% of gross job creation, i.e. the sum of jobs created by growing firms in the non-financial business economy<sup>1</sup> (the definitions of the metrics of job creation are described in Box 2.3). New SMEs that enter the market (entrants) also contribute significantly to new jobs; however, some of these entries are likely to be the result of changes in the legal form of the company, such as mergers or acquisitions (*de alio* entrants), which are known to represent a non-trivial share of all entries among non-micro SMEs (Geurts and Van Biesebroeck, 2016<sup>[2]</sup>). SMEs that close operations account for the largest share of gross job destruction in Italy, Portugal and Spain, while surviving SMEs that contract play a larger role in Finland and the Slovak Republic (Figure 2.1). For instance, scaling SMEs added over 132 000 jobs to the Portuguese economy between 2015 and 2017. Other SMEs growing at a slower pace added around 60 000 jobs, while other surviving SMEs that contracted over the same period accounted for a reduction of about 72 000 jobs, adding to 107 000 jobs lost by exiting firms. New SMEs entering during the triennium contributed with 35 000 jobs.

**Most new jobs added by employment scalers are due to firms that are more than five years old.** On average, mature scalers, i.e. those who start scaling more than 5 years after entering the market, represent over 70% of all employment scalers and they account for more than 40% of gross job creation across 5 countries.<sup>2</sup> Mature scalers are especially important for job creation in Finland and Portugal, where they are responsible for 50% and 43% respectively of gross job creation among all non-micro SMEs. Young firms are more likely to scale than mature businesses but they account for a smaller share of all firms. Therefore, only around one out of four scalers is a young firm. Young scalers are responsible for 14% to 20% of gross job creation of all SMEs in Finland, Italy, Portugal and the Slovak Republic and for about 7% in Spain (Figure 2.1).

**Figure 2.1. Mature employment scalers account for the largest share of gross job creation**

Gross job creation and destruction by young and mature scalers and other non-micro SMEs, 2015-17



Note: The contribution by each group of firms is reported as a percentage of the sum of gross job creation and gross job destruction in absolute value, which implies that, for each country, the positive and negative segments of the bars sum to 100 in absolute values. Employment scalers grow in employment by at least 10% per year over 3 consecutive years on average, as defined in Box 1.2. The sample includes firms with at least 10 and at most 249 employees. The same chart that also includes micro firms with less than 10 employees is reported in Annex A. The sample is limited to the non-financial business economy. Owing to methodological differences, figures may differ from official statistics.

Source: Calculations based on microdata sources from five countries. See Annex B for details.

### Box 2.2. Advantages of analyses based on firm-level data

Statistical agencies have made substantial progress over the last decades in developing business demographic indicators that also cover “high-growth firms” and scalers. Nevertheless, available data still do not allow to systematically compare countries and assess the role played by different groups of scalers. However, this information is important to design effective scaling-up policies. The analysis of microdata from national sources on firms and their employees allows to significantly expand the evidence base on scalers as it brings a number of advantages.

- Firm-level data allow to flexibly aggregate firms along many different dimensions, which is essential to understand heterogeneity. Firms differ substantially even within sector and size classes, thus traditional disaggregation that is commonly available, while useful, rarely proves to be resolute. With firm-level data, it is possible to analyse different phenomena along with a wider array of dimensions, including age, location, detailed size class, etc. On a more technical note, the analysis of a granular and large dataset (for a large OECD country a longitudinal firm-level dataset contains several millions of observations) also allows disentangling the effect of variables that are strongly correlated among each other (e.g. size and age), which would be impossible to do with aggregated data (Haltiwanger, Jarmin and Miranda, 2011<sup>[3]</sup>).
- With longitudinal firm-level data, it is possible to track firms over time and analyse the evolution of their growth pattern. This is important to assess the sustainability of the scaling-up process, i.e. to understand the extent to which scaling up is a temporary or stable phenomenon. It also allows studying the transformative process that scalers undertake before, during and after the high-growth phase.

- It is possible to customise indicators and variables to specific policy questions. These include access to global markets, workforce characteristics and location for example. While the economic and business literature has so far focused on a restricted number of sources – typically business registers and balance-sheet repositories – maintained by national statistical offices (NSOs), there is a large wealth of additional data sources that are potentially accessible. In particular, datasets that link annual fiscal statistics of firms with the annual declaration of social security data, as well as other sources such as customs declarations, research and development (R&D) investment surveys or surveys on financial links between enterprises, are of main interest for investigating firm growth. The availability of a wide spectrum of variables and indicators for many firms also provides an ideal setting to apply innovative machine learning techniques. This enables to uncover new findings compared to traditional statistical and econometric techniques.

The exploitation of firm-level data is a “gold mine” for policy analysis but access is still a bottleneck. One of the reasons is that databases are collected and maintained by different administrations (e.g. custom agencies, social security agencies, etc), whose primary mandate is not producing statistics or economic analysis. However, there has been significant progress in this area and commendable best practices exist across OECD countries. For instance, France has established a secure data hub (*Centre d'accès sécurisé distant aux données*, CASD). The CASD facilitates access to over 350 different datasets maintained by different public sector agencies, including the Ministries of Health, the Environment, Education, Finance, Labour, the National Statistical Office and the central agency for social security. Firm-level data are linkable across original sources via a unique identifier, which significantly expands the detail and scope of the analysis. As a result, a wealth of evidence based on firm-level data is now available to policy makers and researchers.

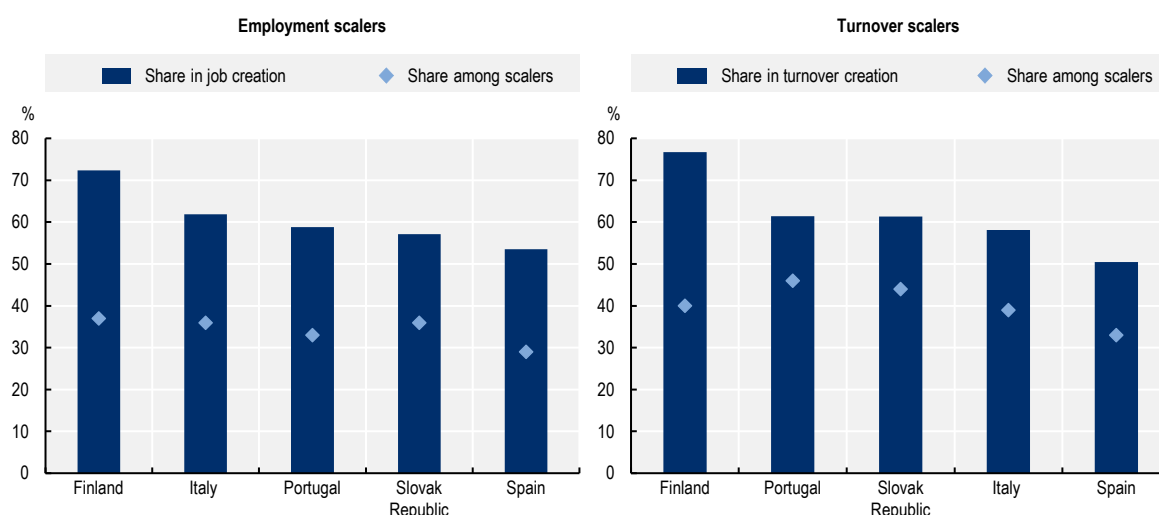
Source: Haltiwanger, J., R. Jarmin and J. Miranda (2011<sup>[3]</sup>), “Who creates jobs? Small vs. large vs. young”, [http://econweb.umd.edu/~haltiwan/size\\_age\\_paper\\_R&R\\_Aug\\_16\\_2011.pdf](http://econweb.umd.edu/~haltiwan/size_age_paper_R&R_Aug_16_2011.pdf) (accessed on 11 October 2019).

**Among scalers, those that grow very fast account for most new jobs.** About one-third of employment scalers grow faster than 20% annually and are defined as high-growth scalers. More than half of gross job creation by scalers is generated by high-growth scalers across the five pilot countries (Figure 2.2). The same pattern applies to turnover scalers. These figures further illustrate that employment and turnover growth is concentrated in a small number of firms, at a specific point in time.

**Scalers play an even more important role in aggregate turnover growth than job creation.** Turnover scalers generate 51% to 71% of gross turnover growth (see definition in Box 2.3) across the examined countries (Figure 2.3). As with jobs, surviving non-scalers (in turnover) are contributing only marginally to aggregate turnover growth. For example, in Finland, scalers generated EUR 28 billion of turnover growth between 2015 and 2017, which represents 71% of the total gross turnover growth generated by SMEs. Mature scalers dominate aggregate turnover creation and account for about 80% of gross turnover growth by all turnover scalers, on average across the countries in the sample (Figure 2.3). This makes mature scalers even larger contributors for turnover growth than is the case for job creation.

**Figure 2.2. High-growth scalers create the majority of jobs among scalers**

Share of gross job creation by high-growth scalers in employment (left) and turnover (right) in all gross job creation by scalers, 2015-17



Note: Scalers grow in employment or turnover by 10-20% (medium-growth enterprises) per year and over 20% (high-growth enterprises) per year over 3 consecutive years on average, as defined in Box 1.2. High-growth firms in employment represent 29% of scalers in Spain, 33% in Portugal, 36% in Italy and the Slovak Republic, and 37% in Finland. High-growth firms in turnover represent 33% of scalers in Spain, 46% in Portugal, 39% in Italy and 40% in Finland. The sample is limited to the non-financial business economy. Owing to methodological differences, figures may differ from official statistics.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

### Box 2.3. Measuring the contribution of different groups of firms to employment and turnover growth

Common metrics to quantify the contribution of a group of firms to employment growth are gross job creation, gross job destruction and net job creation. They all build upon the concept of net employment change at the firm level, i.e. the change in employment level for a given firm over a period. The three metrics are defined as follows:

- **Gross job creation:** Sum of all positive net employment changes across a group of firms, i.e. the sum of employment gains of all firms with positive employment growth.
- **Gross job destruction:** Sum of all negative net employment changes across a group of firms, i.e. the sum (in absolute values) of all employment losses of all firms with negative employment growth.
- **Net job creation:** The difference between gross job creation and gross job destruction.

An example of a group of three firms can clarify how these metrics work in practice. The first firm grows from 10 to 15 employees, the second shrinks from 12 to 10 and the third is stable. It results that the gross job creation is equal to five, the gross job destruction is equal to two and the net job creation is equal to three.

An important limitation of these metrics is that they do not take into account the amount of job “churning” inside the firm. Only the net balance between total hires and separations for each firm at the end of the period matters, irrespective of the volume of hires and separations. For example, the three metrics are

identical if the first firm is hiring five workers and dismissing none or if it is hiring ten workers and dismissing five.

The same definitions are also applied to turnover growth. For example, gross turnover growth refers to the sum of all positive net turnover changes across a group of firms, i.e. the sum of turnover increases of all firms with positive turnover growth.

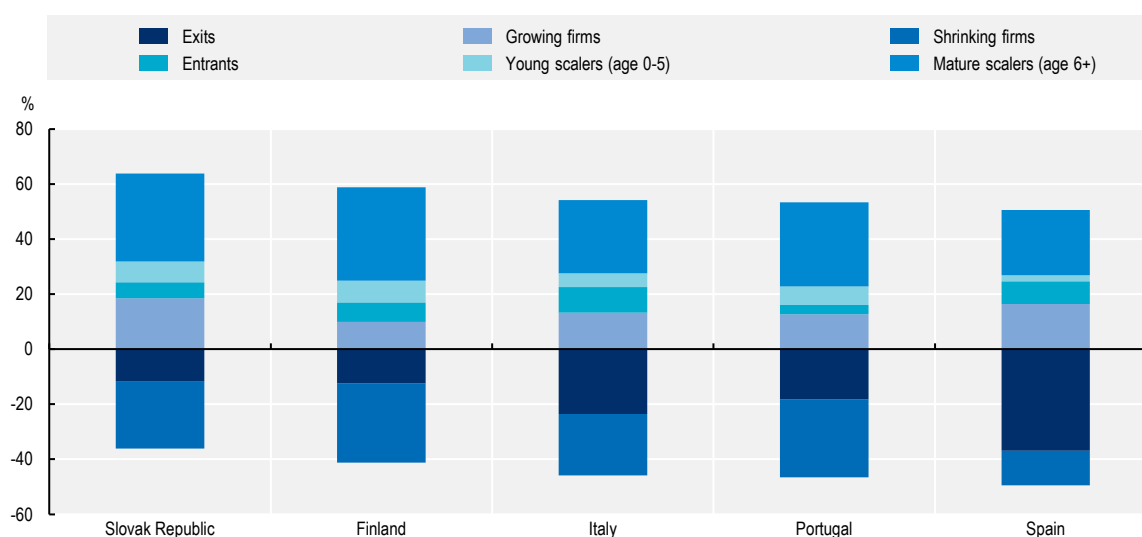
### Definitions adopted in this report

In this report, the metrics are calculated over three years, to match the high-growth period of scalers. The graphs reported in this section are relative to the 2015-17 period. For each country, the firms are divided into five different groups:

- *Young scalers*: Firms that finish a high-growth period at the end of the three-year interval, in 2017, and entered the market less than six years before the start of the growth period (in 2014).
- *Mature scalers*: Firms that finish a high-growth period at the end of the three-year interval, in 2017, and entered the market six years or more before the beginning of the period (in 2014).
- *Entrants*: Firms born in the three-year period (2015-17) for which the job flows are calculated.
- *Exiting firms*: Firms that close operations in the three years (2015-17) for which the job flows are calculated.
- *Other firms*: All other surviving non-scalers.

**Figure 2.3. Scalers account for the majority of gross turnover growth**

Gross turnover creation and destruction by young and mature turnover scalers and other non-micro SMEs, 2015-17



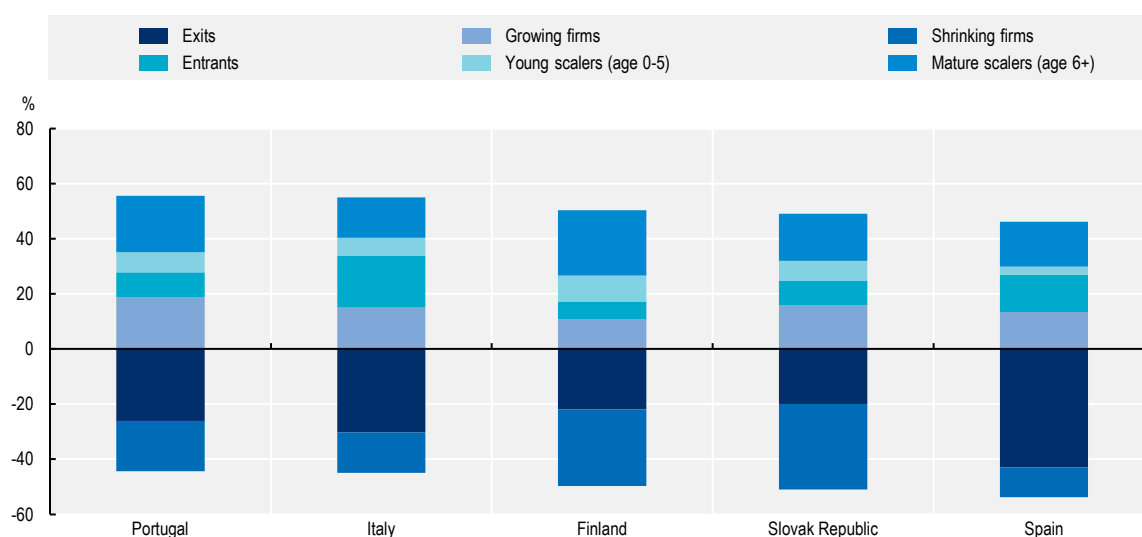
Note: Gross turnover creation is calculated as the total turnover added by all non-micro SMEs growing in turnover over the triennium. The contribution by each group of firms is reported as a percentage of the sum of gross job creation and gross job destruction in absolute value, which implies that for each country the positive and negative segments of the bars sum to 100 in absolute values. Scalers grow in employment or turnover by at least 10% per year over 3 consecutive years on average, as defined in Box 1.2. The sample includes firms with at least 10 and at most 249 employees. The sample is limited to the non-financial business economy. Owing to methodological differences, figures may differ from official statistics. The turnover creation by employment scalers is portrayed in Annex A.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

**Turnover scalers contribute significantly to job creation.** Turnover scalers contribute to 38% to 65% of gross job creation by non-micro SMEs across the 5 countries in the sample (Figure 2.4). There are two main reasons that explain the large contribution to employment growth by turnover scalers. First, they are more numerous than employment scalers. For each employment scaler, there are 1.5 to 1.7 turnover scalers across the 5 pilot countries. Second, almost half of turnover scalers also scale up in employment.

**Figure 2.4. Scalers in turnover also contribute substantially to job creation**

Gross job creation and destruction by young and mature turnover scalers and other firms, 2015-17



Note: The contribution by each group of firms is reported as a percentage of the sum of gross job creation and gross job destruction in absolute value, which implies that for each country the positive and negative segments of the bars sum to 100 in absolute values. Turnover scalers grow in turnover by at least 10% per year over 3 consecutive years on average, as defined in Box 1.2. The sample includes firms with at least 10 and at most 249 employees. Job creation among SMEs including micro firms with less than 10 employees is reported in Annex A. The sample is limited to the non-financial business economy. Owing to methodological differences, figures may differ from official statistics.

Source: Calculations based on microdata sources from five countries. See Annex B.

### ***Beyond scalers: Micro firms' contribution to job creation***

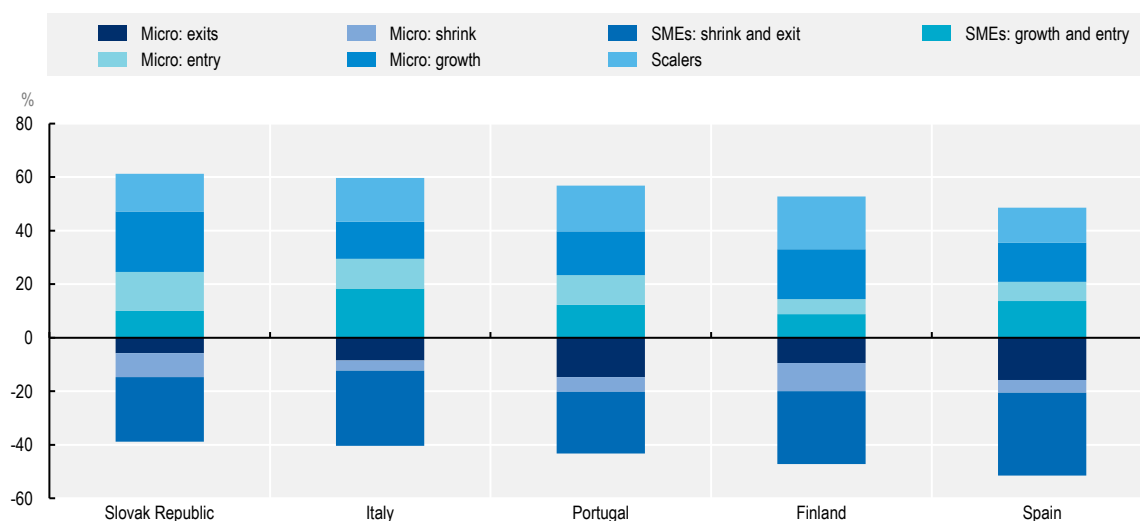
**Micro firms are excluded from the definition of scalers as it is difficult to compare their relative growth with that of larger firms.** As the definition of scalers is based on a relative growth threshold, even a small absolute increase in a firm's workforce, i.e. hiring one or two additional employees, would cause a micro-sized firm with between one and nine employees to become a high-growth firm. Their inclusion would therefore make it harder to distinguish and compare firms that undertake a transformative process and those that are following a slow and gradual path. The drawback of excluding micro firms is, however, that despite their individually small size they make up a large part of the firm population and total employment. The focus on firms with ten or more employees, therefore, excludes a considerable contribution to job creation by micro firms.<sup>3</sup> Beyond the challenge related to the relative growth definition of scalers, measuring the contribution of micro firms is hampered by incomplete coverage in administrative data sources in some countries. Micro firms may not be incorporated or may be registered as simplified legal entities (e.g. sole proprietorship), benefitting from reduced accounting requirements. Therefore, administrative data sources may not cover all micro firms in a country or provide data that is limited in both the time coverage and the type of information available. For instance, the data for Italy and Spain used in this report are sourced from balance-sheet repositories that cover only shareholder companies, thus providing only partial coverage of micro firms, and in particular of self-employed.

**Including job creation from micro firms, SMEs with at least ten employees that scale up account for one-third of gross job creation by incumbent firms.** On average across the 5 pilot countries in the period 2015-17, scalers account for 29% of gross job creation when micro firms are included. Growing micro firms account for 31% and growing non-micro SMEs for 11%. The remaining share of gross job creation is due to newly entering micro firms over the triennium (18%) and new entering non-micro SMEs (11%). Even though micro firms are not included in the definition of scalers, some of them do grow rapidly to reach a new scale. Therefore, the contribution by scalers measured including micro firms is a lower bound of the actual contribution of all fast-growing businesses in the economy.

**The majority of surviving micro firms are stable in employment over time.** The contribution of micro firms to gross job creation among all SMEs with 1 to 249 employees is highest in the Slovak Republic (61%) and lowest in Italy (42%) (Figure 2.5). Every year, around 10% of firms exit the market and are replaced by a similar percentage of new firms, most of which are micro firms. New micro entrants by definition can only create jobs in the year they enter and their contribution accounts for a large share of employment growth across OECD countries.<sup>4</sup> Incumbent micro firms that do not enter or exit in a given year also contribute to employment growth. Similarly to larger businesses, the majority of incumbent micro firms are stable in employment over time. The aggregate contribution to employment growth of surviving micro firms is positive because declining micro firms do not have any “employment buffer” to contract, thus they often have to exit the market if they experience a downturn. Therefore, conditional on surviving, micro firms are more likely to grow than larger firms.

**Figure 2.5. When micro firms are included, scalers account for one-third of gross job creation**

Gross job creation and destruction by young and mature employment scalers and other SMEs with 1 to 249 employees, 2015-17



Note: The contribution by each group of firms is reported as a percentage of the sum of gross job creation and gross job destruction in absolute value, which implies that, for each country, the positive and negative segments of the bars sum to 100 in absolute values. Employment scalers grow in employment by at least 10% per year over 3 consecutive years on average, as defined in Box 1.2. The sample includes firms with at least 1 and at most 249 employees. The sample is limited to the non-financial business economy. Owing to methodological differences, figures may differ from official statistics.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

**Extending the definition of scalers to micro firms shows that their propensity to scale is similar to those of non-micro SMEs.** Statistical agencies, and notably Eurostat, are making progress in measuring the contribution of “micro scalers”. In a recent pilot exercise involving 12 European countries, Eurostat applies a new methodology that requires that the minimum growth in absolute numbers for a micro high-growth enterprise (HGE) is 3.31 employees in 3 years. With this threshold, micro HGEs experience the same absolute growth as an HGE starting the high-growth period with 10 employees and growing on average at 10% per year. The resulting statistics show that around 15% of enterprises with 5 to 9 employees and around 5% of enterprises with 1 to 4 employees are classified as micro HGEs. In addition, micro HGEs are younger than non-micro HGEs: approximately 25-30% of micro HGEs are at most 5 years old, compared to 15-20% of non-micro HGEs.<sup>5</sup>

### ***Scaling up through mergers and acquisitions (M&A)***

**Firms can grow in employment or turnover either through expansion of their existing business (organic growth) or through acquiring other companies, i.e. through M&A** (see Box 2.4). M&A events can have both positive and negative effects on employment growth in the medium to long term. The positive effects may arise from productivity gains after the merger, which translates into employment growth. These productivity gains may materialise because of synergies between activities in the two former entities, technology and knowledge transfer and/or adoption of new management practices (Guadalupe, Kuzmina and Thomas, 2012<sup>[4]</sup>). The negative effects on employment arise as M&A events create room for rationalisations in the use of labour and opportunity to reduce redundancies.

**The definition of scaling up considers both organic and non-organic growth when calculating high growth in terms of employment and turnover.** Organic and non-organic growth are two different margins along which SMEs can expand and both should be taken into account in the analysis of scaling patterns. There is however additional value in distinguishing M&A from organic growth because barriers and required support for M&A activity differs substantially from supporting hiring and expansion of existing businesses.

**M&A could account for a non-trivial share of scaling-up episodes, at least in larger firms.** For instance, evidence from Finland shows that M&A account for about 60% of high-growth episodes in firms with 250 and more employees, compared to about 10% for firms between 10 and 19 employees. Overall, around 15% of high-growth scalers (growing at 20% per annum or more over a period of 3 years) appear to be involved in M&A events in correspondence with the high-growth period (Deschryvere, 2008<sup>[5]</sup>). M&A also affect the measurement of firm age, as the latter is typically calculated using the entry year, which may not correspond to the actual age of the business for entities originating from an M&A.<sup>6</sup>

#### **Box 2.4. Detecting mergers and acquisitions (M&A) using linked employer-employee data**

Traditional firm-level data sources normally do not allow to identify mergers of two distinct companies or the acquisition of a company by another one. A merger is often recorded as the entry of a new business, even if the businesses are not new to the market (“de alio” entry). An acquisition instead results in an existing firm sharply increasing its employment and turnover because of the transfer of a branch of business, an establishment or a whole firm from another entity. The growth by acquisition contrasts with the process of growing by gradually hiring additional employees and expanding the turnover by gaining market share – which is defined as “organic growth”.

M&A events can be identified in the data using detailed employer-employee data, which allow tracking large groups of workers that move simultaneously from a company to another. The methodology adopted in this report follows the approach developed by researchers working on Belgian firm-level data (Geurts and Van Biesebeek, 2016<sup>[2]</sup>). An M&A is identified if there is a collective transfer of

workers from two entities that involves more than half of the workers of at least one of the two entities and more than five individual workers. The approach entails a degree of error and does not allow to precisely track all events. The methodology may also produce some “false positives”, i.e. it may classify as M&A events some peculiar cases of organic growth. However, in absence of official administrative data on ownership transfers, the analysis proves to be useful to understand the extent to which scaling up depends on non-organic growth.

Source: Geurts, K. and J. Van Biesebroeck (2016<sup>[2]</sup>), “Firm creation and post-entry dynamics of de novo entrants”, <http://dx.doi.org/10.1016/j.ijindorg.2016.08.002>.

**Nine out of ten scaling-up episodes are not linked to an M&A event and are thus driven by organic growth.**<sup>7</sup> The analysis of Portuguese data show that M&As are a relatively rare phenomenon. The procedure used to identify M&As, described in Box 2.4, identifies around 600-700 events per year in Portugal over the period 2011-17, which compares to a sample of more than 30 000 non-micro firms, of which around 4 000 scale in employment. Therefore, 89% of scaling episodes happen because of organic growth. However, M&A events have a stronger association with the scaling-up of bigger firms (which account for a small share in all firms). For around 30% of scaling up in firms with 100 to 249 employees and for half of scaling up of firms with more than 250 employees, it is possible to track an M&A event happening during the 3 years of the high-growth period.

**Four out of 10 M&A events involve a firm that scale.** Among all M&A events identified in the data, in 40% of cases, the acquiring firm is classified as an employment scaler and in 37% of cases as a turnover scaler in the year in which the event took place or in the following 2 years. The shares are slightly lower (20% and 21% for employment and turnover scalers respectively) for high-growth scalers growing at 20% yearly. Therefore, scaling in most cases is due to organic growth, not to M&A. However, if there is an M&A, it is likely that the acquiring firm is identified as a scaler within the following three years.

## What happens after scaling?

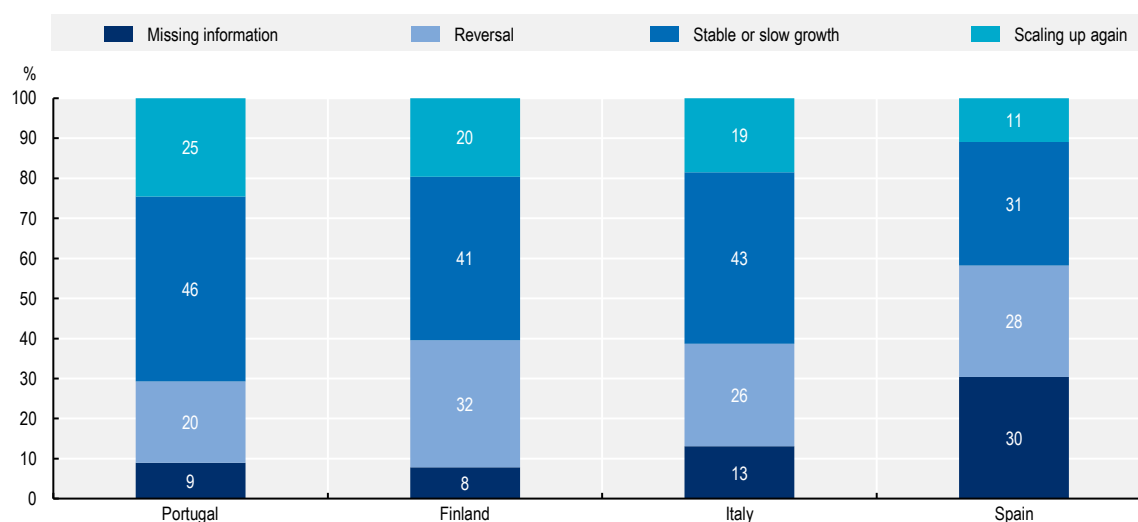
**Scaling up is a persistent transformation for many scalers.** Between 40% and 70% of employment or turnover scalers remain at their newly achieved scale or continue to grow further in the three years after the scaling.<sup>8</sup> Scaling is therefore a sustainable process for many SMEs. A considerable share of scalers even repeats their exceptional high growth. Between 20% and 25% of scalers scale again in Finland, Italy and Portugal (Figure 2.6). The share is lower, at about 11%, in Spain; however, this is because of the high frequency of missing employment information in Spanish firm-level data, which does not allow to track the post-growth trajectory of around 30% of scalers. For firms scaling up over the 2012-14 period, the share of repeated high growth in Spain remains comparable to other countries when the analysis is restricted to firms for which data are available over the full period. Conversely, across the 4 countries, between 20% and 30% of scalers reverse the dynamics of their growth and contract after scaling.

**SMEs that scale twice are particularly important for employment growth.** These companies increase their employment level by more than 80% over a 6-year period. For example, around 800 SMEs that scaled twice in employment over the 2011-16 period in Portugal created more than 52 000 jobs, with a median growth rate of 170% over the same period. The probability to scale again falls rapidly for scalers that grow at a higher rate. For the high-growth scalers that grow at least 20% on average for 3 years, only about 8% grow at the same rate again for another 3 years.<sup>9</sup>

**For around 10% of scalers, no information is available 3 years after scaling; in most cases, it is likely that the company ceased operations.** The lack of information is due to the firm not being present in the firm-level repositories used for the analysis or being present with missing information on employment (or turnover, in the case of turnover scalers). The lack of information is open to different interpretations. First, the firm may be closed or about to close, which is typically associated with the business not being successful. Second, the company may have been acquired by another entity, which typically indicates success rather than failure. Third, the lack of information may simply be a “nuisance” in the data, e.g. due to reporting errors. In this case, it is reasonable to assume that the issue affects successful and unsuccessful businesses to a similar extent. It is not possible to know the exact incidence of each of the three alternatives. However, it is known that acquisitions are rare even for growth-oriented businesses (Breschi, Lassebie and Menon, 2018<sup>[6]</sup>). Conversely, around 8-10% of businesses close down each year and the percentage is not much lower for former scalers, at least based on evidence from the United Kingdom (Anyadike-Danes and Hart, 2019<sup>[7]</sup>; Coad, 2007<sup>[8]</sup>). Therefore, it is likely that the majority of former scalers with missing information have ceased operations. Spain can be an exception in this analysis, as information on the post-scaling status is missing for 30% of scalers. This is due to the source data being carefully scrutinised by experts at the Bank of Spain, resulting in blanking of implausible values. In this case, data issues are likely to explain the majority of missing information occurrences.

**Figure 2.6. The majority of employment scalers maintain the new scale**

Growth dynamics of employment scalers in the three years after scaling



Note: Employment scalers grow in employment by at least 10% per year over 3 consecutive years on average, as defined in Box 1.2. The sample includes scalers that end their first 3-year scaling period between 2011 and 2015 in Finland, 2004 to 2015 in Italy, 2013 to 2014 in Portugal and 2006 to 2015 in Spain. The sample is limited to the non-financial business economy. Owing to methodological differences, figures may differ from official statistics.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

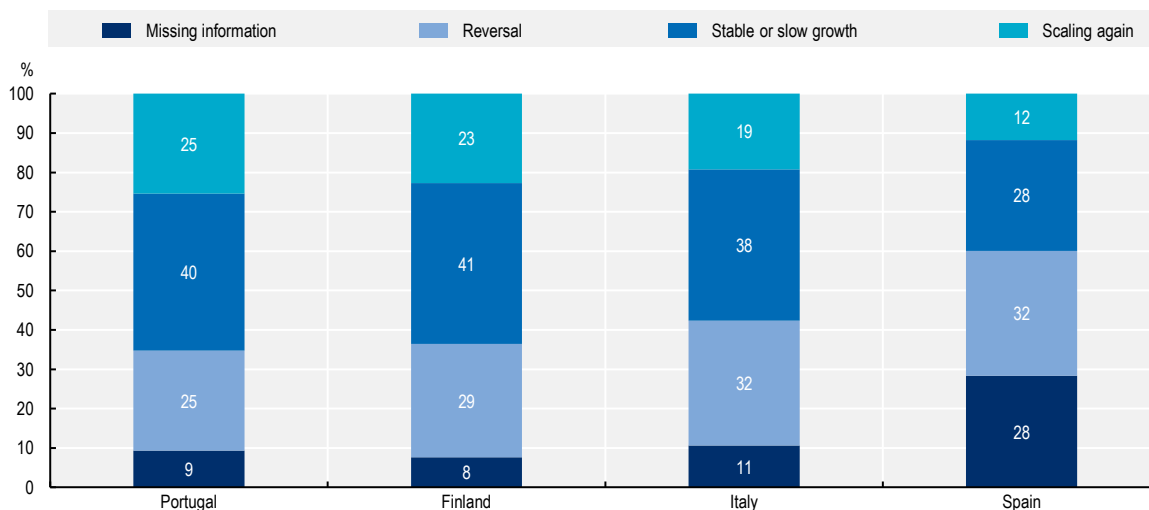
### **Scalers in turnover are slightly less likely to consolidate their scale than scalers in employment.**

About 20% of scalers continue scaling in turnover, compared to 18% of employment scalers. Yet, 37% of turnover scalers remain at the new scale or continue to grow (compared to 40% of employment scalers) and 29% (compared to 26% of employment scalers) reverse the growth dynamics (Figure 2.7). Easier downscaling in turnover stands in contrast to employment downscaling, which can be much costlier for firms. While turnover adapts instantly to the new market conditions, dismissing workers can be costly because of severance pay and related regulations. It can also entail the loss of know-how and of skills that

would be difficult and costly to reacquire, should the market conditions improve. Therefore, employment adjustments are smoother and more inertial than turnover fluctuations in SMEs.

### Figure 2.7. Turnover scalers are slightly more likely to scale up again

Growth dynamics of turnover scalers in the three years after scaling



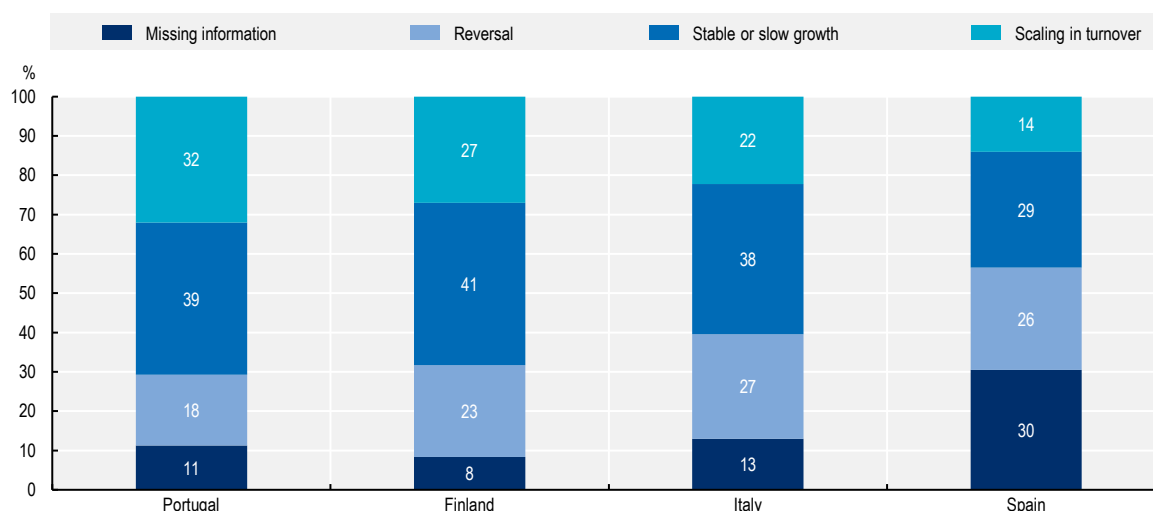
Note: Turnover scalers grow in turnover by at least 10% per year over 3 consecutive years on average, as defined in Box 1.2. The sample includes scalers that end their first 3-year scaling period between 2011 and 2015 in Finland, 2004 to 2015 in Italy, 2013 to 2014 in Portugal and 2006 to 2015 in Spain. The sample is limited to the non-financial business economy. Owing to methodological differences, figures may differ from official statistics.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

**Employment scalers often become turnover scalers and vice versa. For those firms, scaling is an enduring transformation.** Between 14% of scalers in employment in Spain and up to one-third in Portugal continued scaling in turnover in the next three-year period (Figure 2.8). The opposite growth dynamics, from employment to turnover scaling, are also evident: about 10% to 20% of turnover scalers turn into employment scalers (see Figure A.1). This suggests that, for some firms, the scaling-up process is an enduring process that involves a transformation of the way the firm operates. For firms that first scale in employment and then in turnover or vice versa, scaling does not appear to be an isolated phase, possibly triggered by external factors such as a sudden and temporary increase in demand but rather a strategy that builds upon an internal transformation in the way in which the firm operates. This points to scaling being predominantly a firm's strategic choice, rather than a random event that makes scalers "one-hit wonders", as part of previous research maintained. Such transformation may not be confined to the years in which scaling in employment or turnover takes place but may rather be part of a firm's long-term strategy, which involves a phase of preparation that may last for several years. A detailed analysis of the transformation process that scalers undertake before, during or after scaling leveraging firm-level sources is the subject of Chapter 4 of this report.

**Figure 2.8. Up to one-third of employment scalers become turnover scalers**

Turnover growth dynamics of employment scalers in the three years after scaling



Note: Employment scalers grow in employment by at least 10% per year over 3 consecutive years on average, as defined in Box 1.2. The figure displays employment scalers and their performance in turnover after the initial growth. The sample includes scalers that end their first 3-year scaling period between 2011 and 2015 in Finland, 2004 to 2015 in Italy, 2013 to 2014 in Portugal and 2006 to 2015 in Spain. The equivalent figure for turnover scalers can be found in Annex A. The sample is limited to the non-financial business economy. Owing to methodological differences, figures may differ from official statistics.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

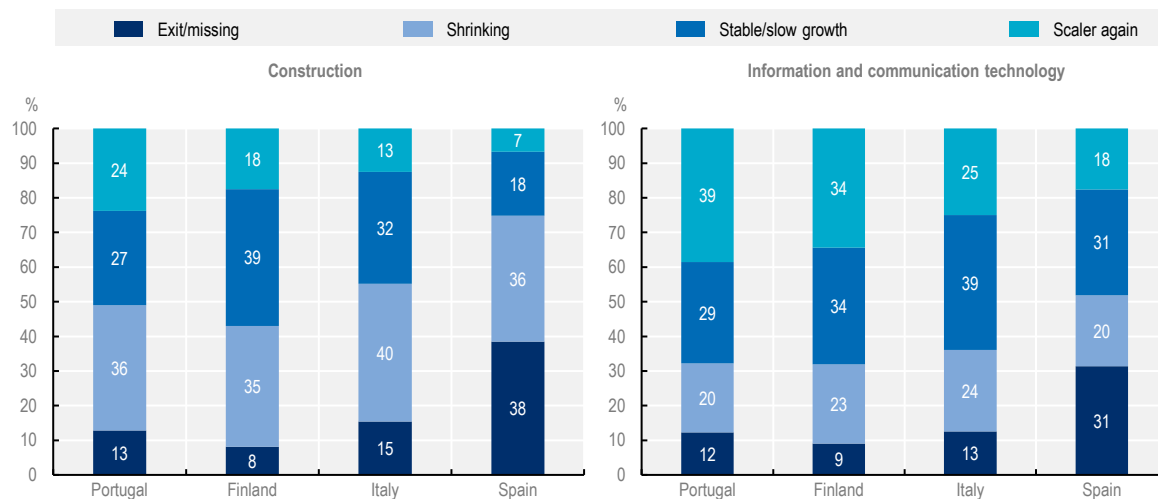
### ***The sustainability of scaling depends on the sector and the age of scalers***

**Scalers in the information and communication technology (ICT) sector often repeat scaling. Scalers in construction are the least likely to continue growing.** Between 18% (Spain) and 39% (Portugal) of employment scalers in the ICT sector continue exceptional growth in the 3 years following the first expansion across the 4 countries analysed. ICT sector scalers are also less likely to “downscale”, underlining the overall lower volatility of employment growth of the sector: 20% to 24% of scalers reverse the growth pattern after scaling (Figure 2.9, right panel). In the construction sector, 7% to 24% of scalers continue scaling, while 35% to 40% of them reverse to a smaller size (Figure 2.9, left panel). The pattern observed suggests that for many SMEs in the construction sector, scaling may be linked to specific characteristics of the market, such as the procurement of public works organised around large contracts or “boom-and-bust” cycles in real estate investments. Scalers in construction may therefore often follow a scaling-up model that is driven by an erratic external demand, rather than by internal improvements in productivity and competitiveness. Chapter 4 of the report discusses in depth the different transformation models that scalers can follow, depending on the different factors that can trigger fast growth, such as disruptive technological innovations or internal improvements in productivity.

**Younger scalers in employment are more likely to both scale up again and reverse than mature scalers.** Between 11% to 29% of young scalers scale up again, compared to 11% to 23% of mature scalers, the share of scalers that scale again is larger among young scalers than among mature scalers in all countries analysed. Young scalers are also more likely to revert the scaling or exit the market than mature firms, and are less likely to be stable after scaling than mature scalers (Figure 2.10, left panel). The evidence recalls the “up or out” growth pattern that the economic literature attributes to new and young businesses. Young businesses enter small as they need to experiment with their model in real market conditions. Those that are viable need to grow quickly to reach a minimum scale and compete with older firms; those that are not successful instead tend to shrink and exit quickly (Jovanovic, 1982<sup>[9]</sup>).

**Figure 2.9. Scalars in the construction sector are more likely to reverse to a smaller size**

Employment growth dynamics of employment scalars in construction and ICT in the three years after scaling

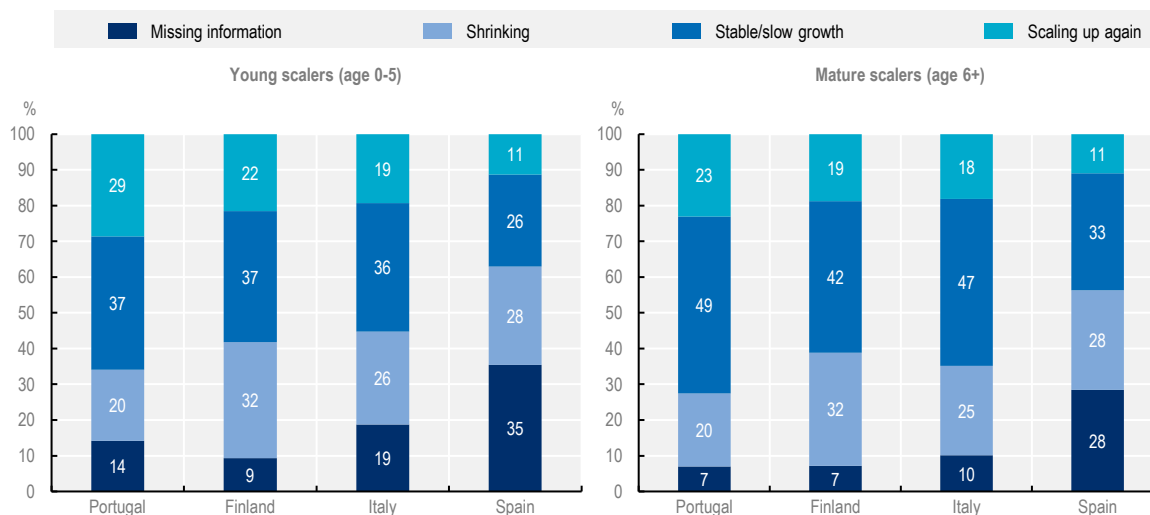


Note: Employment scalars grow in employment by at least 10% per year over 3 consecutive years on average, as defined in Box 1.2. The sample includes scalars that end their first 3-year scaling period between 2011 and 2015 in Finland, 2004 to 2015 in Italy, 2013 to 2014 in Portugal and 2006 to 2015 in Spain. The sample is limited to the non-financial business economy. Owing to methodological differences, figures may differ from official statistics.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

**Figure 2.10. Young employment scalars are more likely to scale up again but also to exit or reverse**

Growth dynamics of scalars in the three years after scaling



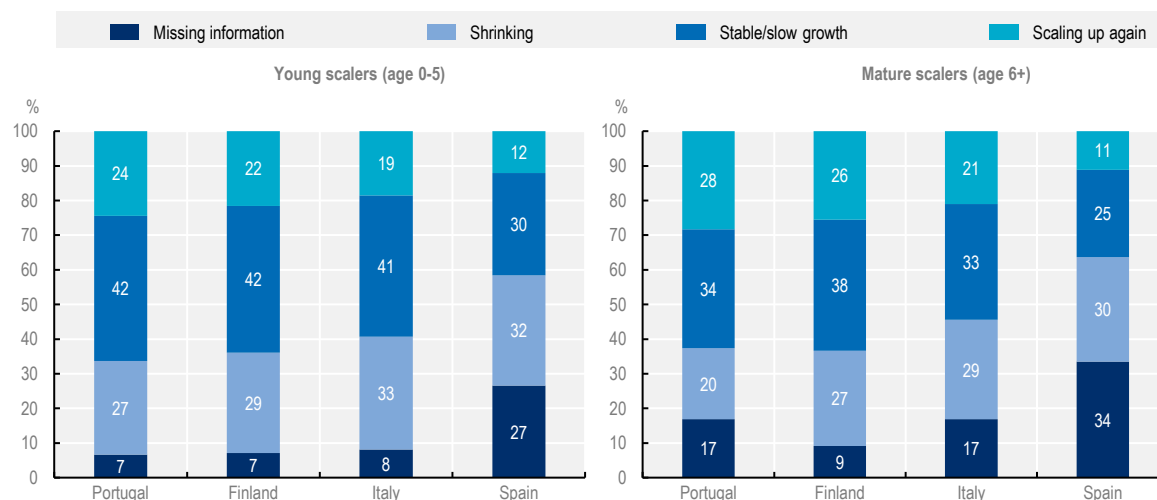
Note: Employment scalars grow in employment by at least 10% per year over three consecutive years on average, as defined in Box 1.2. The sample includes scalars that end their first 3-year scaling period between 2011 and 2015 in Finland, 2004 to 2015 in Italy, 2013 to 2014 in Portugal and 2006 to 2015 in Spain. The sample is limited to the non-financial business economy. Owing to methodological differences, figures may differ from official statistics.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

**Conversely, younger scalers in turnover are less likely to scale up again and to reverse than mature scalers.** The “up or out dynamics” that appear to characterise scaling in employment for young firms is less evident for scaling in turnover. Rather, continued scaling seems to be more achievable for firms that have a longer presence in the market. For example, in Portugal, 28% of mature scalers in turnover scale again, compared to about 24% of young scalers. Mature turnover scalers are, however, also likely to exit the market, possibly also because of acquisition by other firms. Between 9% to 34% of mature scalers cannot be followed in the period of 3 years after their exceptional growth period (Figure 2.11).

**Figure 2.11. Mature turnover scalers are more likely to scale again than younger ones**

Growth dynamics of turnover scalers in the three years after scaling



Note: Turnover scalers grow in employment by at least 10% per year over 3 consecutive years on average, as defined in Box 1.2. The sample includes scalers that end their first 3-year scaling period between 2011 and 2015 in Finland, 2004 to 2015 in Italy, 2013 to 2014 in Portugal, and 2006 to 2015 in Spain. The sample is limited to the non-financial business economy. Owing to methodological differences, figures may differ from official statistics.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

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## Notes

<sup>1</sup> The non-financial business economy includes the sectors of industry, construction, distributive trades and services.

<sup>2</sup> Between 2011 and 2014 in Finland, 71% of scalers were mature firms, 66% in Italy, 78% in Spain and 73% in Portugal.

<sup>3</sup> See, for example, Daunfeldt, Elert and Johansson (2013<sup>[16]</sup>) and Daunfeldt, Johansson and Halvarsson (2015<sup>[15]</sup>).

<sup>4</sup> However, previous research shows that, over a time window of several years, the contribution of a given cohort of micro entrants becomes negative or very small, as most of them either fail in the first three to five years of the activity or do not grow. See, for example, Calvino, Criscuolo and Menon (2018<sup>[12]</sup>) for evidence on 18 OECD countries and Anadyke-Danes and Hart (2018<sup>[11]</sup>) and Coad, Frankish and Link (2020<sup>[13]</sup>) for evidence on the United Kingdom.

<sup>5</sup> See [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Characteristics\\_of\\_micro\\_high-growth\\_enterprises](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Characteristics_of_micro_high-growth_enterprises) (accessed on 26 July 2021).

<sup>6</sup> An analysis of Belgian data shows that most entrants with more than ten employees are pre-existing companies that reregister as a new firm and “de alio” entrants (Geurts and Van Biesebroeck, 2016<sup>[2]</sup>). High incidence of spurious entry also implies that firm age is underestimated. However, some of these spurious entries are often detected by national agencies maintaining business registers or similar database (Jarmin and Miranda, 2012<sup>[17]</sup>).

<sup>7</sup> The figure is consistent with findings from the Scandinavian countries for the period 2014-17, reporting that 85% of scalers grow due to organic growth and 15% due to mergers and acquisitions (Nordic Council, 2019<sup>[10]</sup>).

<sup>8</sup> As outlined in Chapter 1, the economic literature maintains that scaling is an isolated episode in the firms’ lifecycles. High growth in employment over three years is found to not repeat itself for most scalers (Daunfeldt, Elert and Johansson, 2014<sup>[14]</sup>). However, this is partly due to research focusing on the narrower concept of high-growth scalers, e.g. firms growing at a yearly rate of 20% per annum.

<sup>9</sup> Data for the Slovak Republic is only available for years 2014-19, which is less than the required eight years to evaluate subsequent growth periods.





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