Chapter 3.

Regional dynamics from an enterprise approach

This chapter describes the composition of a new database designed to compare business demography statistics at the subnational level. The database offers unprecedentedly rich subnational information across countries, covering 27 OECD countries in total, out of which 21 include data at the TL3 regional level. The chapter analyses the geographical distribution of business activity (entry, exit and survival rates) and presents evidence on how entrepreneurial activity differs across types of regions. The chapter also analyses how the geographic and institutional characteristics of regions are associated to firm creation and survival over time.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Introduction

Analysing entrepreneurial dynamics at the subnational level can help design policy to enable all regions to contribute fully to national economic growth and foster economic cohesion. However, while business demography statistics are available at different geographic levels within most OECD countries, a cross-country comparable source at the regional level was missing.

This chapter presents a new set of regional indicators designed to measure business demography across OECD regions. The statistics presented throughout this chapter are based on a definition of business that revolves around the concept of firm, or enterprise, rather than on the local unit of production (plant or establishment).[1] Throughout the chapter, the geographical location of production units corresponds to the region where the firms' headquarters are located (or the local unit with the largest number of employees).

This firm-level database has the advantage of providing a correct measure of regional firm dynamics (births, deaths, survival) and, at the same time, maximising cross-sectional coverage and cross-country comparability. Plant-level regional data are not available in a vast number of OECD countries and are also less harmonised across countries.

This chapter will focus mainly on indicators of business activity. Chapter 4 will extend the analysis presented in this chapter by discussing, in detail, the impact of firm dynamics on regional employment creation.

Data sources and indicators

The indicators presented in this chapter have been developed through the harmonisation of a variety of data sources. For many countries, the sources are the regional business demography statistics developed by national statistical offices (NSOs; described in Table 3.1). These data sources have been harmonised and combined with data contained in Eurostat's regional business demography database. The combined database spans across 26 OECD countries and 752 TL2 or TL3 regions. The indicators included in the enterprise-level database have yearly frequency. Table 3.1 provides a list of countries in the database, the relative data sources, as well as the level of geographic detail and time coverage available for each country included in the database.

The time frame generally covers the years between 2007 and 2014, albeit some countries provide a longer/shorter time series. A breakdown of these indicators is also available according to the sector of economic activity of the firm (NACE Rev. 2 one-digit). Some NSOs use different sectoral classifications in the original data sources: these differences have been harmonised *ex post* with the use of correspondence tables between international classifications.[2] Furthermore, a size class breakdown is also available. It distinguishes between non-employer firms (category 0), micro-firms (those with one to nine employees) and larger firms with ten or more employees. [3]

The indicators include the number of active firms, births, deaths and the number of three-year survivors. The definitions of these demographic events follow the standard international guidelines on the development of business demography statistics (OECD/Eurostat, 2007). The database also includes some indicators of employment in business (persons employed in active firms, as well as persons employed in firms that experience a birth, a death or survive).

This chapter will mostly focus on firm dynamics, rather than on employment created by businesses. A lengthy discussion of the geography of employment in relation to business demography will be the main subject of Chapter 4. Table 3.2 provides a list of the indicators included in the database and of their availability by country.

Box 3.1. Definition of unit of analysis and demographic events

Enterprise/firm: Smallest combination of legal units producing goods and services which benefits from a certain degree of autonomy in decision making.

Enterprise birth: Creation of a combination of production factors with the restriction that no other enterprise is involved in the event. Excludes entries in the business population due to reactivations, mergers, break-ups, split-offs and restructuring.

Enterprise death: Dissolution of a combination of production factors with the restriction that no other enterprises are involved in the event. Excludes exits from the population due to mergers, take-overs, break-ups and restructuring of a set of enterprises.

Enterprise survival (three years): An enterprise born in year t-3 is considered to have survived to year t if it is still active (in terms of employment or turnover) in any part of year t.

Persons employed: Total number of persons who work in the observation unit (inclusive of working proprietors, partners working regularly in the unit and unpaid family workers), as well as persons who work outside the unit who belong to it and are paid by it (e.g. sales representatives, delivery personnel, repair and maintenance teams).

Employees: Persons who work for a firm receiving compensation in the form of wages, salaries, fees, gratuities, piecework pay or remuneration in-kind. Employees are also included in the number of persons employed.

Employer enterprise: An enterprise having a positive number of employees in any part of the year.

Non-employer enterprise: An enterprise having no employees in any part of the year. The enterprise can have a positive number of persons employed (working proprietors, partners working regularly).

Sources: OECD/Eurostat (2007), *Eurostat-OECD Manual on Business Demography Statistics*, http://dx.doi.org/10.1787/9789264041882-en; Eurostat Glossary of Statistical Terms, http://ec.europa.eu/eurostat/statistics-explained/index.php/Business_demography_statistics.

The geographical dimension of business demography

Entrepreneurial activity is unevenly distributed within countries

Business creation, death and survival differ substantially across countries (OECD, 2016a). The large cross-country variation in entry rates and innovation is complemented by agglomeration dynamics, clusters of production and, generally, by an uneven distribution of firms within countries. These differences can be in part related to the fixed characteristics of local areas, such as geography or availability of natural resources, which in turn affect population and services' density and are crucial in determining the location of businesses. At the same time, policy-variant institutional factors like the availability and quality of the transportation network, the educational attainment of the population, the availability of finance, as well as the quality of local governments and institutions are known to differ widely across regions (OECD, 2016b). These differences

may have visible and long-lasting effects on business demography outcomes and in turn substantially affect job creation, income levels and regional development over time.

Table 3.1. **Data sources and available breakdowns by country**

Country	Spatial scale	Years	Sector breakdown	Size class breakdown	Non-employer separate	Source
Australia	TL2	2011-15	Yes	Yes	Yes	ABS
Austria	TL3	2008-13	Yes	Yes	Yes	Eurostat
Belgium	TL2	2008-15	Yes	Yes	Yes	Statistics Belgium
Canada	TL2	2010-14	Yes	Yes	No	Statistics Canada
Czech Republic	TL3	2008-13	Yes	Yes	Yes	Eurostat
Denmark	TL3	2007-14	Yes	Yes	Yes	Eurostat
Estonia	TL3	2004-14	Yes	Yes	Yes	Eurostat
Finland	TL3	2008-13	Yes	Yes	Yes	Eurostat.
France	TL3	2008-13	Yes	Yes	Yes	Eurostat
Germany	TL2	2006-13	Yes	Yes	No	Federal Statistical Office
Hungary	TL3	2008-13	Yes	Yes	Yes	Eurostat
Ireland	TL3	2008-14	Yes	Yes	No	StatBank Ireland
Israel	TL2	2011-14	Yes	Yes	Yes	CBS
Italy	TL3	2008-13	Yes	Yes	Yes	Eurostat
Korea	TL3	2006-14	Yes	No	No	KOSIS
Latvia	TL3	2007-14	Yes	Yes	No	Central Statistical Bureau
Luxembourg	TL3	2009-14	Yes	Yes	Yes	Statistics Luxembourg
Netherlands	TL3	2008-13	Yes	Yes	Yes	Eurostat
Norway	TL3	2001-15	Yes	Yes	Yes	Statistics Norway
Poland	TL3	2008-13	Yes	Yes	Yes	Eurostat
Portugal	TL3	2008-13	Yes	Yes	Yes	Eurostat
Slovak Republic	TL3	2008-13	Yes	Yes	Yes	Eurostat.
Slovenia	TL3	2008-13	Yes	Yes	Yes	Eurostat
Spain	TL3	2008-13	Yes	Yes	Yes	Eurostat
Switzerland	TL3	2013-15	Yes	Yes	No	Federal Statistical Office
United Kingdom	TL3	2009-14	No	No	No	ONS
United States	TL2	2007-14	Yes	Yes	Yes	SUSB
Number of countries covered	27 at TL2; 21 at TL3		26	25	20	

The temporal dimension of the *Regional Business Demography Database* can be exploited to develop a simple baseline measure of the degree of geographical dispersion in business activity within countries: business population growth or regional-level growth rates in the number of active firms over a particular time span. Since the number of active firms is available for most regions and years in the database (Table 3.2), net business population growth maximises the cross-sectional and time coverage. This indicator confirms the substantial cross-country variation in the degree of entrepreneurial activity measured at the same point in time: between 2008 and 2011, during the crisis and recession, the United States experienced net business destruction on average, with the number of active firms shrinking yearly. At the same time in Germany, net business creation was overall null or sometimes even moderately positive.

Table 3.2. **Available indicators by country**

Country	Actives	Births	Deaths	Survivors (three years)	Employment indicators
Australia	✓	✓	✓	✓	..
Austria	✓	✓	✓	✓	✓
Belgium	✓	✓	✓	..	..
Canada	✓	✓	✓	✓	✓
Czech Republic	✓	✓	✓	✓	✓
Denmark	✓	✓	✓	✓	✓
Estonia	✓	✓	✓	✓	✓
Finland	✓	✓	✓	✓	✓
France	✓	✓	✓	✓	✓
Germany	✓	..	..	..	..
Hungary	✓	✓	✓	✓	✓
Ireland	✓	..	..	..	✓
Israel	✓	✓	✓	..	..
Italy	✓	✓	✓	✓	✓
Korea	✓	✓	✓	..	..
Latvia	✓	✓	✓	..	..
Luxembourg	✓	✓	✓	..	..
Netherlands	✓	✓	✓	✓	✓
Norway	✓	✓	..	✓	✓
Poland	✓	✓	✓	✓	✓
Portugal	✓	✓	✓	✓	✓
Slovak Republic	✓	✓	✓	✓	✓
Slovenia	✓	✓	✓	✓	✓
Spain	✓	✓	✓	✓	✓
Switzerland	..	✓	..	..	✓
United Kingdom	✓	✓	✓	✓	..
United States	✓	..	..	..	✓
Number of countries covered	26	24	22	18	18

Note: ..: not available.

Source: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

The wide within-country dispersion in net business creation in any given year suggests that regions react differently to aggregate shocks (Figure 3.1). In fact, the variation in net business creation within countries often exceeds the differences observed across countries at the same point in time. The example of the United States around the 2008 crisis and the subsequent recession is very instructive. States that experienced higher than average growth rates in house prices ahead of the financial crisis (like Arizona and Florida[4]) experienced a much stronger reduction in the number of active businesses than the national average in 2008 (Figure 3.1). On the other hand, North Dakota (a region rich in natural resources, which experienced a boom in fracking over this time period) consistently outperformed the national average. In the case of Germany, the capital region of Berlin displays the highest net business creation rates over this time frame, while the industrial regions of Rhineland or Saarland display growth rates that sometimes negatively deviate by several percentage points from the national average.

Net business creation portrays the relative change a region's business count, which is a simple and useful indicator to understand the overall degree of geographical dispersion in business activity within a country. Nevertheless, it remains an incomplete measure of entrepreneurial dynamics since it cannot distinguish between entries and exits. A more precise way to measure entrepreneurship is to focus on dynamic indicators, such as business births, deaths and survivals.[5]

Figure 3.1. **Net business population growth, within-country dispersion by year**
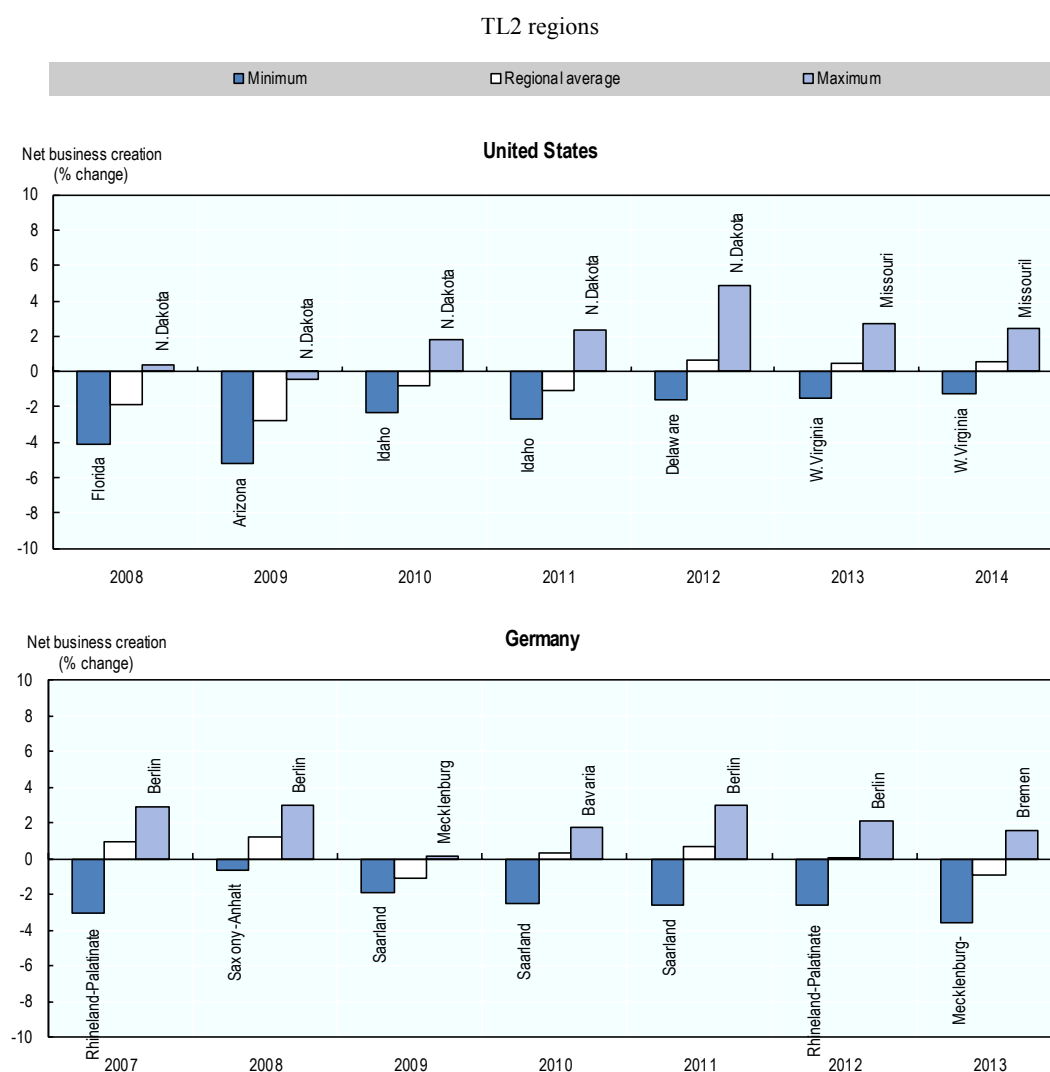
TL2 regions

Source: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

StatLink ⟐ *http://dx.doi.org/10.1787/888933625585*

Within-country dispersion in business births and deaths

Business birth rates, defined as new business openings in each given year as a fraction of active firms, can be considered a measure of entrepreneurial activity. This measure differs substantially within countries. While on average the proportion of newly created businesses as a share of active firms is around 10%, some TL3 regions display much higher/lower rates than the country average (Figure 3.2).

Figure 3.2. **Regional business birth rates across the OECD**

TL3 regions, 2014 (or last available year)
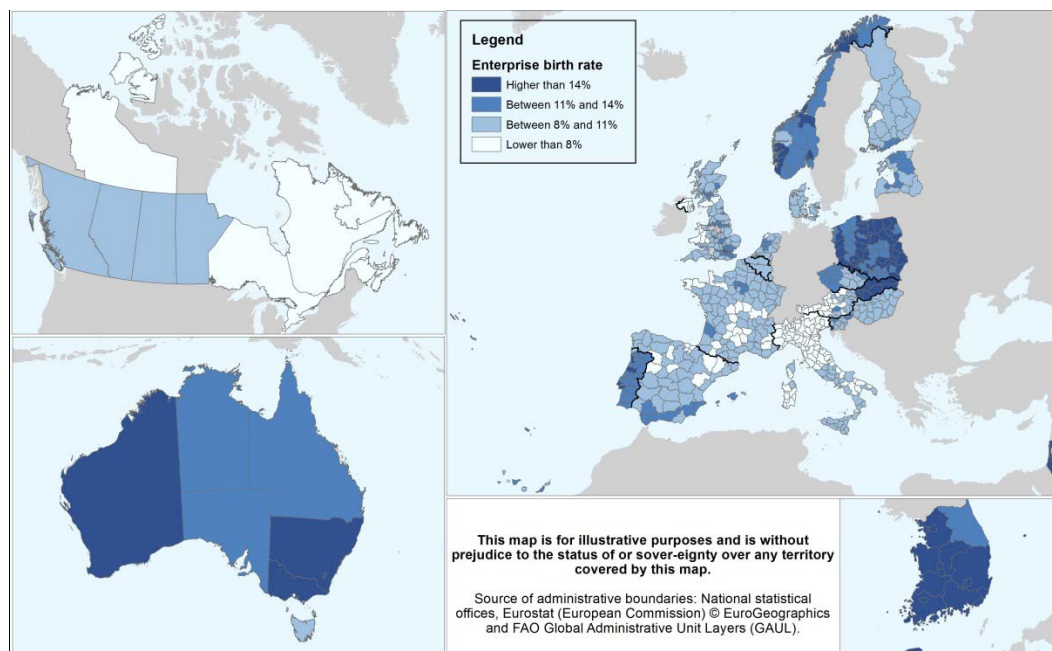
Notes: The figure presents business births as a proportion of total active firms in each region in the year 2014 (or last available year). All firms, including self-employed entrepreneurs, are included (total across sectors and size classes). Data are for TL2 regions in Austria, Belgium, Canada, Israel and the Netherlands.

Source: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

StatLink 🔗 *http://dx.doi.org/10.1787/888933625604*

Whereas the within-country dispersion is sometimes very low, as in the case of many Eastern European countries, in London business birth rates, at 15% a year, are more than twice as high as those in East of Northern Ireland (Figure 3.3). Among the best performers in terms of business births, clear outliers are Israel and the Slovak Republic, where on average across each country 20% of active firms are composed by new entrants. Copenhagen and London are among the capital cities with highest birth rates in the sample, at around 15%.

The dynamism associated with higher than average entries is often accompanied by a high number of business closures. Business death rates exceed 10% per year in many countries. Average business exit figures by country are often comparable in magnitude to birth rates (Figure 3.4). This is also true for some outlier regions, like Copenhagen, where birth rates are relatively high, but so are death rates. The within-country distribution of business deaths has a strong regional component: some Northern regions in Italy (Sondrio) experience half the rate of business closures compared to their Southern counterparts (Caserta).

This descriptive evidence shows that urban regions (capital regions in particular) tend to be at the forefront when it comes to measuring business creation as well as destruction: this is the case of Brussels, London, Copenhagen, Vienna and Helsinki. This evidence may speak to the higher dynamism often associated with capital regions, where dynamics of specialisation and creative destruction may be leading the developments of the regional market (Duranton and Puga, 2001). On the other hand, these differences may also reflect

differences in sectoral composition of the business population operating in urban and capital regions.

Figure 3.3. **Dispersion in business birth rates by country**

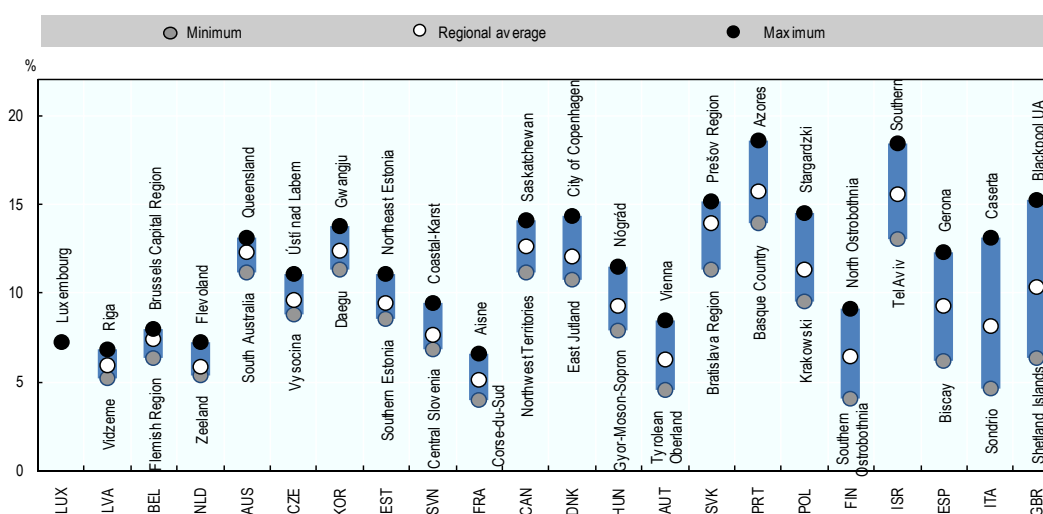TL3 regions, 2014 (or last available year)
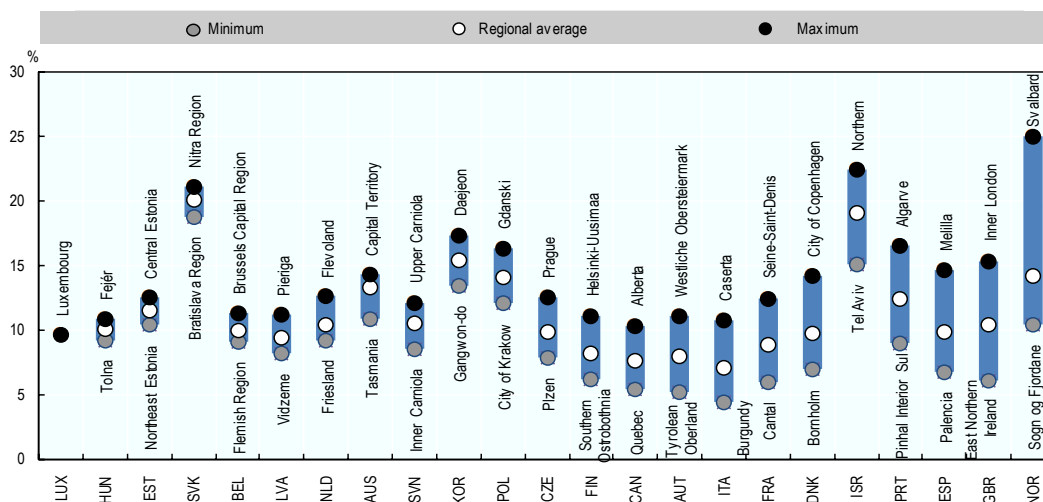
Notes: The figure refers to the total number of business births as a proportion of total active firms in the region in the year 2014 (or last available year). All firms, including self-employed entrepreneurs, are included (total across sectors and size classes). Canada and Latvia show figures for employer firms only. Data are for TL2 regions in Austria, Belgium, Canada, Israel and the Netherlands.

Source: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

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Figure 3.4. **Dispersion in business death rates by country**

TL3 regions, 2014 (or last available year)

Notes: The figure refers to the total number of business closures as a proportion of total active firms in the region in the year 2014 (or last available year). All firms are included (total across sectors and size classes), except for in Canada and Latvia, which show figures for employer firms only. Data are for TL2 regions in Austria, Belgium, Canada, Israel and the Netherlands.

Source: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

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All firms or employer firms only? Cross-country comparability and coverage of indicators

One question that arises when regional business demography is assessed across multiple countries is what type of firms should be considered. This question is particularly pertinent with regards to the size of a new firm, i.e. whether it is a non-employer firm (a firm with zero employees) or an employer firm.

Several OECD countries, especially outside Europe, do not provide a breakdown of regional business demography indicators by firm size class, so excluding the category of non-employer firms from the analysis would imply excluding a substantial part of the sample (see Table 3.1). However, the inclusion of non-employer firms may generate concerns related to the comparability of business demography indicators across countries, and at the same time substantially skew the indicators. Differences in legal definitions, tax regimes and thresholds for inclusion in business registers may lead similar firms to be included in the business registers of some countries but not in others.

While this is true of all firm categories, such differences are likely to disproportionately affect non-employer firms. This is due to the fact that differences in registration requirements (and tax regimes) applied to very small firms are likely to display a large cross-country variation, while the much higher consistency across countries is expected for larger employers. Evidence from the *Regional Business Demography Database* demonstrates that, in fact, the share of employer firms among all firms differs substantially by country (Figure 3.5). While in Belgium or the Czech Republic employer firms in business sectors account only for roughly 20% of all firms, around 70% of all firms in Norway are employer firms.

Figure 3.5. **Share of employer firms by country**
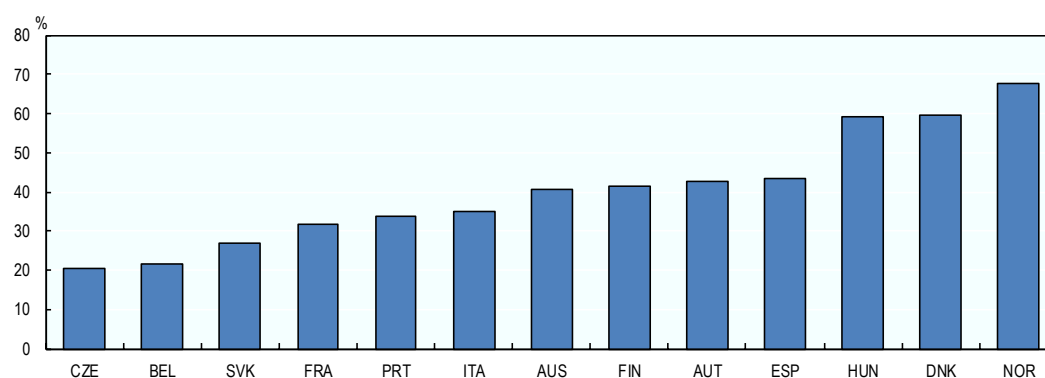
Note: The figure presents the proportion of employer firms of all firms by country across all sectors in 2014 (or last available year).

Source: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

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Regions not only differ in the relative importance that non-employer firms play, but also display significant variation in the relationship between dynamics of employer and non-employer firms (Figure 3.6). Births rates of employer firms and birth rates of all firms (including non-employer firms) are correlated across regions in the set of countries for which such a comparison is possible, but the correlation is fairly weak (Figure 3.6). As a consequence, conclusions drawn for birth rates of all firms are not necessarily correct for birth rates for employer firms.

Figure 3.6. **Ratio of birth rates for all firms and employer firms, TL3 regions**
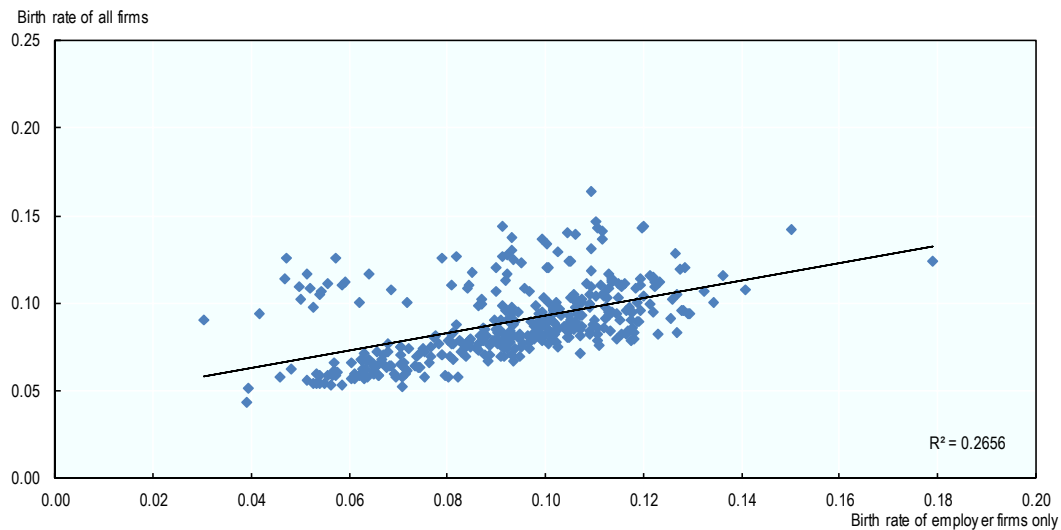
Notes: The figure compares birth rates for all firms with birth rates for employer firms across OECD countries (for all sectors). Data are for TL3 regions in 2014 (or last available year). Hungary and Norway are excluded from the graph.

*Source:* OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

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Non-employer firms do not necessarily capture self-employment and the link between self-employment and non-employer firms varies across countries (Figure 3.7). If every non-employer firm truly consisted of a self-employed individual, then the ratio of non-employer firms to total employment in enterprises should correspond to the rate of self-employment. Such a comparison can be made by looking at labour force survey data for European countries and computing for each business sector in each region and year the share of self-employed labour force.

In almost all countries, non-employer firm statistics do not perfectly match the actual degree of self-employment, with an overall pairwise correlation of 0.36. However, across countries there are strong noticeable differences. Some of these differences might be attributable to the fact that NSOs use different thresholds and rules for including firms in their register. A great part of these differences are likely a product of different legal contexts and tax codes that cause differential incentives to set-up non-employer enterprises. As a consequence, one needs to be cautious in comparing business demography for non-employer firms across different countries and tax codes.

Across the OECD, the within-country range of dispersion of birth rates is in most cases similar when considering all firms and employer firms only, and the same region is often the respective country's minimum/maximum with respect to both measures (Figure 3.8). At the same time, both averages and the range of variation in the indicators are quite different for some countries. In general, birth rates measured for employer-only firms are lower than those measured including non-employers, with the notable exception of Hungary. Norway, for example, has a very low birth rate in terms of employer firms (3%) than when considering non-employers (15%). The large number of firms in the renting and operating own or leased real estate sector – about 8% of all firms in Norway, mostly non-employers – can partially explain the observed differences. The case is similar in Belgium, the Czech Republic and the Slovak Republic.

Figure 3.7. **Self-employment vs. non-employer firms**
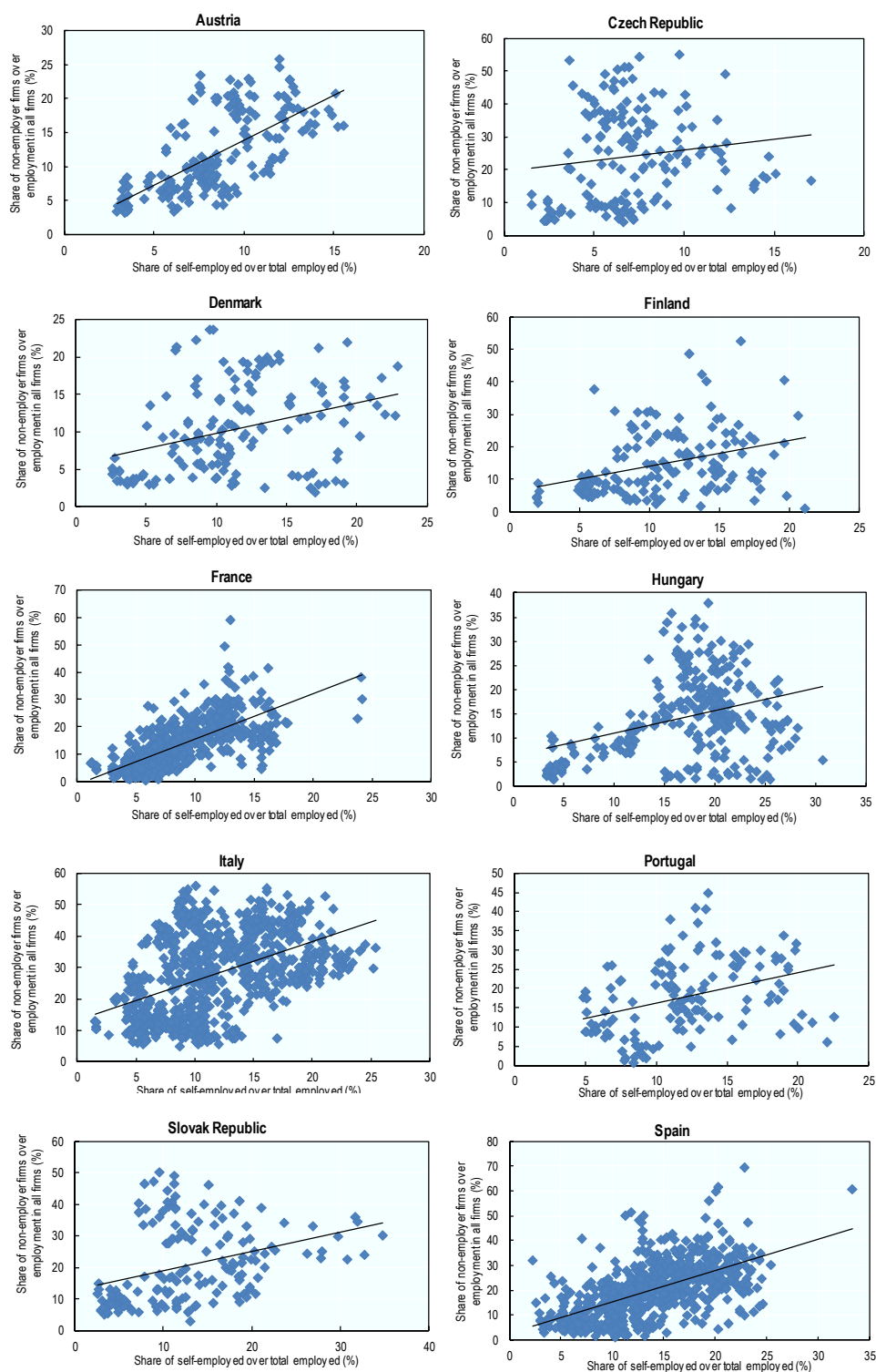
Note: The figures compare the share of self-employed over total employed and the share of non-employer firms over total employment in enterprises for each region, sector and year in ten European OECD countries.

Sources: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en, and EU Labour Force Survey.

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Figure 3.8. **Within-country dispersion: Birth rates for all firms and employer firms**

TL2 regions, 2014 (or last available year)
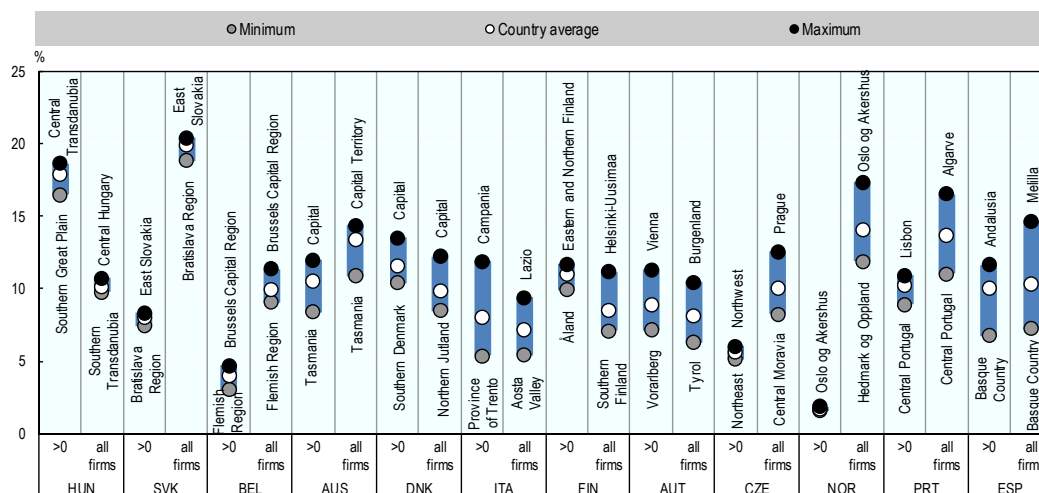
Note: The figure presents both the birth rates for all firms as well as employer firms in the region in the year 2014 (or last available year).

Source: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

StatLink ⟶ *http://dx.doi.org/10.1787/888933625718*

The findings in this section suggest that births of employer and non-employer firms capture different aspects of entrepreneurship. Furthermore, the relationship between these two measures varies across countries and regions. Currently, regional business demography data only allow distinguishing between employer and non-employer firms for a subset of countries. For the remainder of this chapter, we will therefore present results for all types of firms in order to ensure greater country coverage, especially for non-European countries. Another reason for including non-employer firms in the analysis is that they can become employer firms by growth. In fact, such entry by growth in a given year can be very significant in some countries compared to the number of new employer firms that were truly born in that same year (Eurostat, 2015). Where results for employer firms differ substantially from the results for all firms, those differences are explicitly stated.

Business demography in urban and rural areas

The large majority of new firms are born in cities, where the majority of firms are also active. Overall, about 50% of all active firms have headquarters in urban regions, while 34% are in intermediate regions and only 15% in rural areas (Figure 3.9). On average, 52% of new firm registrations take place in urban, TL3 regions (Figure 3.9).[6] This result most likely reflects the concentration of population and services in urban areas, which makes cities attractive to a majority of entrepreneurs. In a similar fashion, urban regions also account for the largest business death share: 51% compared to only 15% associated with rural regions (see Table 3.3 for a definition of urban and rural regions).

Since cities have a higher density of population and of firms, it can seem obvious that these regions will experience the majority of business entries and exits. Nevertheless, entry rates in urban areas are higher also when compared to their relative share of active business population (Figure 3.9). If the proportion of births were to be equivalent to the proportion of active firms across these regional typologies, birth and death shares in urban regions should be 2.2 percentage points lower.

Table 3.3. **Regional classification and typology**

Regional classification TL2 and TL3	The 398 OECD large (TL2) regions represent the first administrative tier of subnational government, for example, the Ontario Province in Canada. The 2 241 OECD small (TL3) regions correspond to administrative regions, with the exception of Australia, Canada, and the United States. These TL3 regions are contained in a TL2 region, with the exception of the United States for which the Economic Areas cross the States' borders. All the regions are defined within national borders.
TL3 regional typology	TL3 regions have been classified as: predominantly urban (PU), intermediate (IN) and predominantly rural (PR) based on the percentage of regional population living in rural communities, combined with the existence of urban centres where at least one-quarter of the regional population reside. The terms urban, intermediate and rural are used to refer to these categories. An extended typology distinguishes between regions that are predominantly rural and close to a city, and predominantly rural regions that are remote. The distinction is based on the driving time to the nearest urban centre with at least 50 000 inhabitants for a certain share of the regional population. Due to lack of information on the road network, the predominantly rural regions (PR) in Australia, Chile and Korea have not been classified as remote or close to a city.
TL2 regional typology	TL2 regions have been classified as mostly metropolitan, mixed (metropolitan and non-metropolitan) or non-metropolitan, according to the percentage of residents living in functional urban areas (FUAs). Regions with more than 70% of their population living in an FUA, or some percentage of their population living in a large metropolitan area with more than 1.5 million inhabitants, are classified as mostly urban, those with less than 50% are classified as mostly rural.

Moreover, the higher dynamism associated with cities is confirmed when looking at a relative measure of entrepreneurship: business birth and death rates, defined as new firm creation and deaths as a proportion of the active business population in the same region and year. This indicator is capable of taking into account the scale effects, because the entries are scaled by the actual business population of a particular region, rather than as a share of the total in a country. Highly urbanised areas have a slightly higher entry rate than other types of regions: 9.5% per year, compared to 8.5% for rural and intermediate regions.

Figure 3.9. **Business births and deaths by urban-rural regional typology**

TL3 regions, 2014 (or last available year)
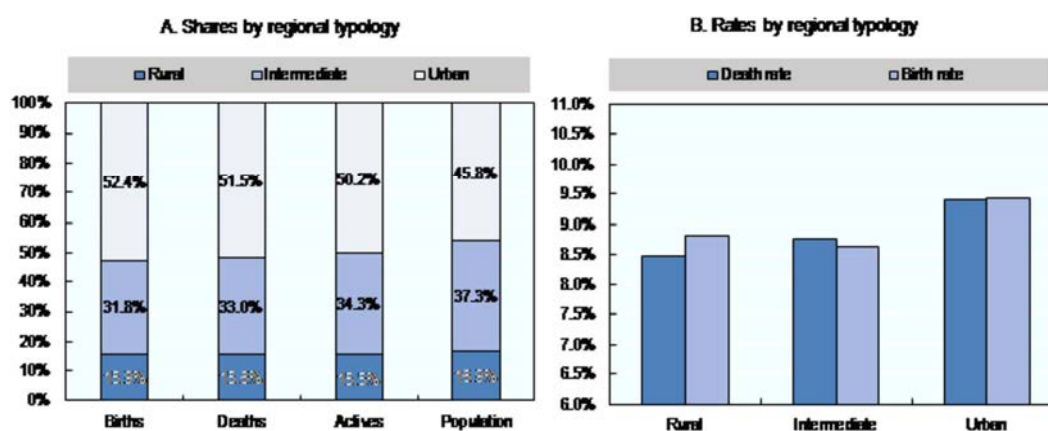
Notes: The left-hand panel displays the share of births and deaths in predominantly urban/rural/intermediate regions as a proportion of total births in a country/year. The right-hand panel displays the birth rates (births as a proportion of active firms in a region in the same year). Austria, Denmark, Estonia, Finland, France, Hungary, Italy, Korea, the Netherlands, Poland, Portugal, the Slovak Republic, Spain and the United Kingdom are included. Average across all firms.

Source: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

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Death rates are also higher in cities (9.5% compared to roughly 8.5% in both rural and intermediate areas). Net churn (the average difference between births and deaths) is virtually zero in cities and instead remains positive in rural areas. This result distinguishes rural regions from other regional typologies, particularly intermediate ones, which seem to be facing net business destruction, with negative churn rates, in recent years (Figure 3.9).

The overall differences between rural, urban and intermediate areas may reflect in part the composition of business births in terms of sector and size class of the firm. Indeed, the sectoral composition in business births differs substantially between urban regions and other areas. For example, more than 60% of new business births in the financial sector as well as in information and communication activities take place in predominantly urban regions (Figure 3.10). This evidence most likely reflects the necessity of these firms to tap into a particular workforce, as well as the need to access networks and services.

On the other hand, intermediate regions host about 40% of births in industry (including manufacturing) and in the construction sector (Figure 3.10; the same pattern can be observed for employer firms only). These sectors often have high requirements in terms of physical space and are therefore sensitive to the cost of land; at the same time, they benefit from having access to large markets and to transportation networks (particularly for the tradable part). Therefore the choice of establishing business in intermediate areas probably reflects the fact that these regions combine a relatively easy access to cities with relatively lower costs. Rural regions instead account for a relatively large share (up to 20%) of new firms operating in the hospitality sector, which is possibly a reflection of the relevance of tourism in the regional economies.

Figure 3.10. **Business birth shares by sector and type of region**

TL3 regions, 2014 (or last available year)
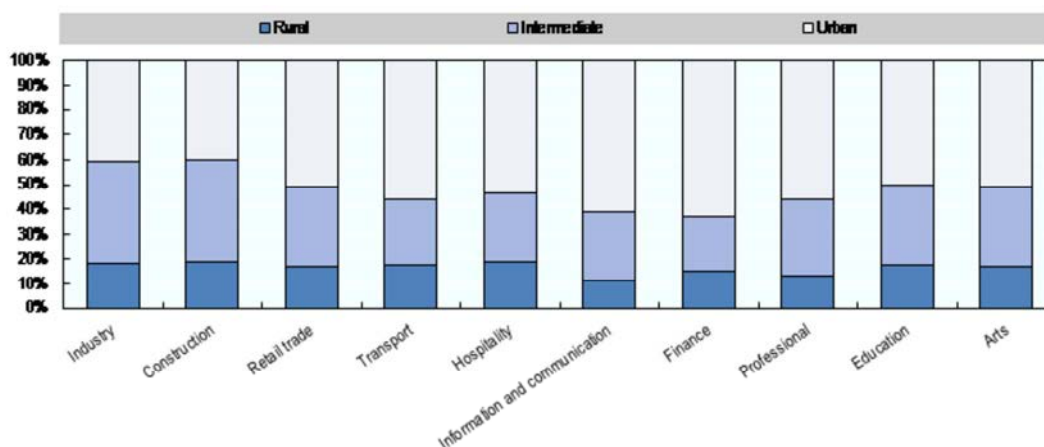
Notes: The figure displays the composition of business birth and deaths rates by type of region and by sector of economic activity of the firm (share of births and deaths in a sector as a proportion of total births in a region). The figures by regional typology are computed as averages across countries: Austria, the Czech Republic, Denmark, Estonia, Finland, France, Hungary, Ireland, Italy, Korea, the Netherlands, Norway, Poland, Portugal and the Slovak Republic. 2014 or last available year. All size classes included.

Source: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

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The geographical distribution of business births is quite heterogeneous when considering firms' size classes. A relative measure of the concentration of business entries across regional typologies can be developed by scaling each regions' birth share by size class

(births by region/all births in the same size class) for its share of business population in the same size class (actives by region/all active firms in the same size class). A uniform distribution of business entries by size class across regional typologies would require this ratio to be equal to one. However, this is not always the case (Figure 3.11).

While micro-firms (1-9 employees) are proportionally distributed in rural and intermediate regions, both intermediate and rural areas host a slightly larger than proportional share of the entries of non-employer firms (Figure 3.11). This evidence may reflect various factors, among which the lower employment possibilities affecting rural areas, particularly during the Great Recession. A lack of alternative job opportunities can be an important driver of self-employment (Vivarelli, 2013).

Figure 3.11. **Relative weight of business births by type of region**
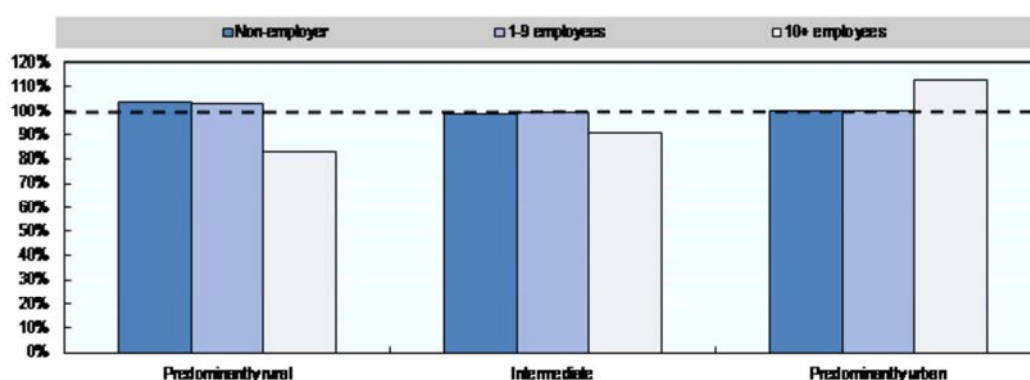
TL3 regions, 2014 (or last available year)

Notes: Share of business births (births by size class and region/total births by size class) as a proportion of the share of active firms (actives by size class and region/total actives by size class). Averages across Austria, the Czech Republic, Denmark, Estonia, Finland, France, Hungary, Italy, the Netherlands, Norway, Poland, Portugal, Spain and the Slovak Republic.

Source: OECD (2017a), *Regional Business Demography* (database) http://dx.doi.org/10.1787/region-data-en.

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Cities, on the other hand, dominate the start-up rate among larger employer firms (those with more than ten employees on payroll). The more than proportional share of entries in the category 10+ pertaining to predominantly urban regions (13 percentage points higher than it would be expected given their share of active firms in the category 10+) strongly suggests that large employer firms prefer to establish headquarters in cities. This might be because of the access to better quality business-related services (legal and consultancy advice, for example) and to a wider pool of skilled workers (Overman and Puga, 2010). This result is also likely to reflect the sectoral composition of the business population in cities, which, operating mostly in services, might be less sensitive to real estate costs than larger employers operating, for example, in the manufacturing sector.

Although firms are on average significantly larger in urban regions, newborn firms are comparable in size across different types of regions (Figure 3.12). A typical active firm with at least 10 employees in predominantly urban regions has around 60 employees, where the average active firm in remote rural regions only consists of 35 employees. Nevertheless, newborn firms with at least 10 employees are of similar size, with 24 employees in urban and 23 employees in remote rural regions. In the smaller class size of 1-9 employees, rural regions that are close to a city have both, on average, the largest

active and newborn firms. Furthermore, birth rates in 10+ firms are larger in types of regions with on average larger firms. However, for 1-9 firms there is a decreasing pattern (higher average size leads to lower birth rates), even if the magnitude of this phenomena is limited.

Figure 3.12. **Average size of new employer firms by type of region**

TL3 regions, 2014 (or last available year)
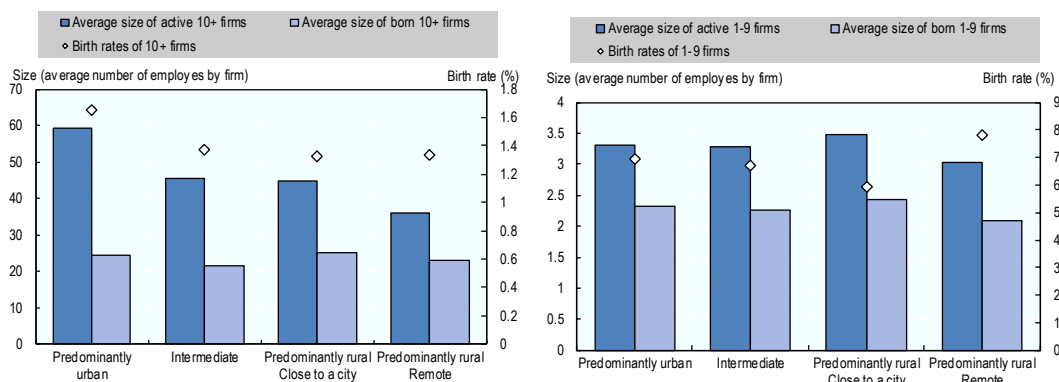
Notes: Average size of active and newborn firms for firms with ten or more employees (left panel) or one to nine employees (right panel). Averages across Austria, the Czech Republic, Denmark, Estonia, Finland, France, Hungary, Italy, the Netherlands, Norway, Poland, Portugal, Spain and the Slovak Republic.

Source: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

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Across OECD regions, the average size of existing firms is negatively related to firm birth rates (Figure 3.13). Regions with, on average, smaller existing firms in terms of employment recorded the largest firm creation rates. In those regions, the newly created firms were also smaller than firms in the regions with larger existing firms and lower birth rates.

The agglomeration in entrepreneurial outcomes is even more evident when TL2 regions are further classified according to their position in the productivity frontier of their respective countries (Figure 3.14). Regions at the frontier are regions leading their country in terms of real gross domestic product (GDP) per worker (Table 3.4). Other regions are classified according to their productivity growth with respect to the frontier between 2000 and 2013, in particular, diverging regions are areas where productivity has been dropping more than 5 percentage points *vis-à-vis* the frontier (OECD, 2016c).

Regions at the top of their respective countries' productivity ranking (frontier regions) tend to correspond to mostly metropolitan areas, and often with capital cities (OECD, 2016c). These regions account for a disproportionate share of new business births in general, and in particular in the category of large employers: they host 40% more births in the category 10+ than it would be predictable given their share of active firms in the same size class. Frontier regions that are classified as mixed or non-metropolitan tend to host a lower than proportional share of entries, especially in the category of large employers.

Non-frontier regions (those that are keeping, catching-up or diverging) overall display a share of business births that is roughly proportional to their share of active firms. However, mixed and non-metropolitan non-frontier regions experience a lower than proportional share of entries among employer firms, once again confirming that cities are preferred by employers as the location of their headquarters, even in the category of micro-firms.

Figure 3.13. **Relationship of average size of existing employer firms and regional employer firm birth rate**

TL3 regions, 2014 (or last available year)
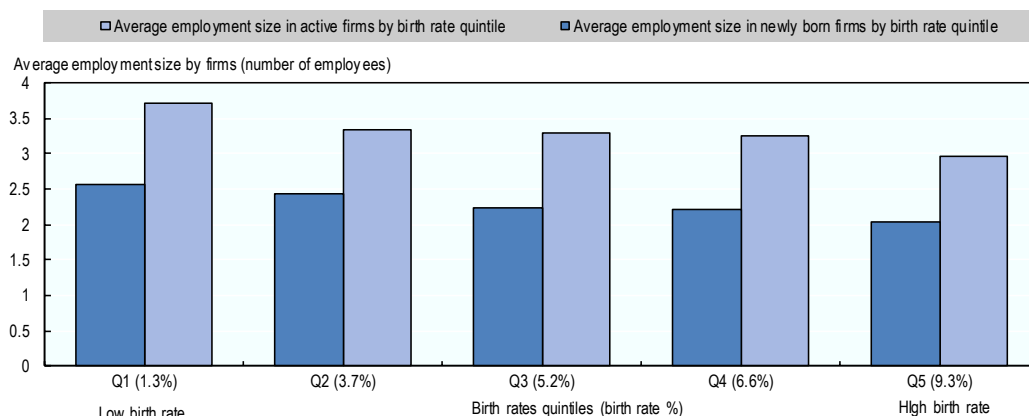
Notes: Average size of active and newborn firms by quintiles of firm birth rates (along the regional distribution of firm birth rates). Averages across Austria, the Czech Republic, Denmark, Finland, France, Hungary, Italy, the Netherlands, Norway, Poland, Portugal, Spain, the Slovak Republic and Slovenia.
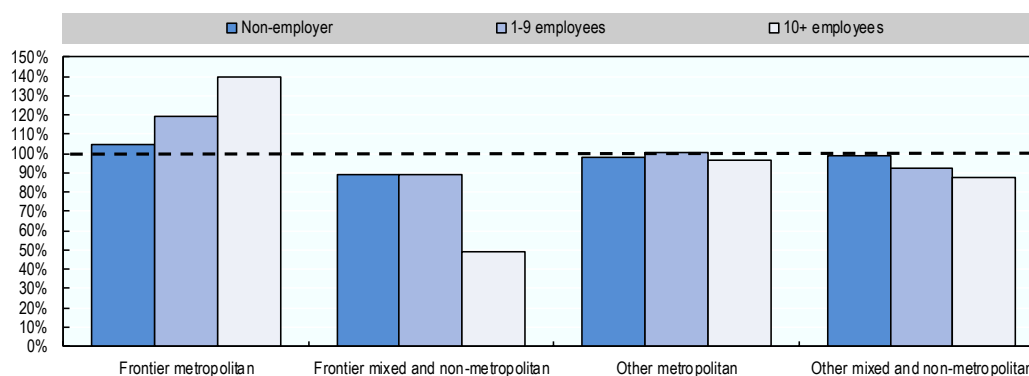
Source: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

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Table 3.4. **Typology of regions with respect to productivity**

Frontier	is the region leading its country in terms of labour productivity, measured by the real gross domestic product per employee. In some countries the leading region accounts for a small percentage of the total workforce. Where this is the case, the frontier is the weighted average of regions with the highest labour productivity levels accounting for 10% of the country's total employment.
Catching up regions Diverging regions Keeping pace regions	is a classification of regions based on their labour productivity growth relative to the frontier. It is based on the growth in labour productivity between 2000 and 2013 (or closest year available). Regions where labour productivity grew/dropped by at least 5 percentage points more/less than in the frontier are classified as catching-up/diverging regions, with regions that are keeping pace falling within the ± 5 percentage points band.

Figure 3.14. **Relative weight of business births by degree of productivity**

TL2 regions, 2014 (or last available year)

Notes: Share of business births (births by size class and region/total births by size class) as a proportion of the share of active firms (actives by size class and region/total actives by size class). Averages across Austria, the Czech Republic, Denmark, Estonia, Finland, France, Hungary, Italy, the Netherlands, Norway, Poland, Portugal, Spain and the Slovak Republic. All sectors, 2014 or last available year.

Source: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

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Choosing a scaling factor for business demography indicators

Indicators expressed in absolute terms (births, deaths) are not easily comparable across regions and countries due to scale effects. The choice of an appropriate denominator is therefore necessary in order to develop indicators that take into account the relative size of regional economies. Business birth rates throughout this chapter are expressed according to the relative size of the active business population in a given area, following the example of previous work (OECD, 2014a; 2016a). Another possible measure of entrepreneurship is the ratio of business births to the population resident in a given region. Business births expressed as a fraction of the population (rather than the business population) are, for example, used by the World Bank in compiling its Entrepreneurship Indicators. This indicator is intuitive, providing a measure of the share of population that started a business. Figure 3.15 shows, however, that the average within-country dispersion is similar between the two indicators, although not in all countries. Exceptions are the Czech Republic and the Slovak Republic, which display a much larger regional heterogeneity in the population-based indicator than in the firm-based one.

The population-based indicator tends to display lower values than the enterprise-based one, although averages are similar. In some cases this bias is severe, as in the case of Israel, for which birth rates drop from 20 to 5 percentage points, depending on the region, once population is taken as a scaling factor. Overall, these two indicators are not interchangeable, in that they measure different concepts: the population-based indicator captures the potential for entrepreneurship in a given population, while the firm-based indicator captures the dynamism of the regional economy. In other words, dividing by firms implies taking into account the pre-existing regional conditions that might affect entrepreneurship, which are likely to be better captured by the number of active firms than by the number of people. Using one indicator or the other depends on the purpose of the analysis. On one hand, the population-based indicator avoids biases in regions dominated by one large employer, for which an increase in one unit would result in a substantial change in the birth rates. On the other hand, the indicators based on the population of active firms might mitigate the understatement of progress of regions with a low-existing number of firms but a large population that record strong relative growth in firm creations. For such regions, population as a scaling factor could hide such progress.

The business demography indicators presented in this chapter consider different types of firms in terms of employment legal status, size (from zero to many employees) and sector. Differences in statistical conventions, taxation and legislation affect the count of business entries and exits and active firms, making cross-country comparisons difficult. Population-based indicators used by the World Bank consider only limited liability companies. In a situation of heterogeneous types of firms, the consequent bias in cross-country comparability can be alleviated when using active firms as a scaling factor (births/actives), as the heterogeneity is reflected in both the numerator and the denominator (see p.12 in OECD/Eurostat [2007]).

Furthermore, other indicators developed through the OECD *Regional Business Demography Database*, such as death and survival shares, become very counterintuitive if expressed as a proportion of the human population, rather than as a proportion of active firms. In order to establish a consistent standard across all indicators presented in this chapter, and in order to increase cross-country comparability, birth rates are therefore expressed as a proportion of the active business population (rather than the population) throughout the other sections of this chapter.

Figure 3.15. **Birth rates, all firms, TL2 regions, 2014**

Number of firm births in % of active firms and by 1000 population
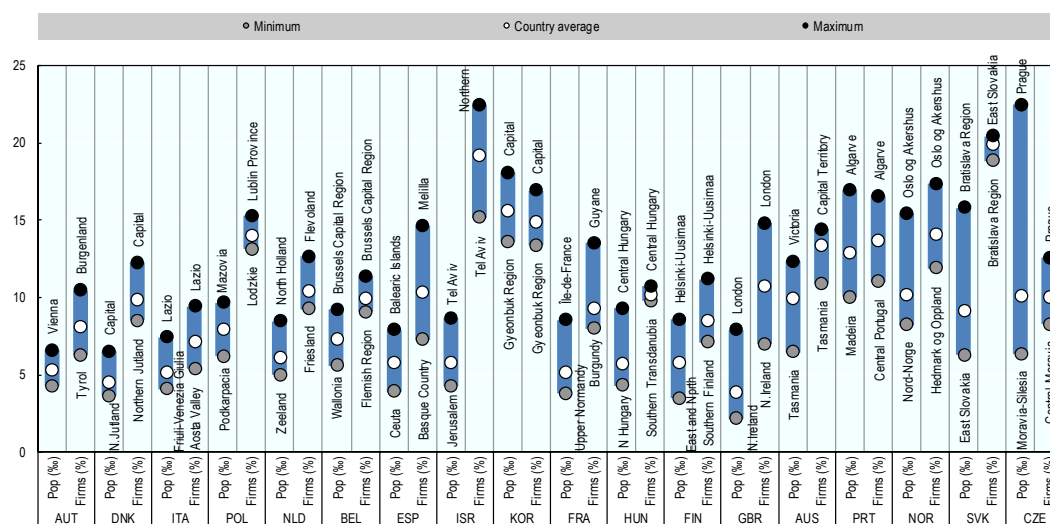
Note: The figure refers to the total number of business births per capita or per active firm in the region in 2014 (or last available year). All firms, including self-employed entrepreneurs, are included (total across sectors and size classes) except for Canada, where non-employer firms are not included.
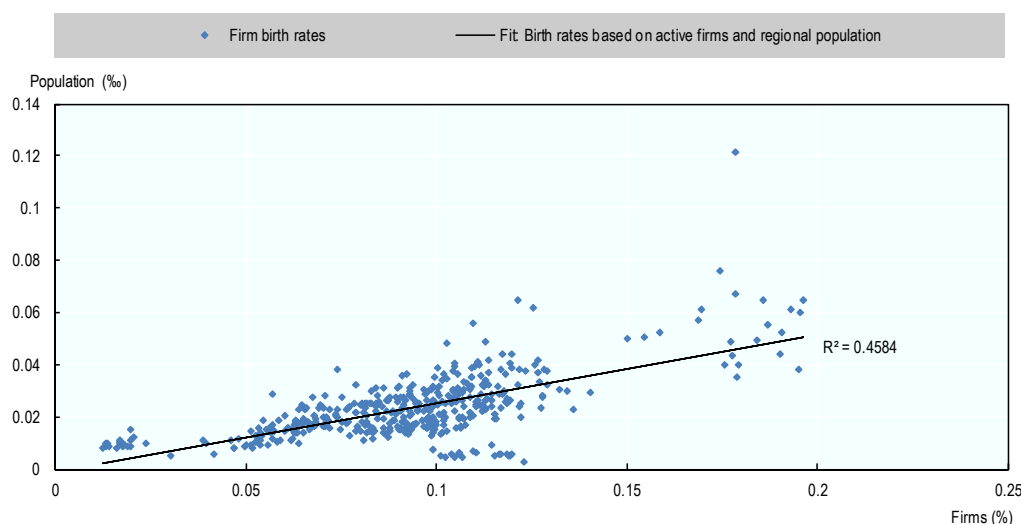
Sources: OECD (2017a), *Regional Business Demography* (database); OECD (2017b), *OECD Regional Statistics* (database), http://dx.doi.org/10.1787/region-data-en.

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There is a clear relationship between the per capita firm births and the firm births per active firms (for employer firms) across OECD regions (Figure 3.16). At the same time, the two indicators seem to capture different aspects of entrepreneurship. The deviations of the trend line appear to be mostly driven by a few countries, such as Finland or Hungary, where most regions, compared to other countries, record more firm births relative to their firms than relative to their population. Even though the two concepts might capture different aspects of entrepreneurship, namely the propensity of the regional population to start a business and the relative dynamism of a region's business environment, they are closely related.

Regarding the choice of an appropriate scaling factor, previous studies have referred to the scaling of firm births by the number of incumbent firms as "ecological approach" and contrasted it to the so-called "labour market approach", which scales firm births by the size of a region's workforce population (Audretsch and Fritsch, 1994). One potential concern about choosing the "ecological approach" is that it might overstate entrepreneurship in urban areas. Evidence from survey data of the adult population of 47 urban areas across 22 European countries suggests that urban areas are not necessarily more entrepreneurial than other areas if entrepreneurial activity is scaled by a region's workforce size (Bosma and Sternberg, 2014).

The reason why the relative entrepreneurial intensity in urban areas could differ depending on whether the ecological or labour market approach is chosen is the fact that establishments also differ between urban and non-urban areas. On average, establishment size tends to be larger in big urban areas than in non-urban ones. As a consequence, there are more employees per establishment that might start their own business and become themselves entrepreneurs.

Figure 3.16. **Comparison: Per capita firm births and firm births relative to incumbent firms**

Note: The figure compares the birth rate of employer firms as measured by: 1) the proportion of all active firms; and 2) the number of new firms per 1 000 inhabitants in the region in the year 2014 (or last available year).
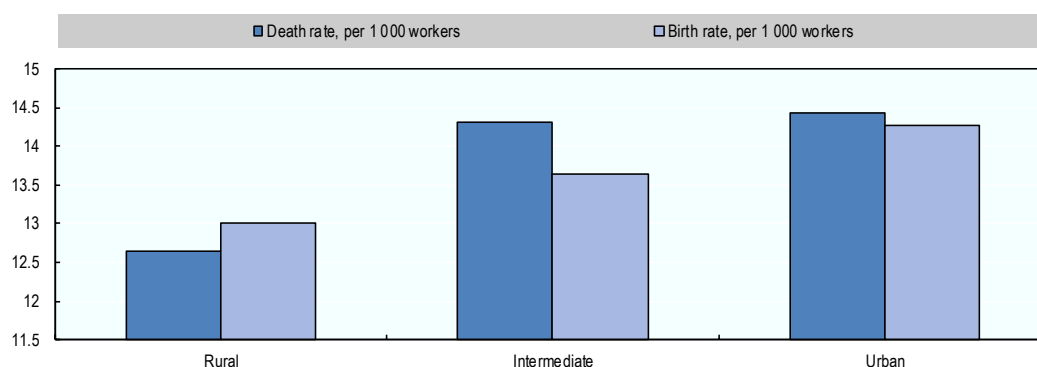
Sources: OECD (2017a), *Regional Business Demography* (database); OECD (2017b), *OECD Regional Statistics* (database), http://dx.doi.org/10.1787/region-data-en.

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Across the OECD, urban regions display higher levels of business dynamics than rural regions even if the firm births and deaths are standardised by a region's workforce size instead of the number of active enterprises (Figure 3.17). Although the exact rates have changed due to the different scaling factor, using the "labour market approach" confirms the findings of Figure 3.9 that urban regions are characterised by greater business dynamics. In 2014, urban regions recorded on average 14-14.5 firm births and deaths per 1 000 workers, while rural regions only experienced 12.5-13 firm births and deaths per 1 000 workers. Noticeably, the differences between urban and intermediate regions appear muted relative to the "ecological approach" (Figure 3.9).

Figure 3.17. **Business births and deaths per worker by type of region**

TL3 regions, 2014 (or last available year)

Notes: The figure displays the firm birth and death rates (births as a proportion of the number of employees in a region in the same year) by type of region. Average across all firms.

Sources: OECD (2017a), *Regional Business Demography* (database), OECD (2017b), *OECD Regional Statistics* (database), http://dx.doi.org/10.1787/region-data-en.

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Per capita indicators can be informative nonetheless. In particular, they can be used to assess the pervasiveness of entrepreneurship in the regional socio-economic environment. Across OECD regions, there is no clear pattern between the density of firms, measured by the per capita number of active employer enterprises, and business dynamics across regions. Regions with high or low firm density document neither more nor less firm births or churn (firm births minus firm deaths).

Sustainability of entrepreneurship: Firm survival over time

For entrepreneurship to be a vehicle for economic growth, firms need to be able to survive the hurdles posed by the early post-entry years, expand their activities and maintain employment over time. Therefore, understanding entrepreneurial dynamics requires observing what happens to businesses after their creation.

Close to one-half of newly created firms do not survive their first three years of activity, on average across regions (Figure 3.18). Survival rates are on average lower among employer firms than when considering the entire firm population, suggesting that non-employer firms face better chances of three-year survival, in this sample, compared to employer firms (Figure 3.18). The differences across countries are relevant: out of 100 firms born in Italy or Spain in 2011, on average only 50 were still active in 2014; in Austria the count goes up to 65. These differences are very likely to reflect the different macroeconomic circumstances faced by countries during this time frame.

Notwithstanding the country-level variation, regional differences in firm survival rates are sometimes larger than the differences across countries. For example, the best-performing region in Spain (the Basque Country) experienced the same survival rates in 2014 as the best-performing region in Austria (Vorarlberg). In the category of employer firms, the Basque Country, and even Northern Portugal, fare the same or even better in three-year survival rates than all regions in Austria.

The ranking of countries according to the cross-regional difference between their best- and worst-performing region in terms of survival rates shows that while some countries are relatively homogenous within their boundaries (Hungary, the Slovak Republic), others (Italy, Spain) show a high degree of inter-regional dispersion (Figure 3.18). For example, out of 100 firms (including non-employers) created in Sicily in 2011, only 50 survived until 2014; in the Bolzano-Bozen Province, more than 60 did.

In most countries average survival rates among employer firms are similar, albeit slightly lower, than average survival rates calculated taking into account all firms (Figure 3.18). There are, however, some exceptions: in Denmark, employer firms face average three-year survival rates that are 20 percentage points lower than those faced by the whole sample of firms. This is also the case of the Slovak Republic. In Portugal, on the other hand, employers face survival rates 20 percentage points higher than the non-employers, possibly suggesting that much of the small-scale entrepreneurship occurring in Portugal during this time frame was indeed motivated by the worsening job opportunities that the country was facing at the time.

The capital regions of Bratislava, Copenhagen and Vienna have the lowest three-year survival among employer firms, confirming the higher dynamism associated with capital cities, which experience high death rates. The Aosta Valley has the lowest survival rates among the employer category in Italy, which is possibly a reflection of the relative importance of touristic facilities in this region, heavily hit by the recession between 2010 and 2013.

Figure 3.18. **Within-country dispersion in business survival rates, by firm class**

TL2 regions, 2014 (or last available year)
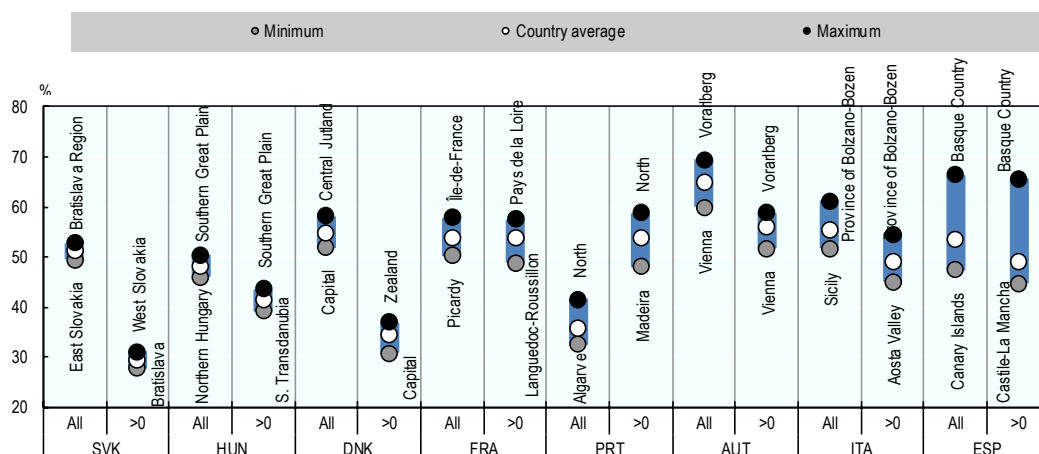
Notes: Survival rates measure the number of firms created in year *t*-3 which are still active at time *t* (three-year survivors/births *t*-3). 2014 or last available year. Countries are ranked according to the range of difference between regions in the survival rates of all firms.

*Source:* OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

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The North of Portugal, Central Hungary and the Basque Country are among the better performers in the respective countries, on the other hand. In Hungary, this effect is likely to reflect the location of Budapest, faring much better than other regions of the country despite the fact that, in absolute terms, survival rates in the country are among the lowest in the sample. Similarly, the case of the Iberian Peninsula stresses an important north-south divide, with survival rates in the Basque Country and the North of Portugal much higher than southern regions in the respective countries.

The urban-rural divide in business survival rates is not particularly marked, with a few exceptions (Figure 3.19). Predominantly urban regions fare significantly better than the country average in the Czech Republic, Hungary, Portugal and the Slovak Republic but in Austria, Finland, Norway and the United Kingdom, they are among the worst performers, with survival rates up to 7 percentage points lower than the country average. Intermediate regions, those mainly rural but close to a big city, have significantly higher than average survival rates in the Czech Republic and the United Kingdom, but fare relatively worse in Portugal. Rural regions stay very close to the country average in most cases, with the exceptions of Austria and Norway, where they experience survival rates that are 2 percentage points lower than the country average.

A country's most productive regions are not necessarily its best performers, in terms of business survival rates. In Austria, Denmark, Finland, Italy, Portugal and the United Kingdom, frontier regions display survival rates up to 4 percentage points lower than the respective countries' averages (Figure 3.20). This is likely to be a reflection of the higher dynamism associated with frontier regions, which not coincidentally tend also to correspond with capital cities. An exception is France, where frontier regions fare 4 percentage points better than the country average when it comes to business survival rates. Frontier regions also stand out in terms of survival rates in the Czech Republic, Hungary and the Slovak Republic.

Figure 3.19. **Business survival rates by urban-rural regional typology**
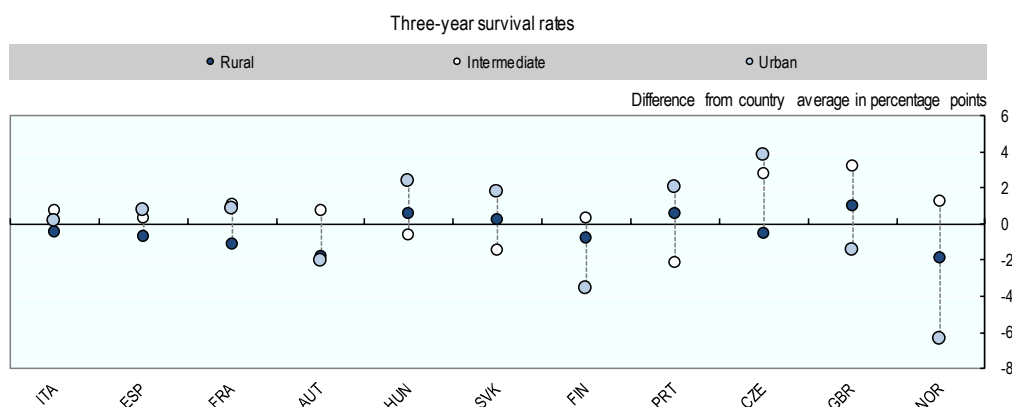
TL3 regions, 2014 (or last available year)

Notes: Survival rate measures the number of firms created in year *t*-3 which are still active at time *t* (three-year survivors/births *t*-3). The rates are expressed as the distance from the country average. All firms apart from Norway (employer firms only).

Source: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

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On the other hand, countries where some regions are classified as diverging (where income and productivity per capita have been declining over time) consistently show that these areas have the lowest relative survival rates (Figure 3.20). Dynamism, or "creative destruction", is unlikely to be the leading explanation for these regions' relatively poor performance. In all likelihood, low business survival rates reflect a worsening of the regional economic fabric over time (OECD, 2016c).

Figure 3.20. **Business survival rates by degree of productivity**
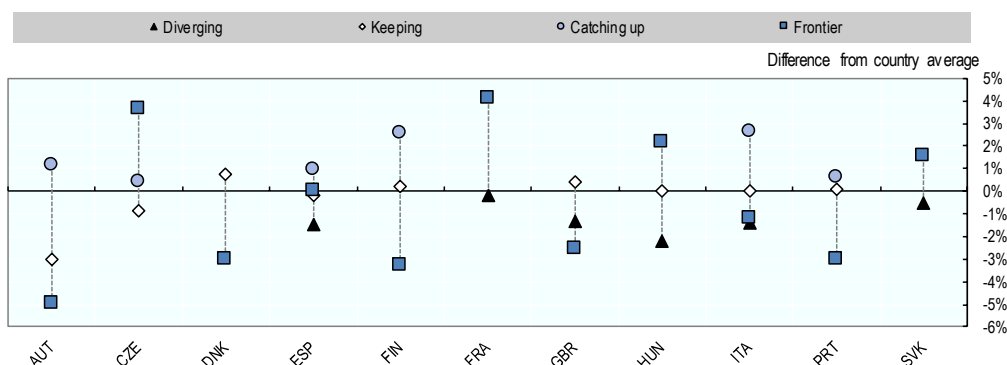
TL2 regions, 2014 (or last available year)

Notes: Survival rate measures the number of firms created in year *t*-3 which are still active at time *t* (three-year survivors/births *t*-3). Average by productivity classification (OECD, 2016c). The rates are expressed in proportion to the country average. All firms.

Source: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en.

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These descriptive statistics suggest that businesses in similar size classes operating at the same point in time across regions of the same country face a different probability of survival. Also, survival rates systematically depend upon regional characteristics, like rurality or the relative positioning of a region with respect to a country's productivity frontier. Clearly, there is a process of self-selection at play, as more productive businesses may decide to locate in regions offering better conditions. Moreover, these statistics are based on a regional aggregation and therefore they disregard important sources of unobserved heterogeneity in the composition of the business population. Nevertheless, the wide within-country variation suggests that the conditions for firms to thrive are not evenly distributed over space. This can hamper the extent of countries' economic development as those regions with low survival probabilities cannot reach their full potential. Lower survival probabilities inhibit job creation and economic growth in those regions as young firms, which are a major contributor to increases in employment, often do not survive to create further jobs. As a result, countries' overall economic development is diminished.

Regional characteristics and entrepreneurial activity

The spatial concentration of firms is a function of many endogenous characteristics of regions, often intertwined with each other. Some of these characteristics are fixed, like geography; others are institutional and as such policy-variant and susceptible of change over time. Some of these factors, like access to services or the institutional framework, may affect the capacity of businesses to grow and thrive.

This section analyses the relationship between business demography indicators and some characteristics of the regions where businesses operate. In particular, the focus is on the concentration of regional employment in a few large firms, the regulatory framework, the role of the financial sector and education as well as research and development. This section also serves as an example of questions that could be explored using enterprise-level business demography indicators.

### *Regional dominance of a few large enterprises*

Possessing a business culture that encourages exchange of ideas and forays into entrepreneurial activities can be an important factor for establishing dynamic regional economies. In fact, entrepreneurship is often a by-product of knowledge spillovers and business interactions between different firms. Therefore, the regional economic environment is of fundamental importance.

In particular, the degree to which regional economies are dominated by a few large firms can affect entrepreneurship. On the one hand, a high concentration of business activities within a few firms can inhibit fostering a local spirit of entrepreneurship as fewer individuals are likely to have gained experience in starting or managing a business. On the other hand, large firms can be local "hotspots" of innovation and can thus generate positive externalities that could translate into more business creations.

Across OECD regions, the effect of employment concentration in a few large firms on business dynamics is ambiguous. Overall, regions with relatively large as well as a relatively low concentration of regional employment in the three largest regional employer firms record the largest firm birth rates (Figure 3.21, panel a). In contrast, regions with employment concentration that falls outside of the first and fifth quintile are less dynamic in terms of firm births.[7]

While high employment concentration is related to high enterprise birth rates in urban regions, in rural regions low employment concentration fares best in terms of new firm creations (Figure 3.21, panels b and c). Urban regions with highly concentrated employment have 10 percentage points higher business birth rates than urban regions with low employment concentration. On the other hand, in rural regions the least concentrated regions in terms of employment have a firm birth rate that is more than eight times as high as that of their peer regions with the largest employment concentration.

Figure 3.21. **Concentration of employment in three largest firms and firm births, TL3, 2014**
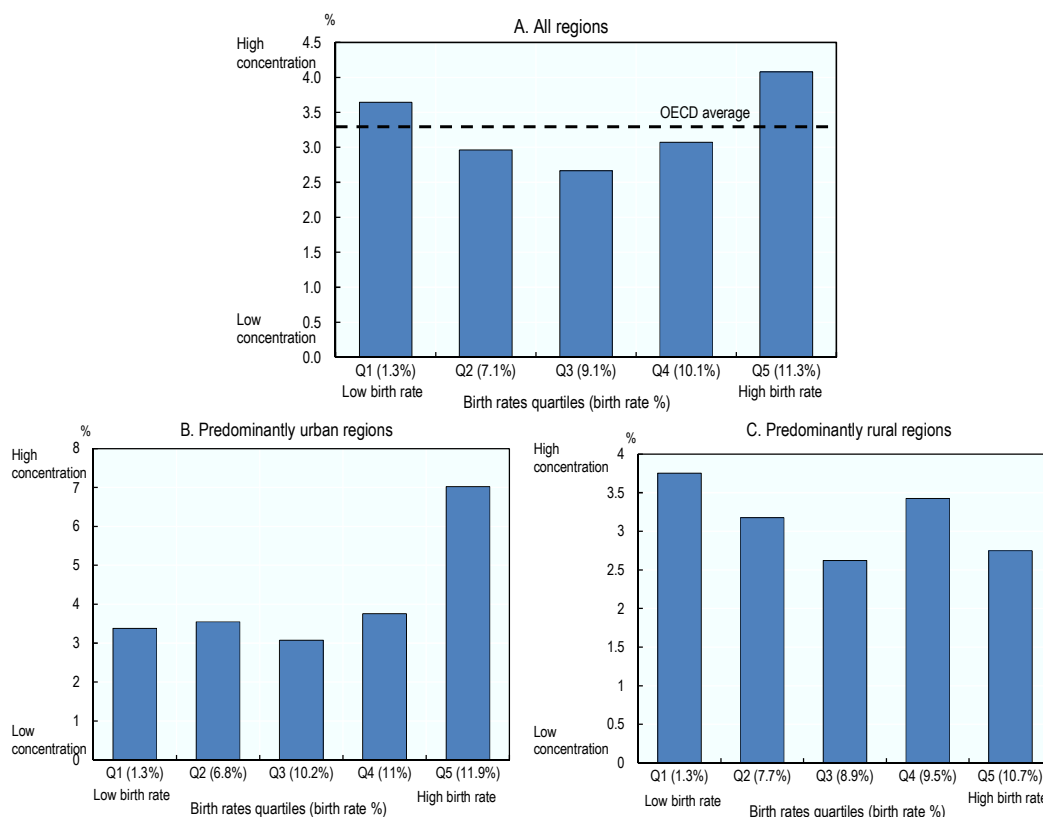
Notes: Concentration (y-axis) presents the employment share of the three largest firms in a region. The figures present the data for all regions, urban regions and rural regions, each partitioned into quintiles (x-axis) according to their enterprise births rates from low (left) to high (right). Data are provided for TL3 regions in Austria, Denmark, Finland, France, Hungary, Italy, Latvia, Norway, Portugal, the Slovak Republic and Spain.

Sources: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en and Orbis.

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These large discrepancies suggest that entrepreneurship in urban and rural regions is differently linked to the local business environment and cluster formation. Whereas in rural regions a more traditional cluster model still succeeds that is often characterised by small firms that innovate informally, in urban areas clusters dominated by a few champions thrive the most. One explanation could be that champion-driven clusters mean that those large firms are large enough and grow fast, which allows them to effectively innovate and connect with international markets. These champions can thus pull other, smaller firms in the cluster, creating a business environment that is dominated by a few large firms but also more dynamics (higher birth rates) at the same time.

The role of institutions: Ease of doing business and firm dynamics

An effective and transparent institutional and regulatory environment is key for entrepreneurship and business development, at all stages of the business cycle, including entry, investment, and expansion, transfer and exit (OECD, 2017a). The regulatory framework, taxation system, competition rules, as well as good governance, extent of corruption and the stability of institutions can directly affect the decision to become an entrepreneur, and as such they can have important consequences for regional development.

Red tape is also often cited as an important factor limiting entrepreneurial dynamism. Regulation can be good to enforce consumer protection and fair competition, but in some cases it can discourage entry and innovation, by imposing high fixed costs on entrepreneurs. Product market regulation, in particular, can affect producers by reducing competition, with important implications not only in the sectors that are directly affected by the legislation, but in all downstream sectors (Borules et al., 2013).

While product market regulation is often a nationwide phenomenon, its intensity can vary across the territory depending on the composition of the business population in a given region. If a change in product market regulation affects some industrial sectors more than others, a change in regulation at the national level will reflect differently upon regions in the same country, because of the *ex ante* sectoral composition of the business population in each region. This can have implications for business demography and for regional growth.

A time-varying country-level change in regulation affecting sectors can be derived from the OECD indicators of product market regulation (OECD, 2013). To derive a regionally time-varying measure of regulation intensity, one can interact the *ex ante* sectoral input-output composition of the firm environment in a given region (before the change in regulation begins) interacted with the time-varying measure in product market deregulation, which is country-/sector-/year-specific (OECD, 2013). As a result, this interaction captures subnational variation in the intensity of product market regulation.

Changes in product market regulation may affect downstream firms mainly through cost dynamics and reduced barriers to entry. Indeed, net firm creation during the period 2008-14 is a negative function of within-region change in product market regulation: higher regulation implies lower net business creation (Figure 3.22). Also, survival shares are negatively correlated with the degree of product market regulation (albeit this correlation is not statistically significant). This evidence, consistent with national-level findings (Borules et al., 2013), suggests that policies like product market regulation may also have regional implications and heterogeneous effects across the national territory.

Although the institutional and regulatory framework is largely driven by norms that are defined at the national or even supranational level, the implementation of norms and services available to entrepreneurs to comply with regulation can vary largely across regions. More broadly, the perception of the quality of government, trust in institutions and security can differ widely within the same country (OECD, 2014b; Charron, Lapuente and Dijkstra, 2012). From this point of view, subjective measures of the perception of the quality of local institutions can be as useful in understanding entrepreneurial activity as objective measures of institutional support to firms, like business taxation or financial incentives. Furthermore, the extent of corruption, good governance and the stability of institutions can directly affect the decision to become an entrepreneur, and as such they can have important consequences for regional development.

Figure 3.22. **Sectoral regulation and firm dynamics, TL2 regions, 2008-14**
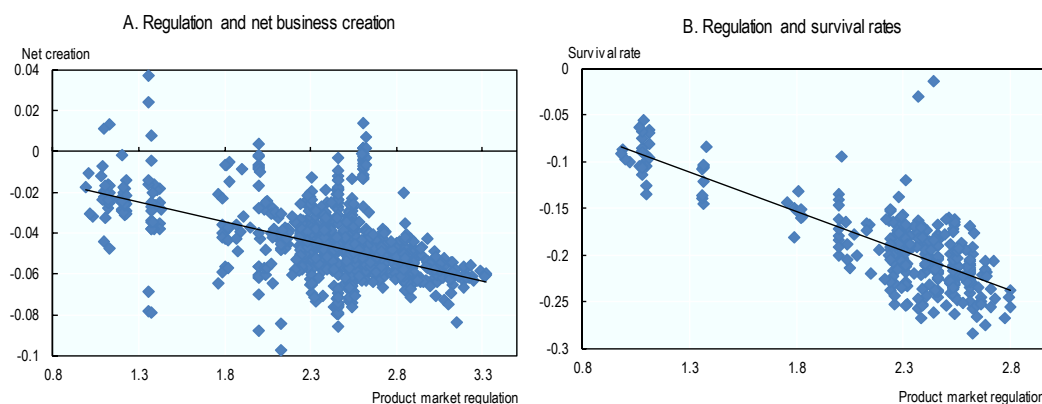
Notes: Residual plots, OLS regression. The dependent variable in the left-hand side is net business creation in all firms (births minus deaths); in the right-hand side it is survival rates (number of firms created in year *t*-3 which are still active at time *t*). Country*year fixed effects are included. Errors are clustered at the country level.

Sources: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en; OECD (2013), *OECD Product Market Regulation Statistics* (database), http://dx.doi.org/10.1787/pmr-data-en.

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Across OECD regions, subjective perception indicators of business-friendly governance and low corruption provided by Gallup World Poll are strongly correlated (Figure 3.23). Regions where survey respondents perceive corruption to be low are also regions where respondents believe that the regional government supports entrepreneurship by making it easy to start a business. Most regions in Scandinavia, Australia, Canada, France, Germany or the Netherlands score highly on both measures. In contrast, many regions in eastern and southern Europe are perceived to have both high corruption and not to have a business-friendly government. Overall, the evidence suggests that citizens' perception of the quality of local governance is significantly related to the decision to start a business.

The regional variation in the percentage of respondents reporting that government makes it easy to start a business is positively and significantly correlated with the birth rates of firms, across all sectors and size classes (Figure 3.24). On the other hand, the perception of the extent of corruption in business is negatively and significantly correlated with firm entry rates, across all sectors and size classes (Figure 3.24). This evidence suggests that the quality of local, rather than national, policies may be an important driver of entrepreneurship, at the margin. Of particular importance might also be the local implementation of nationally shaped or determined policies.

Financing constraints: A regional perspective

Small and medium enterprises (SMEs) typically rely heavily on bank debt for their external financing, as they have less access to market-based financing than large enterprises. Although financing conditions and SMEs' access to finance has generally improved in recent years, financing gaps persist, especially for young firms, start-ups, micro-enterprises and fast-growing innovative ventures. In addition, while there are signs of a recovery, progress has been uneven, with financing challenges much more pronounced in some countries than in others (Box 3.2).

Figure 3.23. **Perception of corruption and local governance (Gallup), TL2 regions**
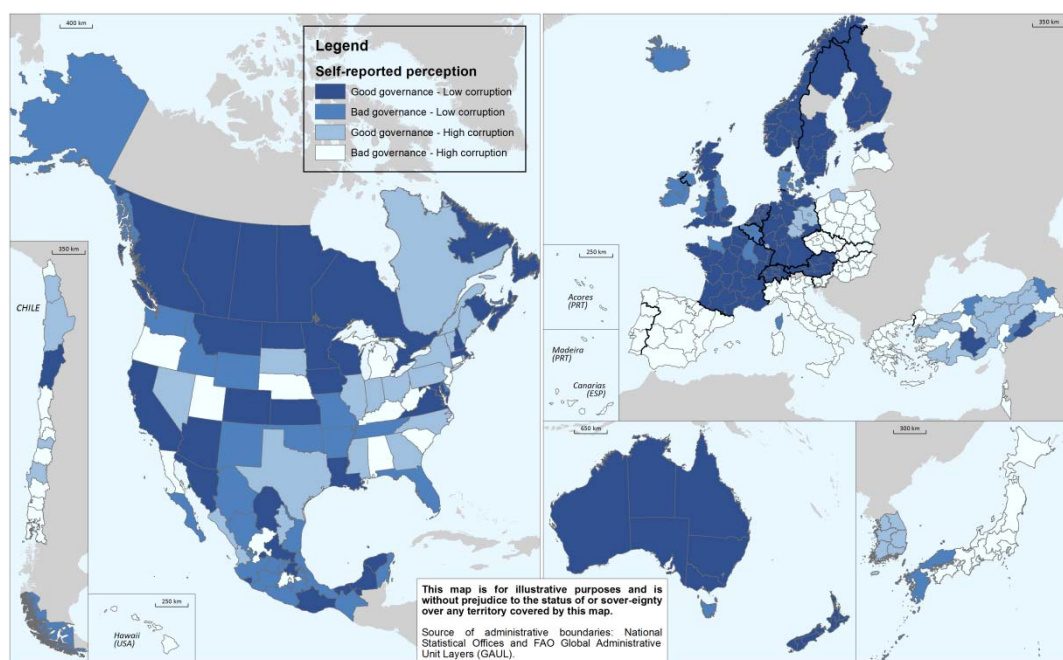
Figure 3.24. **Local governance and firm birth rates, TL2 regions**
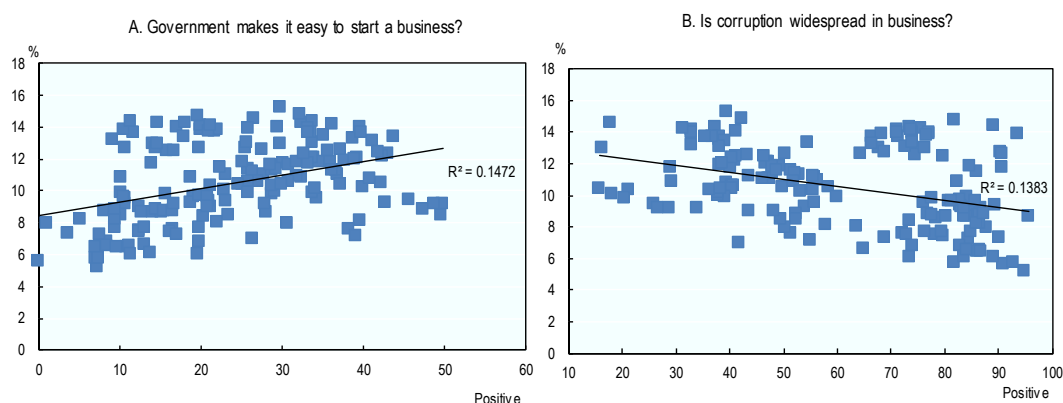
Notes: Correlation between average birth rates in employer firms by region between 2008 and 2015 (or last available year) and regional-level responses to the Gallup World Poll pooled across seven waves of the survey (2008-15). The Gallup World Poll questions are: "Is corruption widespread within businesses located in (area), or not?" (yes=1, no=0); "Does the government make it easy or hard to start a business" (1=easy, 2=hard).

Sources: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en; Gallup World Poll (2008-15).

However, credit and banking also have an important regional dimension (Guiso, Sapienza, and Zingales, 2004; Deloof and La Rocca, 2015). Regional variation in credit supply, in particular, is an important predictor of change in employment in business (Greenstone, Mas and Hoai-Luu, 2014; Chodorow-Reich, 2014).

Box 3.2. **Financing small and medium enterprises and entrepreneurs:**
Evidence from the OECD Scoreboard

The annual OECD Scoreboard on Financing SMEs and Entrepreneurs monitors small and medium enterprises' (SMEs') and entrepreneurs' access to finance, based on data collected on debt, equity, asset-based finance and framework conditions, and includes information on policy initiatives in this area. It provides a comprehensive framework to assess the financing needs of SMEs and whether they are met. In addition, detailed profiles provide an overview of the state of play for every participating country.

The 2017 edition, comprising 39 countries, indicates that lending to SMEs increased moderately in the majority of economies in 2015, interest rates generally declined, and payment delays and bankruptcies are on a downward trend. Nonetheless, key indicators show a varied cross-country picture, reflecting variations in the ease of accessing external financing across participating countries. In particular, the spread between the average interest rate charged to SMEs and to large enterprises, which describes the tightness of the credit market and the costs of accessing straight debt for SMEs compared to large enterprises, ranges from 14.85 percentage points in Brazil to 0.16 percentage points in Korea.

Figure 3.25. **Average interest rate spread between loans charged to SMEs and to large enterprises, 2015**
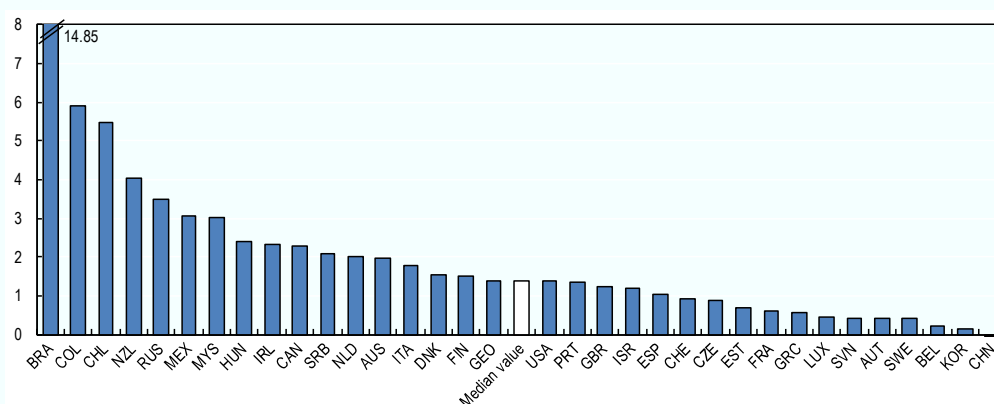
Source: OECD (2016d), *Financing SMEs and Entrepreneurs 2017: An OECD Scoreboard*, http://dx.doi.org/10.1787/fin_sme_ent-2016-en.

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The regional dimension of credit constraints to firms is hard to measure, since a comparable cross-country source of information on credit to firms at the subnational level is not currently available. However, an approximation of the change in credit constraints across regions can be built from national-level time-varying indicators, by exploiting the regional variation in the *ex ante* composition of the business population interacted with national measures of the change in credit supply to different categories of firms over time.

Credit supply experienced a contraction in the immediate aftermath of the financial crisis and during the recession (OECD, 2016d). However, this restriction in credit displays a large degree of heterogeneity: small firms often witnessed their credit supply restricted more than larger firms (ECB, 2016).

The differential in credit restriction to different categories of enterprises can be measured, at the national level, using the spread in interest rates applied to loans to small firms *vis-à-vis* loans to large firms over the period 2009-14 (OECD, 2016d). This

additional layer of within-country variation in lending practices over time (along the lines of firm size) can be interacted with the share of the firm typology (large vs. small) in each region, measured before the start of the survey. The interaction between the *ex ante* composition of the business population across regions (measured in 2008) and the time-varying shifts in credit provision to different categories of firms generates a time-varying regional measure of credit supply that can be used to understand to what extent lending decisions are associated to the lifecycle of firms.

The regional measure of restriction in credit supply is negatively and significantly correlated with birth rates and positively correlated with death rates across most sectors (Figure 3.26). The observation that credit restriction is correlated with net business closures at the regional level is consistent with the intuition that local credit conditions have a vital role in sustaining entrepreneurship, which is consistent with national-level results (OECD, 2016a).

Figure 3.26. **Credit supply restrictions and business demography**

TL2 regions, 2009-14
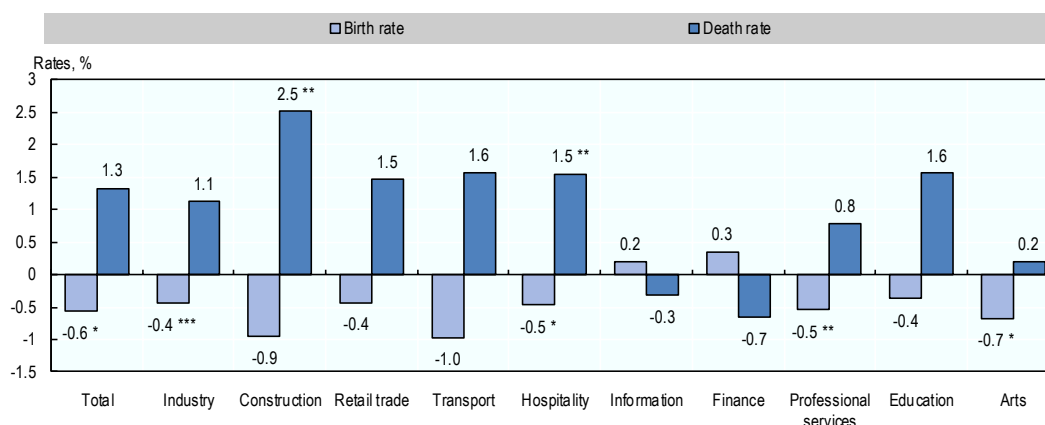
Notes: The figure shows the estimated coefficient of correlation between credit supply restrictions at the regional, net business creation and firm survival shares. OLS regression. The regional dimension is TL2 for Austria, Belgium, Denmark, Finland, France Hungary, Ireland, Italy, Portugal, the Slovak Republic, Slovenia, Spain and the United States. The time frame is 2009-14. Year fixed effects included, as well as fixed effects at the level of TL2 regions. Errors are clustered at the country level. ***p<0.01,**p<0.05, *p<0.1.

Sources: OECD (2017a), *Regional Business Demography* (database), http://dx.doi.org/10.1787/region-data-en; OECD (2016d), *Financing SMEs and Entrepreneurs 2016: An OECD Scorecard*, http://dx.doi.org/10.1787/fin_sme_ent-2016-en.

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However, the role of credit is not equally distributed across sectors. The construction sector was directly affected by the housing market crash that took place during this period in many OECD countries. Construction firms might have suffered from a particularly strong contraction in credit following 2008, and indeed in this sector a 1 standard deviation increase in the regional credit measure correlates with an increase in business death rates worth about 2.5 percentage points, the largest across the sample. The second-largest and significant increase in death rates is in the hospitality sector. Birth rates are particularly affected in the industrial sector and in professional and technical services.

Professional and technical services also experience significantly negative business creation and survival rates in response to changes in lending practices. This possibly reflects the reliance of these services on bank lending, but also the cross-sectoral spillovers resulting

from their non-tradable nature: relying on local demand, they suffer from a deterioration of the credit conditions applied to other firms in the same region. Business demography in other sectors does not experience significant correlations with respect to the change in local credit conditions.

Further evidence on the relevance of the availability of sufficient financial means for entrepreneurship is presented in Box 3.3. EU funding for entrepreneurship strongly increases business dynamics across regions.

Box 3.3. EU funds and entrepreneurship: Evidence from a large transfer to European regions

The European Union administers and distributes a large transfer to European regions in order to promote social and economic cohesion. European Regional Development Funds (ERDF) and the Cohesion Funds (CF) include a number of transfers with the specific objective of promoting entrepreneurship in the recipient regions. The magnitude of the funds that regions receive during each seven-year period depends on a set of criteria that are based on GDP per capita levels. Regions with a GDP per capita below 75% of the EU-27 average satisfy the EU's Objective 1, which qualifies them for decisively more funding.

This discrepancy in the allocation of funds between regions can be analysed to elicit the effect of funds with the objective of promoting entrepreneurship on business creation and destruction.[1] In the framework of a regression discontinuity design, this exogenous variation in the allocation of entrepreneurship funds across regions can be exploited. It compares business dynamics between regions that are similar in terms of GDP per capita but differ significantly in the magnitude of funds received.

Figure 3.27. **The discontinuity in the allocation of funds for entrepreneurship and SMEs**

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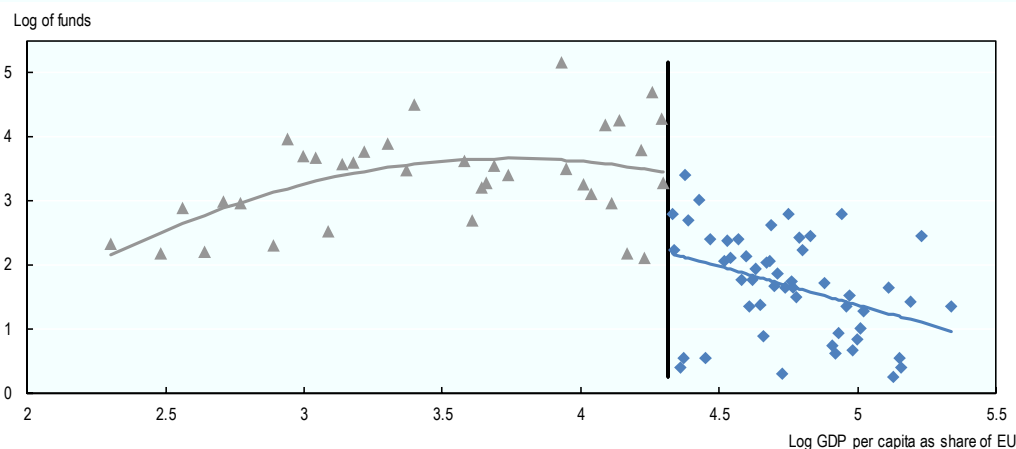
Overall, the EU funds received in 2007-13 significantly increased business dynamics. Regions that fell just below the Objective 1 criterion and thus received larger amounts of funds, recorded considerably more enterprise births as well as deaths than regions that had comparable GDP per capita levels but were slightly above the allocation rule of 75% of the EU average. The effects for self-employed firms are slightly lower than for employer firms. Considering all types of firms, a 1% increase in the amounts of funds received increases the birth and death rate of firms by 0.06%, whereas the respective birth rate of only employer firms would increase by 0.042% and the effect on death rates is insignificant. The net effect of the funds, the number of enterprise births minus enterprise deaths, is in both cases not significantly different from zero. As a consequence, funds do, on average, not cause an increase in the number of enterprises.

> ### Box 3.3. **EU funds and entrepreneurship: Evidence from a large transfer to European regions** (*continued*)
>
> However, the effect of the EU funds on entrepreneurship and the number of firms in a region can be enhanced by the right set of institutions. Funds seem to be relatively more effective in net business creation in those regions with relatively lower levels of corruption. In less corrupt regions, the overall effect of EU funds on net business creations is significantly larger than in relatively more corrupt regions. Interestingly, the contribution of low corruption to funds' effectiveness on business birth rates and net business creation is considerably more pronounced for employer firms than merely self-employed firms.
>
> 1. The funds considered include the following categories: assistance to R&D, particularly in SMEs; advanced support services for firms and groups of firms; assistance to SMEs for the promotion of environmentally friendly products and production processes; investment in firms directly linked to research and innovation; other investment in firms; other measures to stimulate research and innovation and entrepreneurship; services and applications for SMEs (e-commerce, education); support for self-employment and business start-up.
>
> *Source*: Diaz Ramirez, M., L. Kleine-Rueschkamp and P. Veneri (2017), "Does quality of governance affect the returns of policy for entrepreneurship?", Paper presented at the Congress of European Regional Science Association, August 2017.

The importance of human capital: Education and R&D

A vital factor for entrepreneurship is the locally available level of human capital. For many firms, one of the most important production inputs is labour. The availability of a wide local pool of adequately skilled workers may be a crucial source of agglomeration, reducing search costs of new firms (Overman and Puga, 2010). Human capital is a primary determinant of regional differences in economic development as it is paramount for firms' productivity (Gennaioli et al., 2013).

Additionally, the level of training and education of workers may produce positive spillover effects through knowledge-sharing (Fritsch and Aamoucke, 2013). This is particularly true for high-tech sectors that rely relatively more on workers with a tertiary education. As a consequence, differences in the regional supply of highly skilled workers can give rise to productivity differences (Moretti, 2004). For those reasons, the skills and education of workers are likely to also affect the choice and feasibility of creating a new business.

Furthermore, innovation and research are essential for entrepreneurship and (local) economic growth. The presence of universities and the level as well as quality of research activities contribute to the creation of new enterprises (Audretsch, Lehmann and Warning, 2005; Hausman, 2012). Pre-existing research activities and investments can provide the necessary innovation to stimulate entrepreneurship. Similarly, existing clusters of innovation-reliant business sectors might be conducive to the creation of new firms as entrepreneurs benefit both from knowledge spillovers as well as from the availability of an experienced and well-trained workforce (Chatterji, Glaeser and Kerr, 2013).

Information on workers' human capital, high-tech clusters and R&D is available from the *OECD Regional Database* and mostly covers TL2 regions.[8] In fact, measures for all three factors appear to be strong predictors of business entries across regions. The within-country/year variation in business rates is significantly and positively correlated with the share of R&D performed by the regional higher education sector and the share of the regional workforce employed in knowledge-intense services (Figure 3.28).[9] Moreover, net

business creation rates are significantly higher in regions that had a more skilled labour force as measured by tertiary education (Figure 3.29).

Figure 3.28. **Enterprise births: R&D and employment in knowledge-intense services**
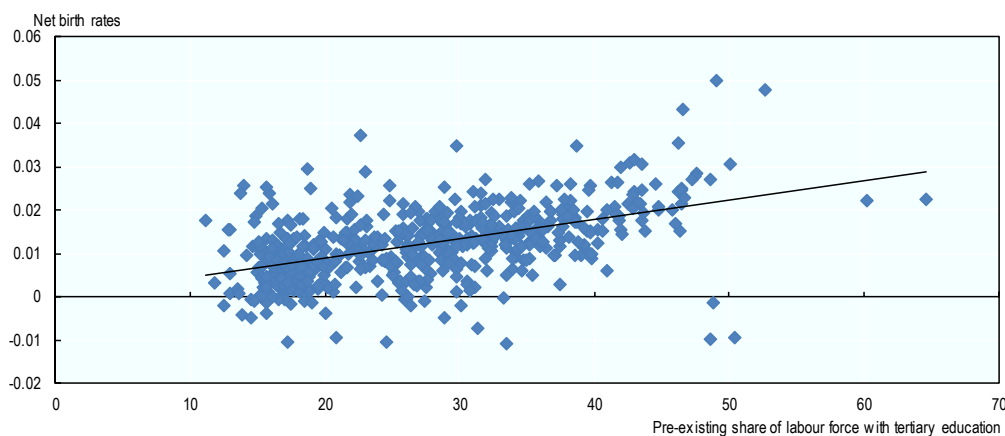
TL2 regions, 2009-14
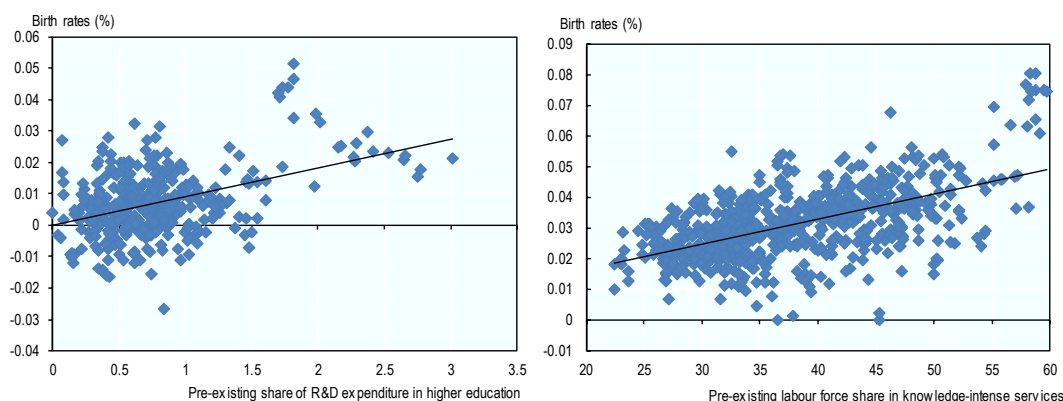
Notes: Residual plots, OLS regression. The dependent variable is business birth rate for all firms (births minus deaths). The explanatory variables are created from year *t*-1, i.e. the year before business creations are examined. Country*year fixed effects are included, years 2008-14. Errors are clustered at the country level.

Sources: OECD (2017a), *Regional Business Demography* (database); OECD (2017b), *OECD Regional Statistics* (database), http://dx.doi.org/10.1787/region-data-en.

Figure 3.29. **Enterprise births and the education of the labour force**

TL2 regions, 2009-14

Notes: Residual plots, OLS regression. The dependent variable is the regional net business creation rate for all firms (births minus deaths). The explanatory variable is created from year *t*-1, i.e. the year before business births and deaths are examined. Country*year fixed effects are included, years 2008-14. Errors are clustered at the country level.

Sources: OECD (2017a), *Regional Business Demography* (database); OECD (2017b), *OECD Regional Statistics* (database), http://dx.doi.org/10.1787/region-data-en.

These findings imply that, within countries, regions with a more educated labour force, greater university R&D intensity and a relatively stronger focus on innovative business sectors experience higher firm entry or net business creation rates.

The way forward: Measuring employment in business

The policy attention reserved to entrepreneurship often stems from the intuition that new firms will generate economic growth and employment. In reality, businesses differ in their capacity to create employment. Young and small firms tend to be net contributors to employment creation, while in "bad times" a large part of employment losses stem from layoffs from old firms (Neumark, Wall and Zhang, 2011; Haltiwanger, Jarmin and Miranda, 2013; Criscuolo, Gal and Menon, 2014).

Moreover, firm creation and expansion have non-linear effects on job creation: the complexity of the relationship between firm entry and employment spans over time (Fritsch and Mueller, 2004) and across regions (Fritsch, 2008). Regional dynamics over time are visible first and foremost in the direct effects of entrepreneurship on employment levels: these can be defined as the immediate effect of new entrants on the number of jobs created.

The direct dimension of employment creation due to business entry can be heterogeneous across regions due to the endogenous and idiosyncratic spatial distribution of quality in new entrepreneurial ventures. In the medium term, new entrants may, however, have a negative effect on employment: due to competition and market selection, newcomers may displace incumbents, leading to a net decline in employment, a phenomenon that can be defined as crowding-out (Fritsch and Mueller, 2004). If new entrants destroy jobs initially, in the long term their net contribution to employment creation may once again be positive, due to supply-side effects: increased competition, higher innovation and an increase in product or process variety (Fritsch and Mueller, 2004). However, such indirect effect of business entries (which occur with a time lag) may also have a spatial component, in that employment creation and destruction may cross regional boundaries, due to knowledge and productivity spillovers, or migration (De La Roca and Puga, 2017; Fritsch, 2008).

Job creation and destruction are therefore phenomena of intrinsically local nature: for example, the same share of layoffs can have different effects on remote regions and on central areas, because workers in remote areas are more likely to remain unemployed following a layoff (Andersson et al., 2014). Clearly, the regional nature of employment creation and destruction has vital repercussions on the both local and national economies, and is therefore of the utmost policy relevance.

In order to fully grasp the regional dimension of differences in demography of business employment, precise information on the geographic location of enterprises and employment is valuable. At the subnational level, extending the coverage of employment demography statistics to TL3 regions in all countries would further increase the precision of the spatial representation and allow a more differentiated analysis and policy design. This report has made significant progress in this direction but for a few countries the current coverage only includes TL2 regions.

Business dynamics can differ among different types of firms, which might have consequences for employment creation or destruction across OECD regions. In particular, collecting data that allow distinguishing between employer and non-employer firms can be informative. First, it reveals potentially different contributions, both across regions or countries, of new employer and non-employer firms to regional employment creation. Second, it can facilitate empirical consistency and comparability across different countries and legislative systems, which might affect the nature and frequency of creations of non-employer firms.

In the medium term, the way forward to increase the quality and the international comparability of business demography statistics at the regional level would have to build on the employer statistics at the enterprise level. This would benefit from a relatively high harmonisation of methods and a relatively wider coverage.

At the same time, accurate information on the actual location of employment creation, in the form of data on new local units, rather than simply the main location of new firms, could further strengthen the analysis of regional employment creation by firm dynamics. For this reason, the following chapter develops and scrutinises different indicators on the location and intensity of subnational employment creation, based both on new enterprises as well as new establishments. This analysis can lead to a better understanding of where employment from entrepreneurship is located across the territory and better inform policies aimed at sustaining job creation and growth in the long run.

Notes

1. Firms (or enterprises) are defined, according to OECD/Eurostat (2007) guidelines, as the "smallest combination of legal units […] producing goods or services, which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources. An enterprise carries out one or more activities at one or more locations".

2. The remaining discrepancies, which mainly revolve around the inclusion or exclusion of particular categories of firms from the statistics, are clearly flagged as notes to the statistics in the database.

3. This distinction by size class is directly available for countries covered by Eurostat's regional database, but not for many other countries for which the data collection relies on national sources. In these cases, the harmonisation has been carried out *ex post*, to make the figures comparable across countries. In a few cases some discrepancies remain (often related to the impossibility to pin down these exact three categories). These instances are reported in the database as missing values or, alternatively, the discrepancies are clearly flagged in the notes to the statistics.

4. For a descriptive analysis of the spatial heterogeneity in US house price growth over time see, for example Bogin, Doerner and Larson (2016).

5. Throughout the chapter and in the database, active firms as well as birth, death and survival are defined in accordance with the statistical guidelines set out in OECD/Eurostat (2007).

6. A predominantly urban (or urban) TL3 region is a region where the majority of the population lives in a city (OECD, 2016b).

7. Concentration of employment in the three largest firms in terms of regional employment is computed with Orbis data for 2014.

8. These are approximated by the share of a region's labour force employed in knowledge-intensive sectors.

9. Knowledge-intensive services are classified by Eurostat: http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Knowledge-intensive_services_(KIS).

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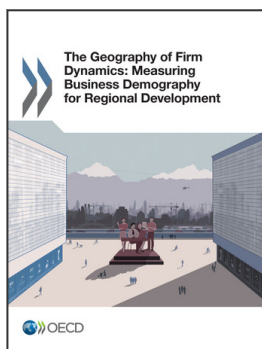
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Annex 3.A1.
Enterprise data sources

Australia	Australian Bureau of Statistics (ABS) Database: Counts of Australian Businesses, including Entries and Exits (CABEEs): www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/8165.0Main+Features1Jun%202011%20to%20Jun%202015?OpenDocument.
Belgium	Statistics Belgium – Directorate-General Statistics https://bestat.economie.fgov.be/bestat/index.xhtml. http://statbel.fgov.be/fr/statistiques/chiffres/economie/entreprises/vie_entreprises/evolution_emploi/#.WEViv_krK70.
Canada	Statistics Canada Data: www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=5290001&&pattern=&stByVal=1&p1=1&p2=50&tabMode=dataTable&csid= Metadata: www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=5157
Germany	Federal Statistical Office - Company Register System (URS) https://www-genesis.destatis.de/genesis/online/logon?language=de&sequenz=statistiken&selectionname=521*.
Ireland	Central Statstical Office – StatBank Ireland-Business Sector – Business Demography www.cso.ie/px/pxeirestat/database/eirestat/Business%20Demography/Business%20Demography_statbank.asp?sp=Business%20Demography&Planguage=0.
Israel	Central Bureau of Statistics-Business demography Data: www.cbs.gov.il/webpub/pub/text_page_eng.html?publ=63&CYear=2014&CMonth=1#100.
Korea	Korean Statistical Information Service Data: http://kosis.kr/eng/statisticsList/statisticsList_01List.jsp?vwcd=MT_ETITLE&parmTabId=M_01_01.
Latvia	Central Statistical Bureau – Statistical Business Register Database Data: www.csb.gov.lv/en/statistikas-temas/termini/employer-enterprise-35891.html. Metadata: www.csb.gov.lv/en/statistikas-temas/statistical-business-register-database-30703.html.
Luxembourg	Statistics Luxembourg-Demography and Structure of enterprises Data: www.statistiques.public.lu/stat/ReportFolders/ReportFolder.aspx?IF_Language=eng&MainTheme=4&FldrName=1.
Norway	The Central Register of Establishments and Enterprises Data: https://www.ssb.no/statistikkbanken/selecttable/hovedtabellHjem.asp?KortNavnWeb=foretak&CMSSubjectArea=virksomheter-foretak-og-regnskap&PLanguage=1&checked=true.

Switzerland	Office fédéral de la statistique (OFS) Data: https://www.bfs.admin.ch/bfs/fr/home/statistiques/catalogues-banques-donnees/donnees.html.
United Kingdom	Office for National Statistics-Business Demography Data: https://www.ons.gov.uk/businessindustryandtrade/business/activitysize andlocation/bulletins/businessdemography/2014.
United States	Statistics of US businesses (SUSB) Data: www.census.gov/programs-surveys/susb/data/tables.html.
All other European countries included in Table 3.1	Eurostat *Regional Business Demography Database* Data: http://ec.europa.eu/eurostat/web/structural-business-statistics/entrepreneurshi p/business-demography.

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