

# Business Demography as a Source of Information about the Level and Dynamics of Entrepreneurship Development - Example of Selected Eu Countries

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## ABSTRACT

Demographic analyses referring to strictly population-based processes can also be implemented on the level of the enterprise population. In international statistics such as Eurostat, data on business demography has been available for several years and can be used to analyse the pace of socio-economic development of a given region. The aim of the publication is to diagnose the dynamics of the enterprise population in selected EU countries. The rationale behind the formulated work objective is that the demand for data on business demography has increased significantly in recent years, particularly in the context of developed strategies for growth and employment across the EU. The relevant quantitative and qualitative analyses were carried out on the basis of data from the Eurostat statistical database. Dynamic methods of change were used, such as absolute increments and dynamics indicators. The time range of the analyses was determined to a large extent by the availability of data.

## Keywords

business demography, enterprise population dynamics, entrepreneurship

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## Introduction

The mission of public statistics is to provide reliable, solid and high quality information on the state of and changes in society, the economy and the natural environment, in order to meet the needs of national and international users (McNabb, 2018; Hackl, 2016). Demographic analyses pertaining to strictly population-related processes are increasingly used in business demography, which deals with the business population, where an observation unit is a business, and the subject of analyses - processes occurring in that population, such as population growth, dynamics of births and deaths and average life expectancy. As in the case of demography, business demography analyses can be conducted to determine the level of entrepreneurship development dynamics as well as mechanisms behind e.g. generation of new jobs, thus showing causal relationships between economic phenomena. Until a dozen or so years ago studying the dynamics of the level of the business population, especially at the regional level, was limited due to a lack of internationally comparable indicators. This was especially the case with statistics for countries of Central and Eastern Europe. Today, Eurostat and OECD databases enable more reliable studies, although the databases still contain some gaps. Recent

years have seen an increasing demand for data on the number of newly established businesses referred to as births and businesses leaving the market referred to as deaths, as this type of information is important for determining activities aimed at increasing the survival rate of such businesses. In the light of the above, this publication represents an attempt to present differences in the level and dynamics of the business population between selected EU countries, which used to belong to the so-called "Eastern Bloc". This paper is a preliminary stage of research on determinants of entrepreneurship development and seeks to answer to the following questions:

- How did entrepreneurship develop in a selected group of countries after their accession to the EU?
- How did the global (2008-2009) crisis affect the dynamics of entrepreneurship development in the analysed group of countries?

## Methodological information

The high degree of EU level harmonisation in terms of maintenance of statistical registers of businesses allowed a certain degree of data comparability to be achieved. Therefore, the quantitative and qualitative business demography

analyses presented in this paper were conducted based on secondary data sources - Eurostat (section - business demography by legal form, group - business economy except activities of holding companies NACE Rev. 1.1 and Rev. 2). Methods such as dynamics indicator were used.

The following measures were used in the analyses (Eurostat – OECD manual on Business Demography Statistics, 2008):

- number of the population of active businesses,
- net business population balance, calculated as the difference between the number of newly born businesses referred to as births and the number of businesses leaving the market referred to as deaths,
- birth rate: number of business births in the reference period (t) divided by the number of businesses active in t,
- death rate: number of business deaths in the reference period (t) divided by the number of businesses active in t,
- survival rate - number of businesses in the reference period (t) newly born in t-1,3,5) having survived to t divided by the number of business births

The temporal scope of the analyses was to a large extent determined by data availability. The year 2004 (when countries of the former Eastern Bloc first joined the EU - the Visegrád Group, Baltic states) was chosen as the beginning of the period over which comparisons were made. To illustrate the dynamics of changes as part of business demography, the following groups of EU countries were selected, taking into account geographical, political and historical aspects as well as the dominance of the SME sector: Poland, the Czech Republic, Hungary, Slovakia, Romania, Lithuania, Latvia, Estonia and Bulgaria. For each of the characteristics discussed, spatial comparisons were made, with a country adopted as a comparative unit. Although the author realises that the process of registering economic activity is determined by numerous socio-economic as well as legal issues and may vary

from country to country, and registering a business does not automatically mean that it starts operation, this paper is based on the measures and definitions presented by Eurostat.

### Theoretical background

The beginning of business demography dates back to the end of the 19th century, when certain similarities were pointed out between demography, which studies human populations, and business demography, which studies changes occurring in a population of economic entities. However it was not until the second half of the 20th century that business demography became an established field in the United States due to a demand for data on the population of businesses. Hence the Population Association of America formed a Committee on Business Demography in 1982, which, together with the Committee on State and Local Demography, launched the publication of the newsletter *Applied Demography* in 1985. During that formative period two commercially oriented magazines *American Demographics* and *Business Geographics* were launched, reporting on demographic trends, technological advances, data availability and business applications. Business demography thus coalesced into a visible and well-established area of endeavour, although the field remains loosely defined and organized (Morrison and Abrahamse, 1996; Russel, 1984; Siegel, 2002). Interest in business demography in Europe is related with two projects by Eurostat and OECD called Business Demography Project and Entrepreneurship Indicators Programme. At the 2000 Summit in Lisbon, the European Council decided that the main aim, which is to transform the European Union into the most dynamic and competitive knowledge-based economy in the world, should be achieved by creating a policy that facilitates the development of entrepreneurship (Ptak-Chmielewska, 2012). The research literature presents various approaches to analysing business demography, which apply more or less advanced tools of statistical analysis, such as descriptive statistics methods, parametric and non-parametric models or analyses of event history analysis (Streater, 2009; Zhao, 2008; Ptak-Chmielewska, 2011). By using appropriate statistical methods, processes taking place in a

population of businesses can be identified, e.g. by indicating determinants of their survival, development and failure. The literature most often mentions macro-economic determinants, such as economic growth dynamics, inflation, level of consumption and investment, technological development, fiscal and monetary system, foreign exchange market, and micro-economic determinants, such as production profile, tangible assets, amount of capital, product quality, staff entrepreneurship and management of human resources (Skibiński, 2019). According to García-Posada and Mora-Sanguinetti, business demography may also be affected by labour market regulations, entry regulations and personal bankruptcy laws. In addition to the above factors, an effective judicial system (or, more generally, the quality of the economy's "enforcement institutions") seems to have an effect on average firm size (García-Posada and Mora-Sanguinetti, 2015). Meanwhile Nucii points out in his research that establishment dissolution declines with age and age at dissolution differs for broad industry and geography groups, establishment affiliation status, and establishment size. Moreover, dissolution declines non-monotonically with age and a similar pattern appears for most affiliation status, industry, size, and region sub-populations. There is substantial variability in dissolution rates by age, size, and to a lesser extent, industry. Affiliated establishments and large establishments are far less likely to close than autonomous establishments or small establishments (Nucci, 1999). Taking into account the above, business demography can be defined as the application of the concepts, methods and quantitative data to business challenges and opportunities. Hence, the business demography is grounded in the application of the demographic perspective to business issues (Thomas, 2018). Meanwhile, Smith and Morison argue that business demography encompasses the application of demographic concepts, data, and techniques to the practical concerns of business decision makers but is not limited to site selection, sales forecasting, financial planning, market assessment, consumer profiles, target marketing, litigation support, or labour force analysis (Smith and Morison 2003). Thus, it can be concluded that business demography, through a range of applications, can be a valuable source of information necessary for

diagnosing modern determinants of entrepreneurship development not only on macro, but also mezo scale.

### Result of research

A variety of definitions of entrepreneurship can be found in modern research literature, especially economic, psychological and social one. P. Drucker defines the essence of entrepreneurship in terms of a close relationship between entrepreneurial and innovative activities through which businesses strive to achieve success on the market (Drucker, 2012). Meanwhile Targalski defines entrepreneurship as a process of starting and carrying on economic activity which involves, among other things, identification of chances and opportunities to operate on the market (Targalski 2003). Thus, entrepreneurship is understood in different ways as a specific type of activity of people acting individually or within an organisation, which aims to take advantage of the opportunities perceived in the environment by undertaking enterprises involving e.g. creation of new organisations or revitalisation of the already existing ones (Shane and Venkataraman, 2007, Gorzeń-Mitka, 2016; Sipa, 2018; Sitek, 2019). Consequently, different interpretations of entrepreneurship are adopted both in the process-based approach, which focuses, among other things, on creation and maintenance of economic activity, and attribute-based approach, which characterises entrepreneurial attributes of an individual such as attitude towards life, ability to take risks or a strong motivation to achieve success (Stam, & van Stel, 2011). By adopting the process-based approach, as in the case of this paper, data on the business population can be used to show spatial variation in business development in a selected group of EU countries.

**Table 1. Population of active businesses in a selected group of EU countries.**

Country	Population of active businesses in years total [in 1000]						
	2004	2008	2012	2016	Dynamic indicator [2004-1,00]		
					2008	2012	2016
<b>Bulgaria*</b>	242.175	271.272	323.745	347.962	1.12	<b>1.34</b>	1.44
<b>Czech Rep.*</b>	889.726	840.464	987.609	1037.883	0.94	<b>1.11</b>	1.17
<b>Estonia*</b>	47.509	74.612	76.002	85.737	1.57	<b>1.60</b>	1.80
<b>Latvia</b>	63.529	77.299	93.664	116.393	1.22	<b>1.47</b>	1.83
<b>Lithuania</b>	113.201	140.572	150.855	197.254	1.24	<b>1.33</b>	1.74
<b>Hungary</b>	580.885	575.382	524.749	535.507	0.99	<b>0.90</b>	0.92
<b>Poland</b>	1,651.16	1,834.96	1,989.88	2,015.51	1.11	<b>1.21</b>	1.22
<b>Romania</b>	380.567	512.753	647.325	717.388	1.35	<b>1.70</b>	1.89
<b>Slovakia</b>	273.939	345.987	404.369	454.191	1.26	<b>1.48</b>	1.66
<b>Net business population balance</b>					<b>Net business population growth [in %]</b>		
<b>Bulgaria*</b>	6,752	13,845	6,618	-14,985	10.73	<b>16.21</b>	6.96
<b>Czech Rep.*</b>	-7,921	-36,855	-10,330	642	-5.86	<b>14.90</b>	4.84
<b>Estonia*</b>	4,137	3,723	3,024	1,846	36.33	<b>1.83</b>	11.35
<b>Latvia</b>	-620	-18	3,468	8,584	17.81	<b>17.47</b>	19.53
<b>Lithuania</b>	2,055	-12,673	9,402	25,755	19.47	<b>6.82</b>	23.52
<b>Hungary</b>	-10,189	-3,779	-15,937	7,170	-0.96	<b>-9.65</b>	2.01
<b>Poland</b>	-1,343	76,072	6,296	34,770	10.02	<b>7.79</b>	1.27
<b>Romania</b>	32,339	22,021	-5,720	6,647	25.78	<b>20.79</b>	9.77
<b>Slovakia</b>	3,458	14,289	5,407	5,461	20.82	<b>14.44</b>	10.97

\* due to the lack of data, the year 2005 was used

Source: own calculation based on Eurostat data: <https://ec.europa.eu/eurostat/web/structural-business-statistics/entrepreneurship/business-demography> [access: 5.07.2019]

There are several important conclusions that can be drawn from the data presented in Table 1. First, if we look at the whole analysed period, i.e. 2004-2016, then the biggest increase in the number of active businesses in 2016 compared to 2004 was recorded in Romania (89%) and Baltic states: in Latvia (83%), Estonia (80%) and Lithuania (74%) respectively. A significant increase was also registered in Bulgaria (44%). Meanwhile, in the Visegrád Group states the biggest increase was recorded in Slovakia (66%) and Poland (22%), while the lowest one in the Czech Republic (17%). Only Hungary saw a decrease in the population of active businesses (8%). Second, the dynamics of the increase in the business population was affected, among other things, by population balance. It is particularly visible in the case of Hungary and the Czech Republic. Third, most of the analysed countries recorded a decrease in the growth of the population of active businesses between 2008 and 2012. Only the Czech Republic and Bulgaria saw a growth of this population. In order to present a trend in the number of businesses, a typical demographic analysis was used. Table 2 presents birth rates, which refer to the rate of newly born businesses (starting business activity), and death rates, which refer to the exit from the market (closing down business activity).



**Table 2. Changes in birth and death rates between 2004 and 2016.**

Country	Birth rate [in percentage]				Change in [%]			average value 2004-2016
	2004	2008	2012	2016	2008/2004	2012/2004	2016/2004	
<b>Bulgaria*</b>	11.90	18.17	13.02	12.48	+6.27	<b>+1.12</b>	+0.58	13.89
<b>Czech Rep.*</b>	8.70	3.81	8.66	8.71	-4.89	<b>-0.04</b>	+0.01	7.47
<b>Estonia</b>	15.75	18.20	12.17	10.57	+2.45	<b>-3.58</b>	-5.18	14.17
<b>Latvia</b>	10.07	13.95	16.83	16.16	+3.88	<b>+6.76</b>	+6.09	14.25
<b>Lithuania</b>	17.29	20.04	24.88	18.82	+2.75	<b>+7.59</b>	+1.53	20.26
<b>Hungary</b>	9.00	10.15	8.60	10.75	+1.15	<b>-0.4</b>	+1.75	9.63
<b>Poland</b>	10.63	13.15	11.52	12.32	+2.52	<b>+0.89</b>	+1.69	11.91
<b>Romania</b>	18.95	14.66	12.26	10.37	-4.29	<b>-6.69</b>	-8.58	14.06
<b>Slovakia</b>	10.54	15.51	10.58	10.96	+4.97	<b>+0.04</b>	+0.42	11.90
<b>Death rate [in percentage]</b>								
<b>Bulgaria</b>	9.10	13.07	10.97	16.79	+3.97	<b>+1.87</b>	+7.69	12.48
<b>Czech Rep.</b>	9.59	8.20	9.71	8.65	-1.39	<b>+0.12</b>	-0.94	9.04
<b>Estonia</b>	7.04	13.21	8.19	8.42	+6.17	<b>+1.15</b>	+1.38	9.22
<b>Latvia</b>	11.05	13.98	13.13	8.78	+2.93	<b>+2.08</b>	-2.27	11.74
<b>Lithuania</b>	15.47	29.05	18.65	5.77	+13.58	<b>+3.18</b>	-9.7	17.24
<b>Hungary</b>	10.75	10.81	11.64	9.41	+0.06	<b>+0.89</b>	-1.34	10.65
<b>Poland</b>	10.71	9.00	11.20	10.37	-1.71	<b>+0.49</b>	-0.34	10.32
<b>Romania</b>	10.45	10.37	13.14	9.44	-0.08	<b>+2.69</b>	-1.01	10.85
<b>Slovakia</b>	9.28	14.95	9.25	9.76	+5.67	<b>-0.03</b>	+0.48	10.81

Source: as in Table 1.

As the data presented in Table 2 show, the highest average values of the birth rate, i.e. above 11%, were recorded in Lithuania, Bulgaria and Latvia. Second highest values of the birth rate, i.e. between 10% and 11%, were recorded in Romania, Slovakia, Hungary and Poland. The lowest ones, i.e. below 10%, were registered in Estonia and the Czech Republic. In terms of death rates, the highest average values, i.e. above 11%, were registered in Lithuania, Latvia and Bulgaria. Second highest values, i.e. above 10%, were recorded in Romania, Slovakia, Hungary and Poland, respectively. Values below 10% were registered in Estonia and the Czech Republic. Thus, a positive difference between birth rates and death rates results in a positive trend in the number of businesses. An exception is the Czech Republic despite the fact that its values of the death rate were among the lowest, which partly had an impact on the increase in the overall

business population in the analysed period. As stressed by Ptak-Chmielewska, a high birth rate may indicate that the socio-economic environment has a positive impact on business development. However, if it is accompanied by a high death rate, it may suggest that some of the newly established businesses emerged at the cost of those already existing or the newly established businesses have a short survival period (Ptak-Chmielewska 2012). Thus, at this point it is worth presenting survival indicators, which may provide a fuller picture of the dynamics of the development of businesses, because the level of this indicator can show which of the above-mentioned countries are faster in initiating processes aimed at adapting to the changing conditions of the changeable socio-economic environment. Fig. 1 presents life cycle of newly born businesses.

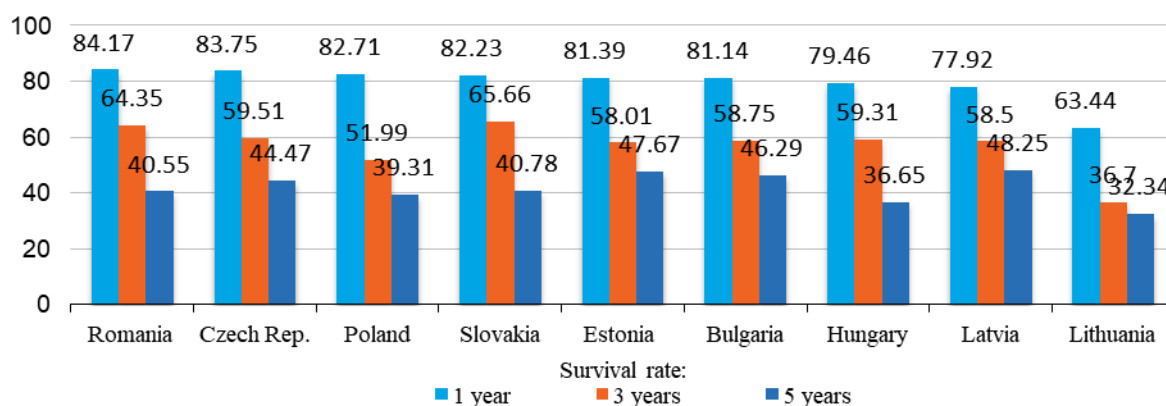


Fig 1. One, three and five-year survival rates of businesses in selected EU countries in 2016.

source: own work based on: Eurostat data base

The data presented in Fig. 1 show that the biggest share of newly born businesses survive up to the 1st year. The highest rates were recorded in Romania, the Czech Republic, Poland and Slovakia. These countries were followed by Estonia and Bulgaria. The lowest percentage of survivals was registered in Latvia and Lithuania. The data also show that over time survival rates decrease. If we look at a five-year period, over half of businesses are unable to survive five years after their birth. The highest five-year survival rates were reported by businesses in Latvia, Estonia, Bulgaria and the Czech Republic. Rates above 40% were recorded in Romania and Slovakia. The lowest values of the rate, i.e. below 40%, were reported in Poland, Hungary and Lithuania. Thus, low survival rates may result not only from the actual number of deaths, but

deteriorating situation in the business environment. It is also worth looking at birth and death rates between 2008 and 2012 (see Table 2). Most of the countries from the analysed group saw a slowdown in business development as a result of a decrease in the values of birth rates and continuing high values of death rates. Although it is difficult to indicate a clear relationship between economic development and an increase in the number of businesses, based on the analyses presented in this paper one can conclude that the macro-economic effect in the form of fluctuations in the economy, among other things, had a significant impact on the dynamics of the growth of the population of active businesses and their development. Undoubtedly, the global financial crisis between 2008 and 2009 contributed to the slowdown in business development in the analysed group of countries. This is well illustrated by the data presented in Table 3.

Table 3. Number of employees in the population of active businesses in relation to basic macro-economic indicators

Country	Persons employed in the population of active businesses total [in 1000]						
	2004	2008	2012	2016	Dynamic indicator [2004-1,00]		
					2008	2012	2016
<b>Bulgaria</b>	1,870.831	2,118.404	1,963.110	2,031.308	1.13	<b>1.05</b>	1.03
<b>Czech Rep.</b>	4,081.346	4,263.014	4,019.340	3,844.752	1.04	<b>0.98</b>	0.96
<b>Estonia</b>	437.102	495.276	423.555	459.914	1.13	<b>0.97</b>	1.09
<b>Latvia</b>	622.473	719.497	629.216	645.318	1.16	<b>1.01</b>	1.03
<b>Lithuania</b>	880.357	1,126.167	1,006.811	1,026.109	1.28	<b>1.14</b>	1.02
<b>Hungary</b>	2,672.856	2,745.373	2,520.618	2,751.632	1.03	<b>0.94</b>	1.09
<b>Poland</b>	7,994.399	9,545.286	9,272.403	9,769.182	1.19	<b>1.16</b>	1.05

<b>Romania</b>	4,006.809	4,531.151	4,178.921	4,409.503	1.13	<b>1.04</b>	1.06
<b>Slovakia</b>	1,539.790	1,706.363	1,504.252	1,606.541	1.11	<b>0.98</b>	1.07
<b>Unemployment total in thousand persons – annual average</b>							
<b>Bulgaria</b>	404	202	410	247	0.50	<b>2.03</b>	0.60
<b>Czech Rep.</b>	426	230	367	212	0.54	<b>1.60</b>	0.58
<b>Estonia</b>	68	38	68	47	0.56	<b>1.79</b>	0.69
<b>Latvia</b>	128	88	155	95	0.69	<b>1.76</b>	0.61
<b>Lithuania</b>	173	88	197	116	0.51	<b>2.24</b>	0.59
<b>Hungary</b>	252	326	473	235	1.29	<b>1.45</b>	0.50
<b>Poland</b>	3209	1165	1749	1063	0.36	<b>1.50</b>	0.61
<b>Romania</b>	793	549	627	530	0.69	<b>1.14</b>	0.85
<b>Slovakia</b>	480	254	378	267	0.53	<b>1.49</b>	0.71
<b>Gross domestic product at market prices [in million EUR]</b>							
<b>Bulgaria</b>	20,932.0	37,200.1	41,947.2	48,128.6	1.78	<b>1.13</b>	1.15
<b>Czech Rep.</b>	96,028.5	161,313.1	161,434.3	176,370.1	1.68	<b>1.01</b>	1.09
<b>Estonia</b>	9,707.7	16,517.3	17,934.9	21,682.6	1.70	<b>1.09</b>	1.21
<b>Latvia</b>	11,673.3	24,354.8	22,058.4	25,037.7	2.09	<b>0.91</b>	1.14
<b>Lithuania</b>	18,237.4	32,696.3	33,348.5	38,849.4	1.79	<b>1.02</b>	1.16
<b>Hungary</b>	83,839.6	108,121.5	99,502.4	113,903.8	1.29	<b>0.92</b>	1.14
<b>Poland</b>	206,119.6	366,182.3	389,376.8	426,547.5	1.78	<b>1.06</b>	1.10
<b>Romania</b>	60,402.0	146,590.6	133,147.1	170,393.6	2.43	<b>0.91</b>	1.28
<b>Slovakia</b>	34,702.3	66,002.8	72,703.5	81,226.1	1.90	<b>1.10</b>	1.12

Source: as in table 1.

The effects of the global financial crisis are reflected in the data showing the number of employees in the population of active businesses. Having said that, there is a clear employment growth between 2004 and 2008. The highest growth was recorded in Lithuania (28%), Poland (19%) and Latvia (16%). These countries were followed by Estonia (13%), Bulgaria (13%) and Romania (13%). The lowest values were reported for the Czech Republic (4%) and Hungary (3%). Thus, the initial period of EU membership proved to be a success in terms of the labour market situation (fall in the registered number of unemployed people), which was translated, among other things, into the values of gross domestic product of those countries. However, if we look at the period between 2008 and 2012, the situation looks completely different. In this period, all of the countries analysed saw a decline in the dynamics of employment, which resulted in deterioration of the labour market situation (increase in the number of the unemployed) and decrease in GDP dynamics. Thus, the above data

confirm a significant impact of the 2008-2009 global financial crisis on the slowdown of the dynamics of basic macro-economic indicators, and consequently the slowdown of the entrepreneurship development in the analysed group of countries. One can thus conclude that business demography can give a picture of the labour market situation by showing, among other things, the scale of employment, and by extension creation of jobs, becoming a helpful tool that supplements more complex methods of labour market analysis.

## Conclusions

Increasing interest in business demography, both at EU and global level, has been observed for a dozen or so years, because the demand for data on the business population is systematically growing, and by analysing such data we can better understand the mechanism related to creation of enterprises, not only on the international but also regional scale. Moreover, as the research showed, business demography can be a useful tool for diagnosing the pace of entrepreneurship

development and showing the regional variation in this area, which seems to be confirmed by the conclusions drawn from the analyses covering a selected group of countries as presented in this paper. The research also shows that the post-accession period was a success in terms of entrepreneurship development in the analysed group of countries. However, the global financial crisis, which took place between 2008 and 2009, had long-term consequences in the form of impeding entrepreneurship development, which was visible between 2008 and 2012. Meanwhile, analysis of survival rates showed, among other things, to what extent the individual countries reacted to changeable conditions of the socio-economic environment. The highest values of five-year survival rate were recorded in Latvia, Estonia, Bulgaria and the Czech Republic, while the lowest ones in Poland, Hungary and Lithuania. The biggest increase in the number of active businesses was recorded in Baltic states and Romania. Summing up, business demography is a fast developing field which can be used as a tool for explaining ever more complex processes taking place in the economies, not only on the regional, but also international scale.

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