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PROJECTION OF ENTERPRISE SURVIVAL RATE IN DYNAMICS OF REGIONAL ECONOMIC SUSTAINABILITY: CASE STUDY OF RUSSIA AND THE EU

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Abstract. Discussing the problem of economic sustainability, we are in general deal with life cycles and economic activity. Factors causing dynamics in entrepreneurial ventures, their duration and process rate depend on environmental conditions, including institutional, market, infrastructure, and resource aspects. A cumulative impact of all of these factors appears at a specific level of enterprise survival, which becomes a universal characteristic of sustainable economy. Going from official statistics on business demography and complementary empirical data, in this research, we focus on enterprise survival trends in Russia and the EU. The results obtained for Russia assume that in a number of industries, there is an intensive turnover of companies. Over the past two years, a medium-term trend towards a reducing number of enterprise births and increasing number of enterprise deaths in Russia has had a negative ratio. The average enterprise survival rate within a horizon of one year (2013/2014) was 74% in Russia and 77% in the EU. For a five-year period of 2009/2014, the average enterprise survival rate was less than 55% and 45% respectively. In general, in countries with a low average enterprise survival rate, in the first year, there is a persisting low rating in almost all of the industries, assuming that trends in enterprise sustainability dynamics depend on an overall economic situation instead of specifics in a particular sector. An important conclusion from the research is that the long-term survival rate of Russian companies is clearly higher, while the short-term one is lower than that of companies in the EU.

Keywords: economic sustainability; economic activity; entrepreneurship; enterprise survival; business demography; adaptation strategies

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1. Introduction

Regions are distinct in their economic structure, resource availability, production factors, infrastructure availability, specifics of customer behaviour and other aspects (Armington & Acs, 2002; Beugelsdijk, Klasing & Milionis, 2018; Capello, 2010; Capello, 2011; Crescenzi, Luca & Milio, 2016; Gerlach & Wagner, 1994; Wennekers & Thurik, 1999; Tvaronavičienė & Gatautis, 2017; Schouten, 2019; Sasongko, Huruta & Wardani, 2019; Zeibote, Volkova & Todorov, 2019; Prakash, & Garg, 2019).

These differences affect a ratio of competitive power, making long-term trends in a movement of resources. At a level of economic agents, interregional differences manifest themselves in a number of measurable that are indicators of their sustainability (Fertala, 2008; Mata & Portugal; Tödtling & Wanzenböck, 2003). The enterprise survival rate is one of these indicators. Obviously, underlying determinants of survival dynamics are highly diverse, have various powers and an action direction. However, as we see it, it is the survival rate that does not only cumulatively mirror a quality of an institutional environment (whether it provides favourable conditions), but also self-organizing capabilities of companies facing a risk of market uncertainty. Therefore, the problem of ways to improve an institutional support to entrepreneurs for sustainable running of economy has recently become of particular relevance (Harris & Robertson, 2001).

The dynamics of agents' numbers is a kind of an indicator for an *economic health*. At the same time, it is necessary to understand that entrepreneurship is not just a profit-making activity, but also an activity performed at one's own risk (Knight, 1965). This means that companies will inevitably face challenges, which in the end might lead them to their closedown. A totality of the data, such as a number of dissolved, recently incorporated and active companies is the first definable value in statistics on business demography. A subsequent data analysis makes it possible to estimate the survival rate of economic agents.

To make strategic managerial decisions, one should consider a demographic situation in a sector/region combined with internal factors of an enterprise competitive power and conditions of an external environment. Techniques for a study of the competitive power applied to business demography data (as viewed chronologically) make it possible to judge importance of certain comparative indicators for a enterprise life cycle. This is important for strategy design and implementation of internal transformations (Müller & Pfleger, 2014; Tobias & Scheermesser, 2006). A circular reference between development rates of entrepreneurship and changes of an *entrepreneurial climate* depends on bi-directional trends. An increased concentration of enterprises might lead to both a creative destruction (following Sombart (1913) and Schumpeter (1961)), and positive spill-over effects, accumulation of entrepreneurial experience, as well as long-term multiplier effects through loops of a positive feedback against the background of business cycles in economy. Krugman (1991), Porter (2000), etc. have reviewed in detail cyclical effects of area development and an influence of regional differences. Representatives of many schools of economy, from neo-classicists (Solow, 1956; Swan, 1956) and supporters to the theory of regional development (Myrdal, 1957), to more recent concepts, such as the agglomeration theory (Romer, 1992; Krugman, 1991; Richardson, 1973) and many others, were pursuing to explain regularities of regional competition.

The issues, such as an achievement of a sustainable enterprise life cycle and economy development in general, had caused a need in a systematic study of enterprise survival. Going from cases of large regional economic structures, Russia and the EU, in this research, we aim at identification of factors in demography dynamics and a comparison between states of business demography.

The identified research issue largely relates to an understudied practice-oriented analysis of enterprise life cycles. A reason for this is both limited statistical data, and a lack of shared methodological approaches. Related research objectives are to define cause-and-effect regularities and anomalies in dynamics of the enterprise survival rate that

might manifest themselves during overall recessions and have time-delayed consequences (*time lag effect* and *memory effect*). This disposition of invert correlations is our basic hypothesis, which we hope to validate next.

2. Literature review

A sustainable development of an enterprise largely depends on an extent, to which it has overcome systemic and non-systemic risks. It seems that it is possible to associate the first field-specific studies of survival risks to new enterprises with Stinchcombe (1965), who introduced the concept of *novelty vulnerability effect*. Stinchcombe believes that this effect explains a phenomenon of ceased activities of innovative enterprises. A new enterprise its life cycle might quickly change its state (Garnsey, Stam & Heffernan, 2006; Adizes, 1979). In this process, agents definitively decide whether they will be workers or innovators in an economic system (Lucas, 1978). An unstable demographic status of new enterprises Stinchcombe associates with at least three factors. First, there is a factor of increased costs in incorporation time as a market niche its operations has not been clear yet. There is a process, in which an enterprise develops a dynamic strategy being in a search for tools to implement the strategy. Secondly, available resources are limited. Third, there are problems in an in-house environment of the enterprise. We mean a system of management and relations, decision-making errors, related among other things to individual determinants of organizational death rate (Preisendörfer & Voss, 1990), consequences of these decisions or a risk of a change in *rules of the game* as the enterprise relies on new values in operations and they might be contrary to norms of an existing social paradigm.

In the empirical study, Ernst & Young together with the Russian Venture Company (RVC) have highlighted amazing survival trends among new advanced enterprises established in business incubators (Ernst & Young, Russian Venture Company, 2014). According to data for 2014, upon an end of the Russian business incubator program, only 27% of enterprises were in the market in a year upon incorporation, while in the USA and Europe, the corresponding indicator was 87 and 88%, respectively. Arshakuni, Kuzminov and Shirokov (2016) studied essential determinants of survival and sustainability rates of small Russian enterprises. Kuzmin (2018) enlarges empirical data on Russian business demography assuming that the organizational immunity as a response to specifics of a business environment is crucial for duration of an enterprise life cycle, while the enterprise survival rate points out to a development quality of markets and an institutional infrastructure.

The survival rate of enterprises focused on exported goods or services as a problem seems urgent. As Kuznetsov (2017) mentions in the practice-oriented research, some Russian enterprises have had international operations for a long time, but most enterprises usually leave overseas markets earlier than 2 years after incorporation. There had been annual updates (by about one third) to a composition of Russian exporting enterprises, while their total number remained without significant changes in 2004-2015. At the same time, indicators of export merchants' sustainability were up to 10% higher among manufacturing companies than among mining and trading businesses. Along with enterprise heterogeneity, researchers often regard fixed export costs as decisive factors of high dynamics in business demography of exporting enterprises (Melitz, 2003). The previously described concept of novelty vulnerability had its development in Hannan and Freeman (1984) with their conclusion that one should search for the lowest death rate among enterprises with the highest rate of in-house inertia instead of among the most efficient enterprises. In an enterprise development, in-house inertia becomes higher, which makes higher an ability of an enterprise to self-organization and as a result, its ability to survive. Business demography data also point out to specifics of economic activity (Plummer & Pe'er, 2010) and resistance to external and internal risks. Later, researchers provided reasons for the approach, according to which a threat does not only include a factor of novelty, but also the so-called small-size factor (Aldrich & Auster, 1986). A relatively small capital of small enterprises narrows a production framework and sets limits to possible attracting of additional resources. At the same time, they are distinct in their high levels of investment efficiency (International Fund of Support to Economic Reforms in Russia, 1994). Federico and Capelleras (2015) conclude that a growth of *young* enterprises has a positive effect on profits, while, on the contrary, the effect of profits on the growth is insignificant. Limited

resources of small and medium-sized enterprises are largely responsible for a relatively short life cycle that might be longer (2003). The concept of youth vulnerability (Bruderl & Schussler, 1990) matches these ideas: enterprise survival and death rates are nonlinear. As long as a company turns into a market player, a death risk gets lower.

It is obvious that data of empirical statistics make it possible to predict future trends better. Regional data on business demography play an important role solving of problems (employment, economic activity, and economic growth). A multivariate analysis of enterprise life cycles in various industries makes it possible to develop strategies to achieve higher concentrations of entrepreneurial activities in socially disadvantaged regions (Reiner & Gassler, 2017). Statistical offices (Eurostat), special-purpose research projects, such as PREDICT (Rossetti, 2017) in IT and telecommunications in Europe, to a large extent contribute in studies of business demography, forecasting and making recommendations on the entrepreneurship development by sector. Based on accumulated data, let us compare the survival rate of enterprises in Russian and EU as important actors in economy. To do this, it is necessary to clarify the techniques that are in use for an estimation of the survival rate based on various data sets and bring them to a common format to ensure representativeness of an analysis.

3. Materials and Methods

Basic statistics on business demography includes information of manifested enterprises' activities. However, in business registers, such activities are not a subject of monitoring to the proper extent. Only some countries possess reporting data that might be a basis for further estimations of enterprise survival rates using comparable values. The Organization for European Economic Cooperation (OECE) and Eurostat have jointly developed the "Program of Indicators of Entrepreneurial Activity" based on business demography data (OECD). Dynamics of enterprise births and deaths, as well as a survival percentage for two years are an important part of structure coefficients in progress monitoring under the updated Lisbon Strategy (The Community Lisbon Program, 2005). The European Parliament Regulation on structural business statistics also requires collecting of data on business demography and their annual submission (Concerning structural business statistics, 2008).

In accordance with the classifier of economic activities, NACE Rev. 2 (Eurostat), business demography indicators are collected by enterprises that belong to sections B-N, except for group 64.2 (management activities of parent companies), as well as voluntarily by sections P-S. Thus, statistical data cover activities of industrial, construction, trade enterprises, and service companies, but exclude agricultural and public sectors, as well as extraterritorial offices and non-market economic activities of households.

The reason is specific information coverage that business statistics registers provide. Note that in some countries, it is usual to account for enterprises that have achieved a certain threshold of financial and economic performance indicators (Simonova & Ovsyankina, 2016). So far, business statistics cover those actors who have market-oriented forms of ownership. They also do not take into account (in calculation) new enterprises that appear in the EU, those enterprises that re-start operations within two years upon termination of activities, registration of new enterprises as a result of mergers, spin-off/restructuring and a changed type of activity of an enterprise.

The enterprise survival depends on the fact that a company remains active before and after a particular demographic event. Therefore, a birth of new enterprise is often one of the key factors that cause provision of new jobs influencing the economic growth. New enterprises promote innovations and facilitate an introduction of new technologies, as well as an increase in overall performance in economy (Braunerhjelm 2010; Gerguri & Ramadani, 2010).

The Rosstat (2014) methodology assumes that an enterprise birth is a combination of production factors, taking into account that no other enterprise is involved in this event. Objects of observation were commercial organizations on the Unified State Register of Legal Entities in Russia, operating in all sectors of economy except

for public administration, housekeeping services and activities of extraterritorial organizations. We calculate the enterprise birth rate as a ratio between a number of registered enterprises for a reporting period and an average number of enterprises as calculated per 1,000 enterprises. There is a similar approach to the enterprise death ratio. Both in Russia, and the EU, the enterprise death rate does not cover data on retirement of existing enterprises as a result of a merger, spin-off/division or restructuring and changed operations. At the same time, the survival refers to maintenance of economic activity by an enterprise for a certain number of years. We consider an enterprise a survivor (that has been continuing operations) if, incorporated in year of $T(t)-n$, it is economically active in year of $T(t)$. According to methodological guidelines by Rosstat, the enterprise survival rate is always a comparison between two consecutive years or continuously throughout a period in question. Official statistics limits itself to calculating the survival rate for a period up to $T(t)-5$.

The Rosstat data panel (regarding the enterprise survival rate) comes down to recent statistics starting from 2017. Before that time, there had been no official observations of the enterprise survival rate in Russia. Empirical works by various researchers fill a gap in data of government monitoring. At the same time, such studies do not always have a coordinated result that they present or are not representative by size of a sample of actors. For example, an average age of Russian enterprises across the sample by Shirokova *et al.* (2006) was 19.2 years in 2006. In 10 years, in 2016, it was 7.8 years (Ivonen & Shirokova, 2016). According to Shamray (2010), in 2010, the average age of enterprises was 7.1 years. At the same time, there were no evaluations of the relative survival rate for various time intervals.

The first large-scale study with a solution to this problem dates back to 2016 held by a group of researchers led by Kuzmin at the Institute of Economics of the Ural Branch of the Russian Academy of Sciences and the Ural State University of Economics (Kuzmin, 2017; Kuzmin, 2018; Kuzmin & Guseva, 2016). The empirical research is distinctive in its original approach. It makes it possible to adjust an enterprise lifetime to a framework of a conditionally active period, during which enterprises show signs of involvement in financial and operational activities. The edition of collected works presents data on the enterprise survival in Russia in 1991–2014 (2015 was final for the comparison).

Due to a wide coverage, estimated values of the enterprise survival rate are given up to $T(t)+23$. A distinctive feature of the approach is a modified calculation base, where T is a year of an enterprise birth. This circumstance leads to a need in a conversion tool for data formats for a comparative analysis. Further, it is necessary to study empirical data by enterprise survival rate in Russia and Europe. This will make it possible to identify key differences and identify factors that influence values.

4. Results

It is not only possible to describe spatial distribution of entrepreneurial activity as significantly differentiated by region, but also it is possible to say that localization of high and low business concentration was biased (Plummer & Pe'er, 2010). At the same time, of course, one should keep in mind that a situation with demography dynamics is not the same. Consider first dynamics in enterprise demography indicators in Russia (Figure 1).

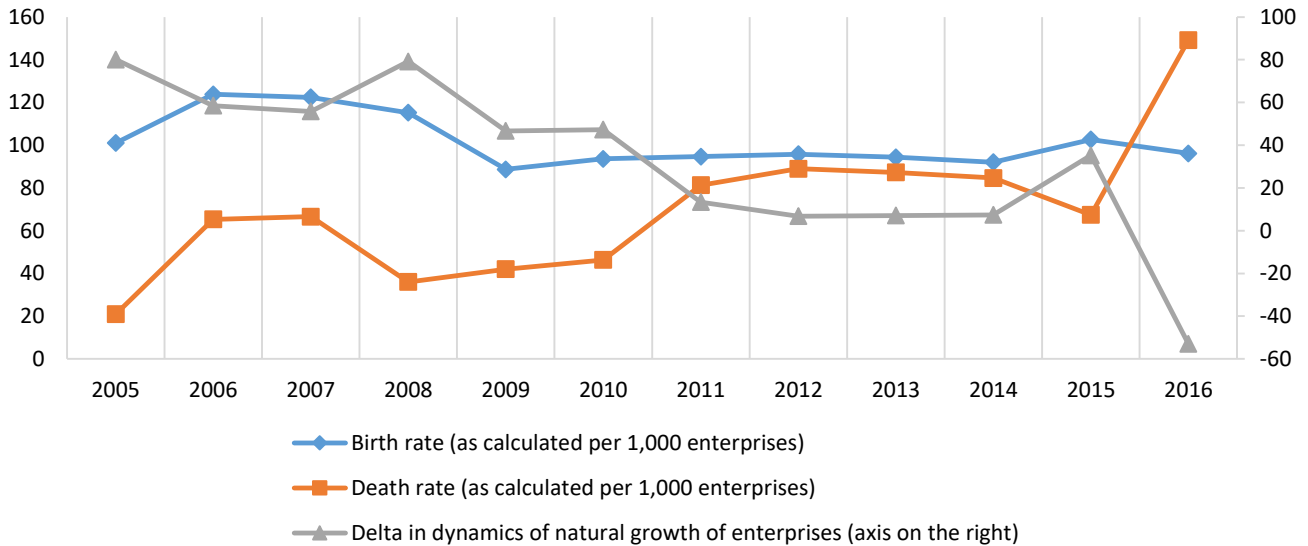


Fig. 1. Enterprise birth and death rates in Russia in 2005-2016
 Source: (Rosstat).

The retrospective review of 2005/2016 shows that the enterprise birth rate was from 88.7 (the least value in 2009) to 123.8 (the highest in 2006). The average value of the enterprise birth rate is 101.7. There was relatively high enterprise birth rate in three consecutive years in the first half of the period in question: in 2006–2008, there was a peak of values, and immediately after - the least value in 2009. From 2009 and almost until an end of the period, the coefficient was in a *red zone* (values below the average). Dynamics was stable and, as late as in 2015, there was a local growth to 102.7.

The retrospective review of 2005/2016 on the enterprise death rate says that values were clearly less smooth. In general, dynamics is positive, values increased from 20.9 (the least value corresponding to the beginning of the period of 2006) to 149.2 (the highest value in 2016). The average value was 69.7. Dynamics of enterprise death rate was getting much more intensive almost throughout the whole period in question except for a local decline in 2008–2010. Also, note a sharp peak of the enterprise death rate in 2016, when the ratio increased 2.5 times to the record level, from 67.4 to 149.2.

In general, in the mentioned period, enterprise birth and death rates had multidirectional dynamics, however, local retrospective sections have coincidences, as well as discrepancies (up to an inversion) and it is possible to explain this with a multifactorial influence on the development of enterprise demography in Russia.

We believe that, to a certain extent, a simple incorporation procedure and liberal requirements are reason for high enterprise birth and death rates in Russia, for example, requirements to the authorized capital (Volkonitskaya, 2006). We attribute a certain contribution to higher numbers in some Russian regions to changes in local legislation (in terms of tax regulation and working conditions for certain activities), which in some cases might lead to deaths of some enterprises and formation of new structures in another region, kind of enterprise migration. An important reason for higher enterprise death rates is also recession in the Russian consumer market.

Thus, there is a clear trend towards a decline in a number of enterprise births and deaths. At the same time, a ratio between born and dead Russian enterprises has recently become negative.

Table 1. Distribution of active enterprises in Russia in 2017 by age

Economic activity / Indicator	Number of active enterprises	including					
		born	one-year	two-year	three-year	four-year	five-year
Total	100.0% 3802007	9.5%	11.1%	10.4%	8.8%	7.3%	6.3%
Extraction of mineral resources	0.4%	9.0%	11.0%	9.2%	8.4%	6.3%	6.1%
Manufacturing industries	8.2%	8.0%	9.4%	9.0%	8.2%	7.2%	6.4%
Supplies of electricity, gas and steam, air conditioning	0.5%	5.7%	7.7%	8.1%	8.0%	7.3%	7.3%
Construction	12.5%	12.2%	12.7%	10.7%	9.3%	7.8%	6.4%
Wholesale and retail trade, repair of motor vehicles and motorcycles	38.4%	10.1%	12.5%	12.0%	9.1%	7.4%	6.2%
Information and communication	3.2%	8.8%	10.1%	8.7%	7.9%	6.8%	6.6%
Education	0.3%	10.0%	11.0%	10.9%	9.5%	8.4%	6.7%

Source: (Rosstat).

Moving from a ten-year retrospective review to a today’s situation (according to Rosstat, Table 1), note that, by activity, wholesale and retail trade are leading in a number of existing enterprises (38.4% of a total number), and a number of enterprise deaths (47.3% of a total number of dead enterprises). In this category, there is an almost even liquidation of enterprises aged 2-5 (9% each of age subcategories) and a higher survival rate of one-year enterprises, of which only 2.2% have been dissolved.

In general, a number of *young* enterprises prevails (10-12% of subcategories of enterprises aged 1-2 versus 6% of subcategories of enterprises aged 5). There is a similar situation in construction (12.5% of a total number of enterprises), manufacturing industries (8.2%), information and communication (3.2%) and education (0.3%). In these categories, those enterprises dominate (in number), incorporation of which had been not earlier than three years ago. Their gap from more mature actors in economy is 0.5-3 percentage points.

There is another picture in supplies of electricity, gas and steam (0.5% of a total number of enterprises) and this industry looks much more conservative. Here, a number of *young* businesses is less than a number of more mature ones. This, in 2017, in this category, there were 5.7% of enterprise registrations, while a number of legal entities aged 2-5 was 7.3-8.1%, respectively. At the same time, from enterprise deaths in this category, it is clear that this group is getting younger: there is a clear increase in a number of enterprise deaths in 2017 with an increasing age of the latter. Thus, in the subcategory of enterprise deaths, 1.4% of companies were aged one, 5.6% were aged three, and 8.1% were aged five. There is the most active youthification (advanced death of mature in the industry) in information and communications, manufacturing and mineral extraction.

Table 2. Enterprise deaths distributed by age in Russia in 2017

Economic activity / Indicator	Number of enterprise deaths	including				
		one-year	two-year	three-year	four-year	five-year
Total	100.0% 510669	2.4%	8.4%	8.5%	8.7%	8.2%
Extraction of mineral resources	0.3%	2.4%	6.4%	6.6%	6.4%	7.8%
Manufacturing industries	7.5%	1.5%	4.8%	6.2%	7.7%	7.8%
Supplies of electricity, gas and steam, air conditioning	0.4%	1.4%	4.4%	5.6%	6.8%	8.1%
Construction	12.4%	2.7%	9.5%	9.0%	8.9%	8.3%
Wholesale and retail trade,	47.3%	2.2%	9.2%	9.2%	9.1%	8.5%

Economic activity / Indicator	Number of enterprise deaths	including				
		one-year	two-year	three-year	four-year	five-year
repair of motor vehicles and motorcycles						
Information and communication	2.5%	2.3%	6.5%	7.0%	7.3%	7.5%
Education	0.3%	2.8%	8.4%	9.6%	8.7%	6.8%

Source: (Rosstat).

The next step is a study of short-term and long-term survival rates of Russian and EU enterprises. The tables present data on enterprise survival rates for two periods: the first year upon incorporation (comparison of 2014 and 2013, Table 3), and within 5 years from incorporation (companies operated in 2009-2014, Table 4).

Table 3. Survival rate 1*: EU and Russian companies in 2014/2013

Economic activity / Region	Mining and quarrying	Manufacturing	Electricity, gas, steam and air conditioning supply	Construction	Wholesale and retail trade, repair of motor vehicles and motorcycles	Information and communication	Education
Czech Republic	64.29	73.16	48.99	62.41	62.27	65.44	70.05
Germany	80.00	79.31	79.92	75.84	78.47	77.36	79.96
Spain	65.96	79.71	83.50	68.23	73.52	78.44	81.35
France	78.85	85.31	70.83	75.00	82.11	79.28	82.12
Italy	85.42	86.04	81.69	69.70	79.77	82.13	86.89
Latvia	50.00	88.27	72.73	89.74	79.19	90.07	87.18
Lithuania	83.33	93.85	84.51	92.93	92.06	93.53	78.69
Luxembourg	100.00	94.87	50.00	91.85	88.58	91.60	87.50
Hungary	80.77	77.91	86.52	76.11	76.75	79.28	80.57
Netherlands	88.89	84.95	86.49	71.80	80.09	79.61	81.70
Austria	50.00	85.18	84.62	80.36	81.04	78.75	83.59
Poland	75.68	71.04	69.82	62.96	67.77	61.92	-
Portugal	87.88	90.56	92.31	88.11	89.09	91.54	91.16
Romania	66.20	73.32	54.55	67.64	72.97	85.16	87.78
Slovenia	100.00	87.96	94.12	85.61	84.95	85.31	87.93
Slovakia	45.45	55.00	22.22	50.94	53.76	41.92	40.93
Finland	69.23	74.75	80.49	73.18	75.62	79.17	74.87
Sweden	93.33	98.47	98.04	97.68	96.98	98.97	-
United Kingdom	72.09	92.85	78.83	94.35	94.69	95.08	94.36
Norway	63.27	77.47	56.41	78.62	76.83	73.17	91.40
Turkey	85.95	80.97	78.02	84.32	81.75	81.71	85.66
Russia**	75.40	74.80	83.40	68.80	65.80	73.20	81.30

Note:

* Survival rate 1 is a number of enterprises in the reference period (*t*) newly born in *t-1* having survived to *t* divided by the number of enterprise births in *t-1*, percentage;

** Data conversion format for Russia '2013+1'.

Source: (Eurostat; Kuzmin, 2018).

The analysis of data on EU companies for 2014 assumes that Sweden, the United Kingdom, Luxembourg, Lithuania, Slovenia, and Portugal are absolute leaders by enterprise survival rate almost in all of the sectors. Sweden is number one in five industries (of seven in total) by enterprise survival rate, and ranks among top three in six industries (for the seventh industry, there are no data for Sweden). This indirectly assumes that Sweden has created the most favourable conditions for a launch of an enterprise. The United Kingdom and Lithuania (among top three by enterprise survival rate in four sectors) have the second position. In the UK, there is a high enterprise survival rate in such areas, as education, information technology, wholesale, construction, and manufacture. The

value is low in electric power and resource extraction, which are closely interconnected and this indirectly points out to a highly competitive environment in these areas. Luxembourg (traditionally high survival rate in all of the sectors except for electric power), Slovenia (high rates in all of the sectors), and Portugal (high rates in all of the sectors) share the third position on the rating by enterprise survival rate in the EU.

Not all among countries leading in the EU are at the same time countries with the highest GDP, or GDP per capita, assuming that the enterprise survival rate in the first year in this period was more likely dependent on comfortable business conditions instead of their economic development and an unsaturated competitive environment in some industries. The average survival rate for all industries in Sweden is 97.25%. The indicator of over 97% in the first year of operations was only in extraction industry in two countries (Luxembourg and Slovenia), equal to 100%, which was probably due to oligopoly in the market or an intensive government support. The survival data analysis confirms that for the period of *t-5*, when Slovenia also had the survival rate of 100% in this industry. The average survival rate in the first year was 77% in all of the countries and industries

Note also that in $\frac{3}{4}$ of countries, over 75% of enterprises survive in the first year, while in a half of countries this value is over 79%. Production has become an industry with the highest enterprise survival rate in 2014 among other countries. The average value is 82.08%, while the least was 74.32% in education.

The average enterprise survival rate in Russia was 74.67% (for the period under review). Poland, Hungary, Norway and Spain had the same value. The enterprise survival rate of 65-75% is typical for one fourth of countries from the EU sample. *Russia is in the group of countries with the least enterprise survival rate in the first year of operations*, along with such countries, as Norway (73.88%), Romania (72.52%), Poland (68.20%), the Czech Republic (63.80%), and Slovakia (44.32%). Note that there is an extremely low enterprise survival rate in Slovakia, which is the last among seven industries with a minimum rate of 22.22% in electric power industry. In general, countries, enterprise average survival rates of which are low, in the first year upon incorporation, retain low ratings in almost all of the sectors. This means that trends in dynamics of enterprise sustainability depend on a general economic situation and a lack of support to recently incorporated enterprises instead of depending on specifics in a particular industry. This may also assume a high proportion of companies that resort to tax optimization and large number of *one-day companies*. Also, note that almost all of the countries with the low average enterprise survival are in Eastern Europe and their GDP is lower than that of other countries on the list. This might show a correlation and dependence between a level of economic development and enterprise sustainability nationwide.

Table 4. Survival rate 5*: EU and Russian enterprises in 2014/2009

Economic activity / Region	Mining and quarrying	Manufacturing	Electricity, gas, steam and air conditioning supply	Construction	Wholesale and retail trade, repair of motor vehicles and motorcycles	Information and communication	Education
Czech Republic	47.06	46.43	25.71	34.82	39.69	48.13	42.35
Estonia	0.00	42.86	60.00	34.08	39.04	42.94	42.42
Spain	35.59	38.77	53.45	20.17	35.19	36.75	44.27
France	62.50	49.83	38.95	30.41	43.74	39.87	46.89
Italy	47.95	41.31	45.77	25.64	37.13	44.06	50.81
Latvia	47.06	45.74	36.96	33.28	37.51	48.77	65.15
Lithuania	85.71	64.89	63.16	63.83	66.83	70.96	66.79
Luxembourg	-	41.94	100.00	54.27	52.59	53.61	50.00
Hungary	22.58	32.36	23.40	25.50	30.00	29.00	23.15
Netherlands	33.33	47.53	45.00	34.38	45.28	41.75	46.63
Austria	50.00	54.40	58.23	49.75	47.13	43.49	50.36
Portugal	47.62	48.13	52.00	34.33	41.92	46.03	38.70

Economic activity / Region	Mining and quarrying	Manufacturing	Electricity, gas, steam and air conditioning supply	Construction	Wholesale and retail trade, repair of motor vehicles and motorcycles	Information and communication	Education
Romania	33.00	30.08	42.86	22.31	28.52	29.82	39.25
Slovenia	100.00	42.05	56.52	23.60	40.44	51.17	39.29
Russia**	56.00	50.70	63.00	49.10	38.70	63.80	67.10

Note:

* Survival rate 5 is number of enterprises in the reference period (t) newly born in *t-5* having survived to *t* divided by the number of enterprise births in *t-5*, percentage;

** Data conversion format for Russia '2009+5'.

Source: (Eurostat; Kuzmin, 2018).

The analysis of the five-year trend in 2009/2014 (Table 4) assumes that the average enterprise survival rate in all of the countries and industries was 44.93% (against 77% in the first year), i.e. 40% lower than in the first year. This means that, on average, in the EU and Russia, a half of enterprises does not achieve five years of operations. Although, these data do not cover a number of countries listed in Table 3. The analysis of data from such leading countries, as Lithuania, Luxembourg, Slovenia, and Portugal shows that the enterprise survival rate in these countries for 5 years declined from 19% to 46% respectively. *This confirms that 30–40% survival rate decline over five years is a norm.*

Note that in Russia, Lithuania, and the Czech Republic, the average survival rate of enterprises in all of the sectors decreased by a smallest percentage (19-23%). At the same time, in five-year aspect, Russia entered a range of top countries in terms of the average enterprise-survival rate in all of the sectors (55.49%, while Lithuania had a maximum survival rate of 68.88%). This might assume that a burden on enterprises in the first year (2009) was much higher than later. The global financial crisis of 2008-2009 in one way or another had a negative impact on economies of all companies and countries, so that positive and negative trends of the enterprise survival rate in several countries upon the crisis (in 2009-2014) one might only in part attribute to an economic situation. Indicators from Russia and the Czech Republic make it possible to conclude that in these countries a company, having survived the first year of operations, has greater chances to work longer than for five years.

The Czech Republic, Spain, Estonia, Romania, and Hungary had the least average survival rate in five years. At the same time, the enterprise survival rate in Hungary fell to a record of 53.13%. This means that more than a half of enterprises in Hungary had ceased operations. Industry-specific analysis in these countries confirms a retained general trend towards low survival rates of enterprises in the long term. It is revealing that extraction companies turned out to operate in the industry with the highest enterprise survival rate in all of the countries (survival rate of 47.74%), while construction had the lowest rate of 33.69%.

Findings from the completed data analysis show that in general the enterprise survival rate strongly depends on industry and country of operations. The enterprise survival rate gets significantly lower in five years, while a decline percentage depends more on internal trends in national business development instead of an economic situation. Another amazing observation was a high percentage of Russian enterprises that were unviable in their first year accompanied with a high percentage of enterprises operating for more than five years.

5. Discussion

Findings show that demography dynamics is a complex process where it is impossible to single out just one influence factor. Each country has its own reasons that precondition a focus of its entrepreneurial activity. However, it is possible to identify features typical for a business climate in Russia and in the EU. The main factor

of the enterprise survival rate in Russia is rapid adaptability to changes caused by uncertainty in an external environment and a high margin of safety/reserve against a possibility of economic or other shocks. Enterprise sustainability in the EU is typical for large-sized actors that actively benefit from economy of scale, innovate their production facilities and use export distribution channels for products. Depending on established conditions (as part of nature, climate and history related aspects and general economic, infrastructural, and institutional conditions), a level of entrepreneurship development will be highly differentiated and heterogeneous. Table 5 shows main differences in factors that influence the enterprise survival rate in Russia and the EU.

Table 5. Differences in factors that influence enterprise survival rates in Europe and Russia

Europe	Russia
High competition	Low competition
Low loan rates	High loan rates
High taxes for business	Low taxes for business
Large number of innovative companies	Small number of innovative companies
Poor government support to business	Government support to business
High role of exports and imports, inter-countries interaction	Difficulties in interaction with other countries
Large number of business angels and business incubators	Small number of business angels and business incubators
Open access to advanced technology	Difficulties in access to advanced technology
High research level	Poor research level
Large number of small and medium-sized enterprises	Large number of monopolies and large-scale enterprises (often government-funded)
Relatively stable macroeconomic environment	Relatively unstable macroeconomic environment

In theory of economy, there are two general groups of factors that influence both enterprise living in general and the survival rate in particular. Internal factors refer to factors that depend on a condition of an enterprise, its management system, available resources, etc. External factors refer to tax and credit control policy of a government, institutional and financial support, and external regional and global crises. Consider these features in more detail. The tax policy of the government is the first. One might assume that the lower a tax rate is, the more favourable demographic dynamics is and vice versa, but many researchers have found that there is no direct dependence between the enterprise survival rate and a value of the tax rate (Hungerford 2013; Jaimovich & Rebelo, 2017; Jones, 1999; Lucas, 1988). Dynamics and the tax rate value are not always directly proportional to business demography in the aspect of an influence, although there is such a correlation. It is possible to refer to France, Italy, Spain, Germany, etc., where a high fiscal burden goes hand in hand with a good demography survival rate in the first years upon incorporation.

The second most important environmental factor that influences the enterprise survival rate is the loan rate. Inflation expectations and availability of financial resources affect enterprise development opportunities, seriously restraining a growth of those actors that are limited in these aspects. Government support is another factor. For example, France has introduced incentives for a start of businesses in spite of the highest enterprise tax. We associate the relatively high birth rate in France with implementation of the corresponding government program (RSM International Association, 2014). However, empirical studies (Chindooroy, Muller & Notaro, 2007) lead us to a conclusion that among companies that benefit from a direct government support, there is a high death rate. At the same time, a volume of support and availability of other support tools do not either influence their survival, or this connection is poor. We can conclude that a limited and differentiated government support in a form of much favourable conditions created for entrepreneurship would consolidate a business environment and create necessary conditions for a growth by ensuring the survival of recently incorporated and existing enterprises.

As a result, it is possible to agree that an analysis of business demography gives a clear idea of difficulties in entrepreneurship development, whereas a comparison between regions that have various factorial effects provides opportunities for modelling tools of control over these trends.

Conclusions

Survival is one of the main objectives when an enterprise develops its strategy regardless of its status and a stage in a life cycle. Adaptation to changes in internal and external environments is a core of economic sustainability, clearly manifested in the universal indicator of business demography, specific level of the enterprise survival. Industry and countries, in which enterprises operate, strongly influence enterprise survival rates.

Findings from this research assume that, to a certain extent, high birth and death rates in Russia depend on institutional conditions and a market condition (competition saturation, consumption recession, incorporation procedures, local changes in tax legislation, etc.). There is a clear medium-term trend towards a decline in a number of enterprise births and increase in a number of enterprise deaths in Russia. At the same time, a recent ratio between them has even become negative. There is an intensive rotation of companies in a number of industries: wholesale and retail trade, construction, manufacturing industries, education, information and communication. In these categories, in numbers, dominating companies have been those companies that had been *born* not earlier than three years ago.

The average enterprise survival rate in Russia was 74.67% over the period in question. Poland, Hungary, Norway and Spain have the same value. The enterprise survival rate of 65-75% is typical for one fourth of countries from the EU sample. Thus, Russia is in the group of countries with the least enterprise survival rate in the first years of their operations. The discussed five-year trend of 2009-2014 assumes that the average enterprise survival rate in all countries and industries was 44.93% (versus 77% in the first year). This means that, on average, in the EU and Russia, a half of enterprises does not operate for five or more years. This confirms that a decrease in the survival rate by 30–40% over five years is normal. It is amazing that in Russia, the average enterprise survival rate in all sectors has had the smallest decline of 19-23%. At the same time, in the five-year trend, Russia have entered the group of top countries in terms of the average enterprise survival rate in all of the sectors (55.49%). This might assume that a load on enterprises in the first year was significantly higher than later.

In general, countries with a low average enterprise survival rate in the first year have a low rating in almost all of the industries. This assumes that trends in dynamics of enterprise sustainability depend on an overall economic situation instead of the specifics in a particular sector. These features assume available self-organizing skills developed by Russian companies when they adjust to shocks of environmental uncertainty, fixed in a long-term memory effect. At the same time, EU companies did not show such features in their functioning, but, on the contrary, their short-term sustainability was higher than a long-term one.

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