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REGIONAL DISPROPORTIONS – BUSINESS DEMOGRAPHY AND ECONOMIC GROWTH (EXAMPLE OF BULGARIA)

The study investigates imbalances of business demography of regions NUTS 2, Bulgaria, which of them are key determinants of regional economic growth disparities; compares business demography at the time of Bulgaria's accession with the beginning of 2014-2020 programming period in EU; determines the impact of key factors on the dynamics of business demography. ***Methods:*** *The study applies comparative, variance and regression analysis in business demography and economic growth. A statistical test was done of the relation between some indicators and test of correlation between the coefficient of variation of regional growth and the variation in business demography.* ***Results:*** *Differences in GDP per capita are strongly related to differences in the number of NFC/1,000. Average dependence of differences in GDP per capita on the differences in the number of industrial enterprises and employees has been found out. Moderate negative relationship was observed between GDP per capita and the number of dead companies, as well the number of employed in services.* ***Conclusions:*** *Business demography is strongly influenced by economic processes at national and international level. Regions react differently to the socio-economic impacts. Attention needs to be drawn towards business environment, which is determined by the state, improving regional policy and measures to business environment in the companies.*
JEL: R11

Introduction

The main objectives of Europe 2020 Strategy to ensure smart and sustainable growth, and more and better jobs in the EU can be reached, among others, through the support of entrepreneurship and entrepreneurial dynamism, the presence of which, demonstrated by Eurostat – OECD (2007), can be revealed by the analysis of business demography over time.

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One of the prevailing aspect drawing the attention of scientists and policy makers as regards the relation between business economy and regional economic growth is the link between performance/survival of the firms and regional economic growth (Nunes and, Sarmento, 2010; Fritsch and Mueller, 2004; Georgelis and Wall, 2000). Enterprise creation also is regarded as an indicator of competitiveness and as a vital means of creating jobs. The subject of enterprise demography, is often linked to the potential contribution that enterprise creation can make to employment (Ottens, 2014; Schrör, 2009; OECD, 2011; Eurostat, 2016) and to decreasing of inequality (Karanovsky, 2014).

A study, funded by the European Parliament (2015), confirms the need and significance of research related to enhancement of business perspectives which will result in economic growth and a regional and national level. Unfortunately, there isn't enough about this problem in Bulgaria due to the lack of appropriate longitudinal data on firms. The content and observation (official data) of term "business demography" has started in Bulgaria since 2007 and includes market oriented legal forms and activities in area of industry, construction, distributive trades and services on the base of current coverage of statistical business registers by national statistics and Eurostat.

According to the Doing Business Index of the World Bank (2016) Bulgaria ranks 38th out of 189 countries in the latest report, whereas in the previous one (2015) it ranks 36th. This means that Bulgaria makes very small or no steps for improvement of the business conditions. Moreover, regardless of the implemented policy for regional cohesion on a European and national level, the situation of reginal inequalities with regard to economic growth continues in Bulgaria. Thus each study related to tendencies, changes, challenges and opportunities for the regional business demography in Bulgaria becomes a useful tool to support the programming and planning of the regional economy and development.

Based on the thesis that business activity is of paramount importance for the regional, social and economic prosperity, the first part of the present study seeks which of the disproportions in business demography among regions are basic determinants of the disproportions in the reginal economic growth. Of investigation interest is also comparison of business demography and its regional disproportions at the moment of Bulgaria's accession to the EU to those at the beginning of the second program period for the country (2014-2020).

Second part of the paper presents the influence of some determinants for the business demography dynamics in the country. Selected determinants – quality of demographic potential, measured by the average age of population and total volume of demographic potential, measured by number of population the region, are leading factors for the business demography in most of the Bulgarian regions. The price of the credit resource as another determinant in present study could be pointed as crucial factor for business development – the ability to pay off debt has been quoted as one of the most important determinant of the firm survival by Nehrebecka, Maria Dzik (2013) and López-García, Puente (2006).

Survey Methods

The object of study is the non-financial sector in the region of NUTS 2 level. The aggregation of non-financial enterprises comprises enterprises classified in sectors B to J, L to N and section 95 of sector S pursuant to the Classification of Economic Activities – 2008. The grouping in the analysis is based on the Eurostat definitions and more specifically on the regulations on structural business statistics: micro enterprises (0-9 employees), small enterprises (10-49 employees), medium-sized enterprises (50-249 employees) and large enterprises (250 and more employees). The definitions of small and medium sized enterprises (SME) in the structural business statistics (SBS) of Eurostat and the European Commission (EC) are identical. The regional distribution of data is classified by the regional units NUTS 2 in the 6 statistical regions: Northwest region (NWR), Northcentral region (NCR), Northeast region (NER), Southeast region (SER), Southwest region (SWR), Southcentral region (SCR). Basic notions in the study are: ***number of active enterprises*** (number of registered legal or physical entities which had turnover or employees, i.e. were active during the reference year (t)), ***enterprise births*** (during the year (t), are those which: - were active during the reference year (t) but were not active either in year (t-1), nor in year (t-2) or were active in years (t-1) and (t-2) but with zero employees) ***enterprise deaths*** (in year (t), are those which were active during the reference year (t), with at least one employee but were not active either in year (t+1), or in year (t+2) or were active in years (t+1) and (t+2) but with zero employees) (NSI, 2016).

The analysis in the present paper applies comparative analysis, variation and regression analysis concerning the following parameters:

- Level and dynamics of GDP per capita 2007-2015;
- Distribution of non-financial enterprises by regions NUTS 2 level according to employees 2007 and 2015;
- Distribution of non-financial enterprises/1000 people by regions in NUTS 2 level according to number of employees 2007 and 2015;
- Enterprise death rate , NUTS 2 regions;
- Enterprise birth rate, NUTS 2 regions;
- Enterprise birth net rate NUTS 2 regions;
- Sector (industry/services) variation rate according to number of non-financial enterprises and number of employees;
- Statistical test for available connection between some parameters of business demography (by regions) and selected indicators, related to the analysis, as well a test for availability of correlation dependence between the regional growth variation rate and the variation rate in basic parameters for business demography.

Results Obtained

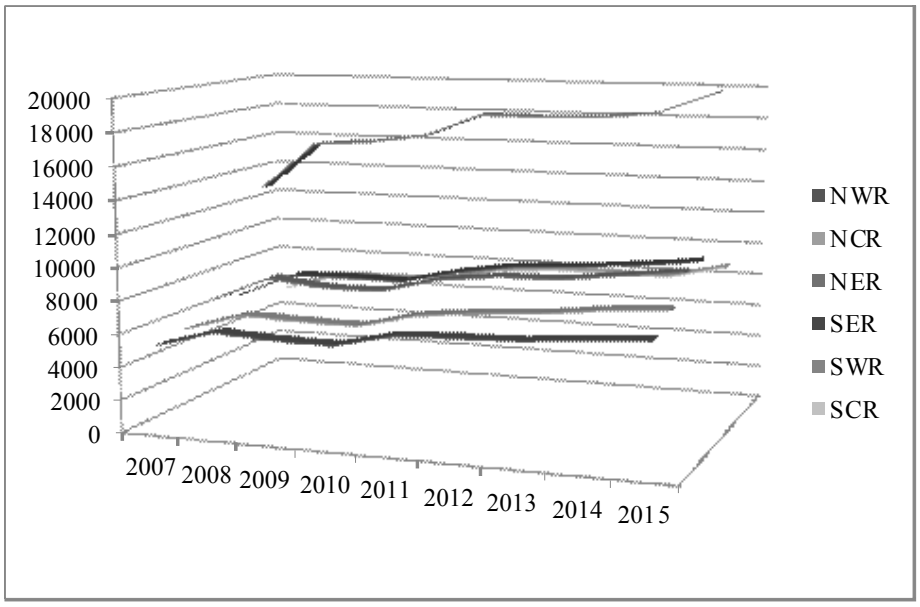
According to Eurostat data the level of gross domestic product per capita (GDP/cap) for the country is under 75% compared to the average for the EU (Eurostat, 2016), and the existing interregional differences increase through the greater part of the monitored period, presented in table 1.

Disproportions in the level of the parameter GDP/cap in NUTS 2 regions (Fig.1) have the following characteristics:

1. Differences range from medium to big and the highest registered GDP/cap (Southwest region – SWR) is 2.4 times bigger than the lowest (Northwest region – NWR) at the beginning and 2.6 at the end of the period.
2. The growth rate for the GDP/cap for the entire period is the lowest in the region with the lowest level of development (45.1%). On the other hand, the highest growth rate (60.3%) does not belong to the most developed region, but the one with medium level of development compared to the others.
3. Increase of differences in period of crisis and subsequent trend of their reduction, but with no signs of absolute (β) convergence and in 2015 a new increase in disproportions and respectively the highest heterogeneity level for the entire period.

Figure 1

GDP per capita, BGN, NUTS 2 2007-2015



Source: Eurostat, 2016.

Table 1

Variation rate V (%) GDP/cap., NUTS 2 2007-2015

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Variation rate V (%)	37.6	38.2	39.4	41.3	40.3	38.0	37.5	36.8	41.9

Source: own calculation based on NSI data.

The regional distribution of non-financial enterprises (NUTS 2) is presented in table 2.

Table 2

Distribution of non-financial enterprises by regions from NUTS 2 level according to number of employees 2007 and 2015

	2007			2015					
	Total	SME	Large	Total	SME	Large	2015/2007 (%; 2007=100%)		
							Total	SME	Large
Bulgaria	**283444**	**282615**	**829**	**393460**	**392721**	**739**	**138.8**	139.0	89.1
NWR	26080	26017	63	28580	28535	45	109.6	109.7	71.4
NCR	31653	31559	94	35510	35438	72	112.2	112.3	76.6
NER	38831	38728	103	52631	52548	83	135.5	135.7	80.6
SER	42655	42560	95	56600	56518	82	132.7	132.8	86.3
SWR	92829	92497	332	151933	151600	333	163.7	163.9	100.3
SCR	51396	51254	142	68206	68082	124	132.7	132.8	87.3

Source: NSI data and own calculations.

By means of the data in the table variation rates about the number of non-financial enterprises have been determined. Its value for the total number in 2007 shows high heterogeneity of regions of NUTS 2 (V=50.8%), and in 2015 the rate grows even further (V= 67.2%), which already determines very high dispersion of that trait.

Due to the high share of SME (2007 – 99.63% – 99.78%; 2015 – 99.78% – 99.86%) the total variation in the number of enterprises correlates with the variation of SME. Concerning the number of Large enterprises there are very big differences both at the beginning and the end of the monitored period – 2007 V=72.9%, 2015 V=84.3%.

The aggravating disproportions in the number of enterprises at the end of the monitored period is a result from the uneven dynamics of the parameter in the NUTS 2 regions – the growth rate varies from 8.7% to 58.4%, in favor of the more developed regions.

Thus three cluster groups of regions are formed with regard to the dynamics of non-financial enterprises:

1. In the Southwest region, which is the richest in the country throughout the entire monitored period (based on Eurostat data in 2014 GDP of SWR is 75% compared to the average for EU[)], the highest growth in the number of non-financial economic units has been registered;

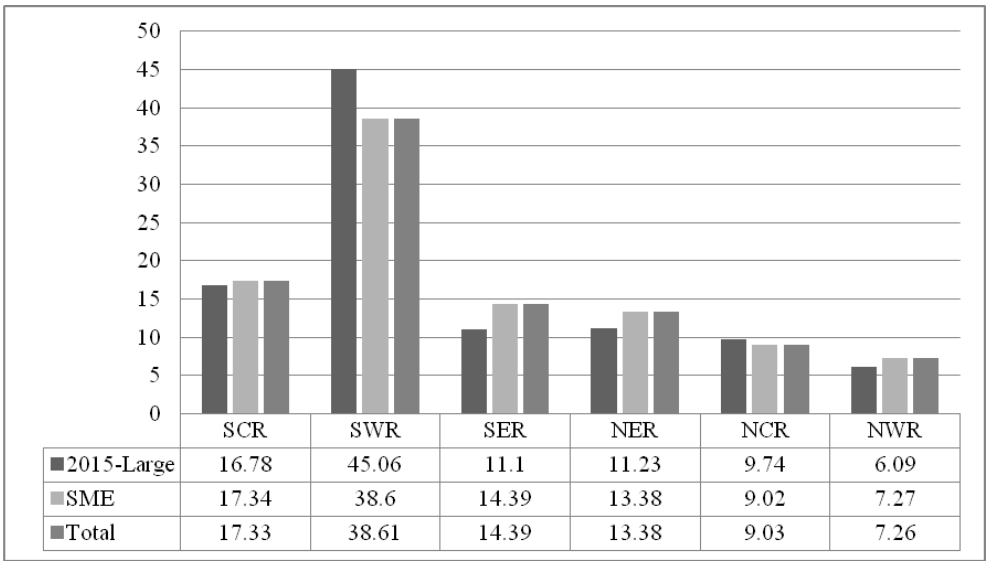
2. In the two north regions – Northwest and Northcentral regions (NWR is the second poorest region in the EU based on Eurostat data in 2014 GDP of NWR is 30% compared to the average for the EU), the changes is the weakest;
3. In the other three regions similar growth rates have been reported.

The increase in the number of enterprises in all regions is basically at the expense of SME, since with large enterprises a decrease has been noticed, except for the most developed region (SWR).

With regard to the contribution of the NUTS 2 regions in the total number of enterprises in the non-financial sector significant differences have also been observed, and again the variation sweep is formed by the Southwest and the Northwest region. The biggest number of non-financial enterprises is concentrated in the Northwest region and their share grows. Almost half of the large enterprises (45,06%) in 2015 also belong there (Figure 2).

Figure 2

Non-financial enterprises by NUTS 2 regions (Bulgaria=100%) 2015



	SCR	SWR	SER	NER	NCR	NWR
2015-Large	16.78	45.06	11.1	11.23	9.74	6.09
SME	17.34	38.6	14.39	13.38	9.02	7.27
Total	17.33	38.61	14.39	13.38	9.03	7.26

Source: Graphic presentation by own calculations based on NSI data, Bulgaria

Analyzing interregional differences with regard to business demography, when the population factor is eliminated, through the parameter *non-financial enterprises per 1000 persons* (Table 3) it is established that variation among NUTS 2 regions is considerably lower in 2007 V=15.2%, while in 2015 V=23.3%. Yet the tendency for increase of differences is preserved and the growth rate is in favor of the richer regions (Figure 3).

Table 3

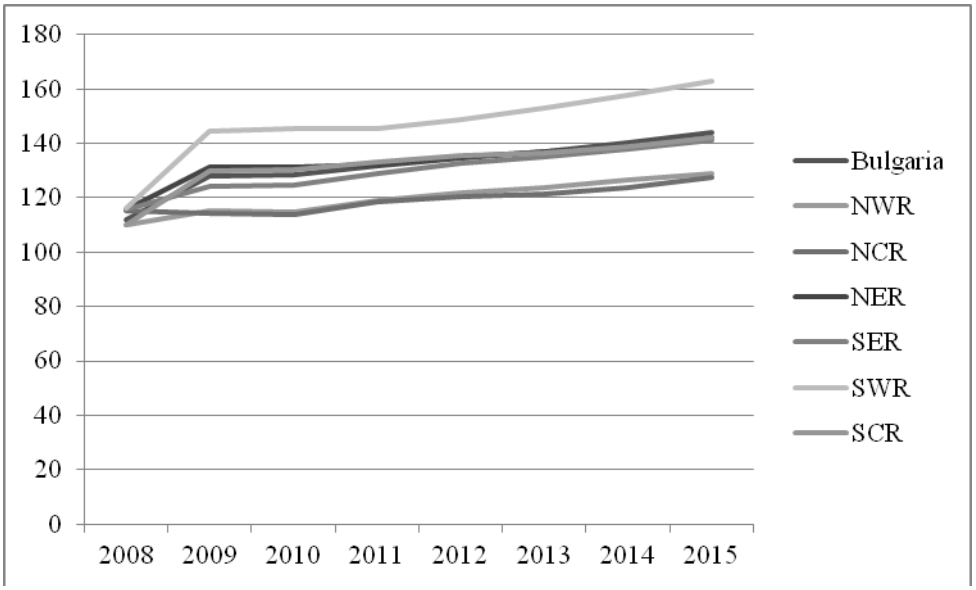
Distribution of non-financial enterprises/1000 persons by regions in NUTS 2 level according to number of employees 2007 and 2015

	2007			2015					
	Total/1000 p.	SME/ 1000 p.	Large/1000 p.	Total/1000 p.	SME/ 1000 persons	Large/1000 p.	2015/2007 (%; 2007=100%)		
							Total/ 1000 p.	SME/ 1000 p.	Large/1000 p.
Bulgaria	38.0	36.9	0.11	54.8	54.7	0.10	144.2	144.1	90.91
NWR	28.1	27.9	0.06	36.2	36.1	0.06	128.8	148.2	100.0
NCR	34.0	33.9	0.10	43.3	43.2	0.09	127.4	129.4	90.0
NER	39.1	39.0	0.10	55.6	55.5	0.09	142.2	127.4	90.0
SER	37.9	37.8	0.08	53.6	53.5	0.08	141.4	142.3	100.0
SWR	43.9	43.7	0.16	71.6	71.4	0.16	163.1	141.5	100.0
SCR	33.3	33.2	0.09	47.3	47.2	0.09	142.0	163.4	100.0

Source: Own calculation based on NSI data, Bulgaria.

Figure 3

Growth rate of non-financial enterprises per 1000 persons 2007-2015 2007=100%



Source: Graphic presentation by own calculation based on primary NSI data, Bulgaria

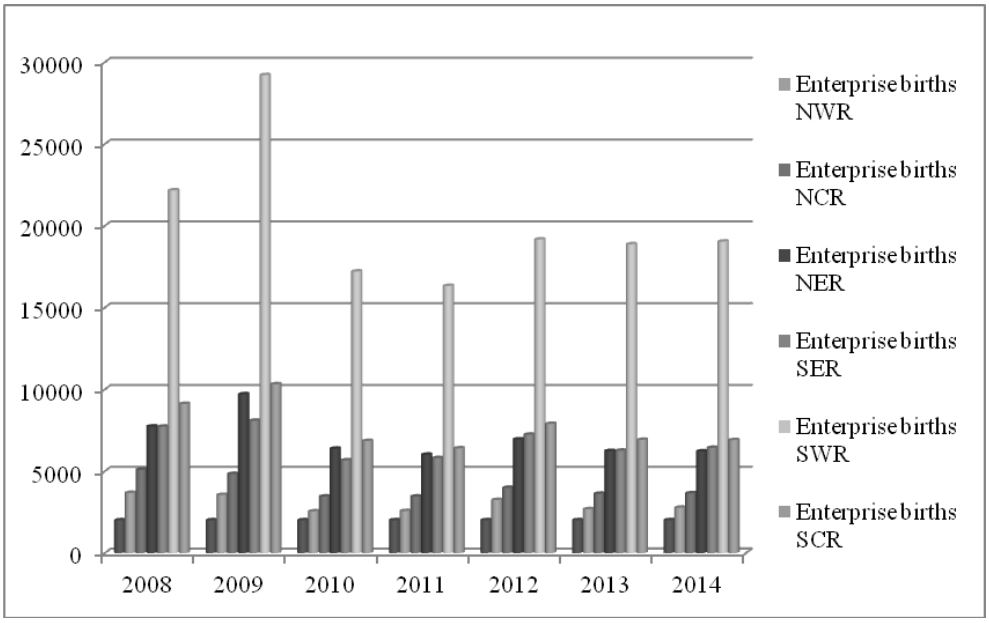
By temp of development of non-financial enterprises per 1000 persons the highest growth (163.1% in 2015 compared to 2007) the Southwest region stands out – over 2 times higher rate compared to the lowest values of growth in the two north regions (NWR and NCR).

Figure 4 shows the dynamics in the number of ***enterprise births and deaths*** *for the six regions in the period* 2008-2014. Throughout the analyzed period the highest number of new born enterprises was recorded in the beginning. The decrease in their number coincides with the financial and economic crisis, the growth being restored sustainably in the most developed Southwest region – after 2011. In most of the other region restoration is short lived – in 2012. With regard to deceased enterprises reduction has also been observed except for a visible apex in the climax of crisis 2010-2011, only the Southwest region showing lasting tendency of increase in the number of deceased enterprises (after 2011), which demonstrates instability of the relatively high business initiative.

Figure 4

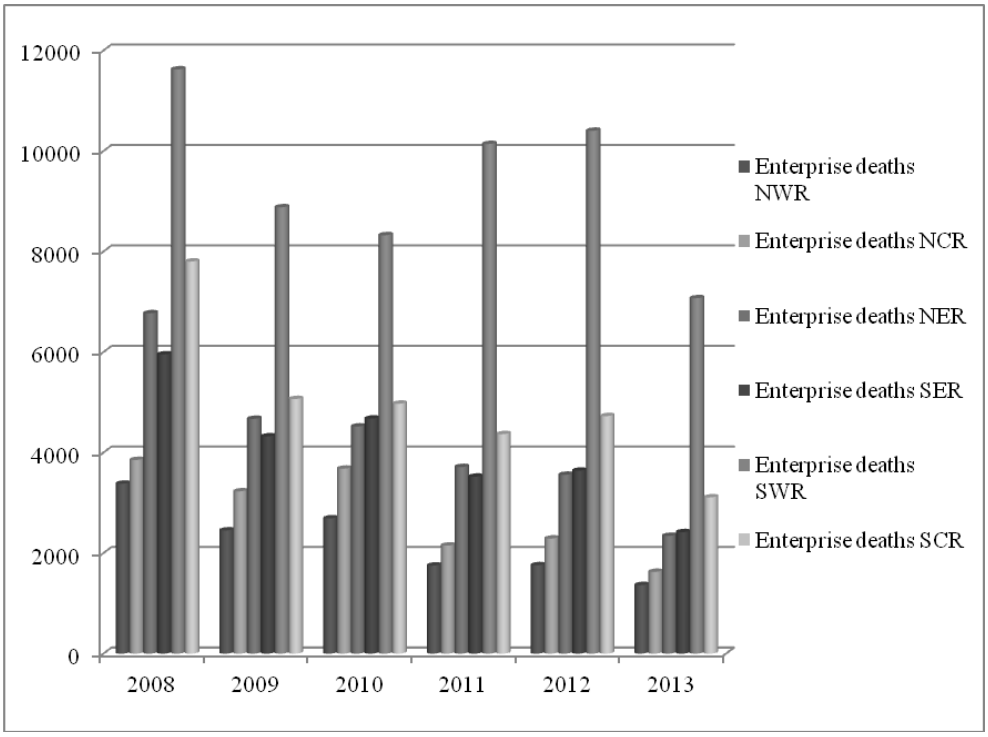
Dynamics of enterprise births and deaths by regions NUTS 2 for the period 2008-2014

4-A Enterprise births



Source: NSI, http://www.nsi.bg/en/content/13218/business-demography

4-B Enterprise deaths



Source: NSI, http://www.nsi.bg/en/content/13218/business-demography

Clearer idea about the need of the comparative regional analysis is given by the ***enterprise birth and death rate*** as share of the active enterprises in the region.

Map 1 (Eurostat) presents the level of ***enterprise birth rate*** for the NUTS 2 regions in 2010 (for Bulgaria the data are for 2009). It is evident that two north regions ((Northwest region – NWR and North-Central Region – NCR) have value of the rate between 7 and 10, while in the other four regions the value is between 10 and 13, i.e. they are relatively homogeneous. On the other hand, this information shows favorable positioning of most Bulgarian regions compared to the NUTS2 regions in EU.

Table 4 sets the rates of new born enterprises in the period after 2010.

Table 4

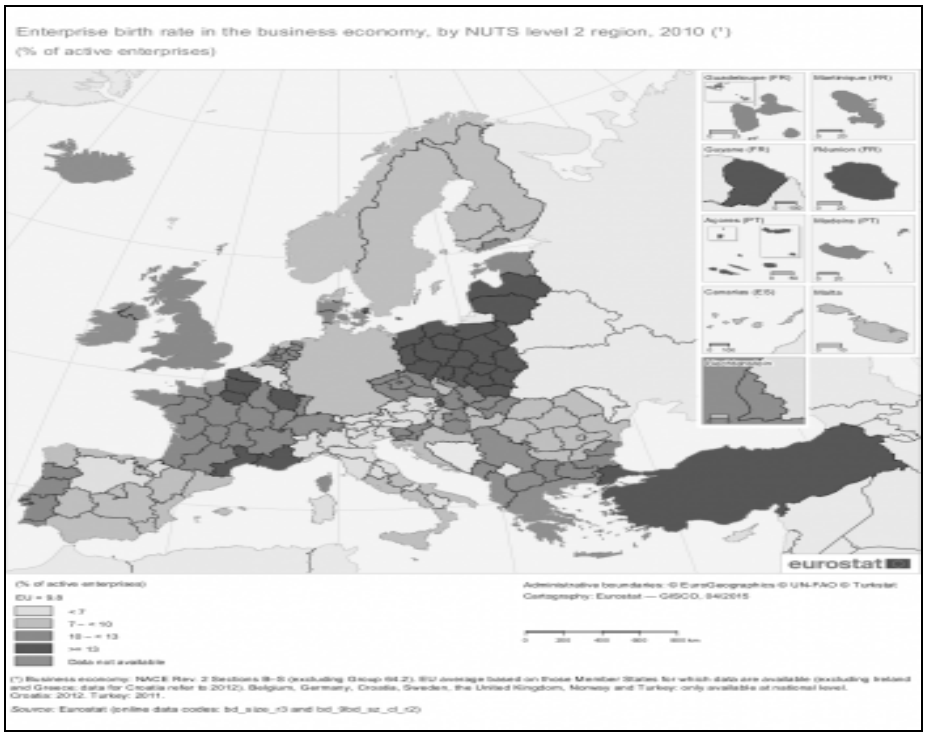
Enterprise birth rate, NUTS 2 regions

	NWR	NCR	NER	SER	SWR	SCR	Variation coef. V (%)
2011	9.22	10.06	12.12	11.10	11.48	9.81	10.8
2012	11.55	11.54	13.84	13.53	13.18	11.98	12.7
2013	9.63	10.52	12.36	11.62	12.59	10.47	11.5
2014	9.92	10.52	12.19	11.69	12.38	10.32	9.38

Source: Own calculations based on NSI data.

Map 1

Enterprise birth rate in the business economy, by NUTS level 2 region, 2010



Source: Eurostat, Structural business statistics.

In all four years the enterprise birth rate is lowest is the least developed regions (NWR and NCR). In 2009 and the following years all regions (except for the poorest – NWR) are in the group with enterprise birth rate between 10 and 13. Only in 2012 three regions (the most developed) are with rate value above 13.

Although with variable trends over the four years, the enterprise birth rate increases in 2014 compared to 2011 in all regions, with differences between them being rather low.

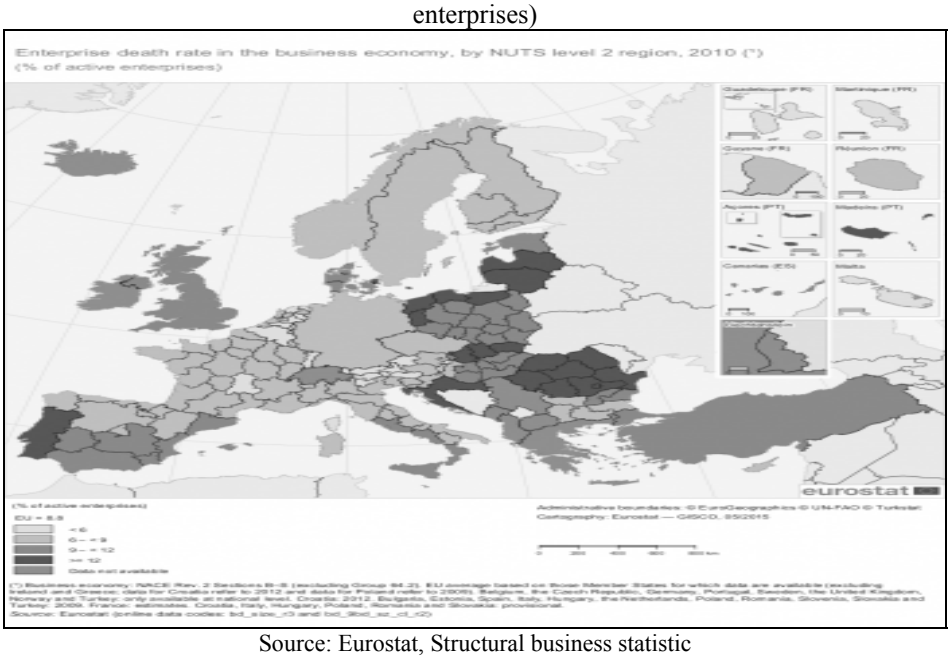
Significantly higher are inter-regional differences in the beginning of the recovery (2012) after the economic crisis. This can be explained by the short-term effect of using the potential of entrepreneurial activity factors. There is also faster rate growth in less developed regions. Although this is a manifestation of catch-up development in terms of business demography, it is a fact that both in the beginning and in the end of the period the highest enterprise birth rate is recorded in the highest developed regions.

Map 2 presents the ***enterprise death rate*** for NUTS 2 regions in 2010 (for Bulgaria the data are for 2009). By this indicator, the Bulgarian regions have favorable positioning compared to NUTS 2 regions in EU. NCR and NER are among those with rate value between 9 and 12, and the value of the remaining 4 regions is between 6 and 9. In 2011 most regions (excluding SWR and South-Central region – SCR) are in least favorable rate groups (above 12) (Table 5). This is due to the crisis period. It is very noticeable that enterprise death rate lowers in 2013, which mainly results from leaving the state of market instability by the economic subjects. It has to be noted that the highest enterprise death rate is not in the lowest developed regions. As a whole with regard to inter-regional differences small to very small variation in the value of enterprise death rate is observed.

Not only due to the historical experience, which shows that, but also due to the strong global economic inter-relations in the 21st century, one can assert that negative processes (world financial crisis) are dispersed via "shock wave", the effect of which can be defined as „unification in the evil". That could account for the smaller interregional differences in the enterprise death rate compared to those in the enterprise birth rate.

Map 2

Enterprise death rate in the business economy, by NUTS level 2 region, 2010 (% of active enterprises)



Source: Eurostat, Structural business statistic

Table 5

Enterprise death rate, NUTS 2 regions

	NWR	NCR	NER	SER	SWR	SCR	Variation coef. V (%)
2011	12.2	12.4	14.1	12.4	10.6	11.2	9.7
2012	11.3	11.7	13.7	11.0	10.8	10.9	9.4
2013	4.89	4.72	4.64	4.48	4.71	4.70	2.84

Source: Own calculation based on NSI data

With the ***enterprise birth net rate*** (this rate is the difference between the enterprise birth rate and the enterprise death rate) one can pin point the presence of very strong disproportions among NUTS 2 regions (table 6). In 2011 due to the economic crisis in all regions (except for SWR) it is evident that enterprise death share exceeds the birth share. It is also reported that it is in a varying degree – the value of the variation rate is within the upper scale V = -88.2%. During the following years a positive value of that rate predominates and the variation among regions reaches its highest level in 2012. This is the year in which revitalization of economic activity starts. Some studies (Manolov, 2016) in Bulgaria show stronger effect of the components of nationally determined conditions in the regional localization of business activities. There is sufficient justification to account for these strong disproportions in the enterprise birth net rate with regional specifics – demographic, social, financial, economic, and institutional. In 2013 there is already strong "attenuation" of differences and variation can be defined as one of medium scale, which is typical of the greater part of the analyzed business demography parameters.

Table 6

Enterprise birth net rate NUTS 2 regions

	NWR	NCR	NER	SER	SWR	SCR	Bulgaria	Variation coef. V (%)
2011	-3.0	-2.3	-2.0	-1.3	0.9	-1.4	-0.8	-88.2
2012	0.2	-0.2	0.1	2.5	2.4	1.0	1.4	119.2
2013	4.74	5.8	7.72	7.14	7.88	5.77	4.74	19.3

During the studied period almost three quarters of ***employment in the non-financial sector*** is provided by SMEs. Their share increases from 74.5% of the total number of employees in all non-financial enterprises in 2007 to 75.4% in 2015. Variation by regions is low both at the beginning and at the end of the period. With regard to the ***enterprise birth employee/enterprise death employee*** rate in non-financial enterprises low differences are also accounted for: 2011 V = 14.2%; 2013 – 14.7%.

Inter-regional differences in NUTS 2 regions with regard to ***branch sectors*** are from high to very high (table 7). With the number of enterprises in the service sector differences are greater and they increase quicker compared to those in the industrial sector. With the parameter ***employees*** (in industry/services) there is a tendency for reducing the differences which remain high in industrial non-financial enterprises and very high in number of employees in services.

Table 7

Inter-regional variation rate (V%) of non-financial enterprises and employment by branch sectors

	2007	2008	2009	2010	2011	2012	2013	2014
Industry (incl. construction) – No. of enterprises	51.7	52.6	58.1	58.7	59.0	59.0	59.2	59.2
Industry (incl. construction) – No. of employees	48.2	48.3	51.1	49.2	48.7	50.5	47.7	45.6
Services – No. of enterprises	55.2	56.5	64.8	65.8	67.0	67.8	69.9	70.1
Services – No. of employees	92.4	83.3	85.6	87.1	88.0	90.4	90.7	91.7

Source: Own calculations

Correlation analysis (correlation coefficients of GDP/cap and variation coefficients of basic business demography parameters) shows that regional differences in the parameter GDP/cap are in closest positive dependence on the differences in the number of non-financial enterprises/1000 persons (0.3899). Moderate negative dependence is observed between GDP/cap on the one hand, and on the other, the number of enterprise death (-0.4610).

Determinants impact on business demography

When assessing the possible impacts on the process of creating new enterprises, one of the theoretical assumptions is that there is both direct link between "entrepreneurial activity – economic growth" and reverse dependence. Economic activity is determined by the cyclicality of the economy, represented by the volume of goods and services produced. Growth, measured by positive GDP/cap growth, results in an increase in entrepreneurial activity measured by new non-financial enterprises. The tests carried out show that there is no significant linear dependence between the regressor (GDP/cap) and the number of enterprise births. Weak dependence, coupled with low level freedom (caused by a small number of observations since the indicator has been reported and announced only since 2008), leads to results with low experimental value (test in 5% and 10% significance level). This is not surprising – however, an enterprise, based on the adopted technology, combines production factors and produces a result that is projected into GDP, and therefore the primary link is the straight link in which enterprise birth could have a positive impact on GDP. And here the results of research for Bulgaria are contradictory. If some indicate that with the rise in the number of non-financial enterprises per 1000 people by only one, annual GDP per hectare rises by 1640 BGN (ILS, 2013), others make a conclusion about negative dependence (albeit weak and statistically unreliable) (Karanovsky, 2014).

In view of the effect of demographic parameter as basic factors with unfavorable action on a national and regional level, the other hypothesis about the effect of demographic component of the business environment is outlined. Human resources have structural significance for the overall development of regions, incl. in Bulgaria. That focus is additionally pointed out by the concept about “production function”, which in a simplified „Cobb-Douglas“ type puts the accent on labor resources along with physical capital and

adopted technology. The demographic factor is presented by a quality and quantity indicator: 1) quality of demographic potential measured by the average age of population (Eurostat, 2016); 2) total volume of demographic potential measured by number of population the region.

First test – a hypothesis is adopted about the presence of linear relation between average age of population in the relevant region (regressor) and number of enterprise birth. The relation results from the assumption that entrepreneurial initiative is typical of the younger part of the population in the region. The equation is the following:

$$\mathbf{РП = a_0 + a_1\ СВ + \epsilon}$$

Where:

EB – enterprise births acting as output element;

AA – average age of population acting as factor (regressor)

a_1 – coefficients measuring the degree of impact

ϵ – random component, characterizing the deviation of the empirical meaning from the theoretical one.

The results are presented in table 8.

Table 8

Effect of the average age of population on the number of enterprise births

Region	R^2	"a_1" coefficient of the variable (average age of population) – regressor		Research hypothesis		
		Value	P value	Accepted at 5% error	Accepted at 10% error	Rejected
Northwest	0.51	-869	0.067		X	
Northcentral	0.60	-1106	0.039	X		
Northeast	0.40	-1240	0.127			X
Southeast	0.23	-953	0.282			X
Southcentral	0.40	-1489	0.129			X
Southwest	0.32	-5657	0.184			X

Source: Own calculations, EXCEL, Data Analysis.

The following conclusions can be made from the results:

1. In four of the regions the described model has no research value due to which the research hypothesis cannot be accepted;
2. In two of the regions the described model is statistically significant and liner dependency can be defined as moderate;
3. The link between regressor and resulting value is negative;

4. There is very high elasticity – the increase in the average age with very little, makes a significant decrease in the number of enterprise births.

The conclusions made confirm the understanding that the regions in Bulgaria are extremely different in their overall development and therefore the individual socio-economic processes "respond" in different ways to the individual impacts. Perhaps it is not illogical that only in the two most backward regions of the country there is a statistically significant relationship between the average age and the number of enterprise births. These two regions are experiencing the most deteriorated economic and demographic processes. All growth generators are so limited that the average age of population appears to be a major retention factor. The average age exceeds 47 years (in the Northwest region 2014) and 45 years (in the Northcentral for 2014). It is possible to look for a frontier value of the average age, from which the explicable impact of the regressor on the result is triggered, and in the future a similar interaction to be reported in another region as well.

Second test - a hypothesis is assumed that there is a linear relationship between the number of the population in the respective region (regressor) and the number of enterprise births. The assumption is that entrepreneurial initiative is more active in more populated regions, as the number of entrepreneurs is higher. The equation is the following:

$$\mathbf{EB = a_0 + a_1\ NP + \epsilon}$$

where:

EB – enterprise births acting as output element;

NP – number of population acting as factor (regressor)

a_1 – coefficients measuring the degree of impact

ϵ - random component, characterizing the deviation of the empirical meaning from the theoretical one.

The results are presented in table 9.

Table 9

Dependence of enterprise births on the number of population

Region	R^2	"a_1" coefficient of the variable (number of population) – regressor		Research hypothesis		
		Value	P value	Accepted at 5% error	Accepted at 10% error	Rejected
Northwest	0,40	0,01	0,13			X
Northcentral	0,55	0,02	0,05	X		
Northeast	0,41	0,09	0,12			X
Southeast	0,27	0,03	0,23			X
Southcentral	0,48	0,05	0,10		X	
Southwest	0,16	-0,72	0,37			X

Source: Own calculations, EXCEL, Data Analysis.

The following conclusions are drawn from the results obtained:

1. Only two regions have a statistically significant relationship with the defined model (North-Central at 5% error and South-Central at 10% error);
2. The relationship is positive and the impact – moderate, i.e. only part of the result can be explained by the number of the population.

The surprise is about the lack of significant results. It would be logical for regions with high demographic potential to report a distinctly higher entrepreneurial activity. The main reasons for non-conformity with the theoretical expectations are:

1. Unreliable dynamic order to evaluate phenomena and processes. The data covers a relatively short period of time that cannot serve as maximum credibility.
2. The studied period is characterized by extremely high cyclicality and fluctuations. The reason is the economic crisis that has occurred since 2008. Obviously, the crisis and the subsequent recession have an impact on the ability of the model to reliably assess the impact of the variable and to predict the impact of demographic resources on entrepreneurial initiative in the country.

Third test – a fundamental rule is that supply of credit resources affects entrepreneurial activity. It is not accidental that we have registered high economic growth since 2000, as the banking sector has seriously reduced interest rates on loans. This is why hypothesis is being tested that low interest rates increase the attractiveness and use of loan capital, resulting in increased entrepreneurial activity. The average annual interest values by the LEONIA index are used to measure interest rates.[4]

Table 10

Dependence of enterprise births on the price of the credit resource

Region	R^2	"a_1" coefficient of variable (price of the credit resource) – regressor		Research hypothesis		
		Стойност	P value	Accepted at 5% error	Accepted at 10% error	Rejected
Northwest	0,39	224,38	0,13			X
Northcentral	0,52	367,34	0,06		X	
Northeast	0,09	304,88	0,49			X
Southeast	0,21	324,98	0,30			X
Southcentral	0,20	491,47	0,30			X
Southwest	0,05	779,47	0,60			X

Source: Own calculations, EXCEL, Data Analysis.

From the results obtained, the following conclusions can be drawn:

[4] LEONIA index is used pursuant to agreement between the Association of banks in Bulgaria (ABB), ACI Bulgaria – BDA and Bulgarian National Bank (BNB). LEONIA is an interest rate on real deals overnight calculated as the average weighted value for all deals on granting non-secured deposits overnight o the inter-bank market in Bulgaria by a representative group of banks.

1. Insufficient dynamic order, combined with the low to moderate impact of the regressor on the resultant unit, determine the low research significance of the defined model. Only in the North-Central region a statistically significant model is reported at trust interval of 90%;
2. The positive relation between the studied parameters is interesting. More determined higher demand for credit resources. But in times of crisis, economic subjects (predominantly SMEs) have no positive expectations for the future, so they prefer to withdraw their money from the real economy and deposit it in the banking system.

Conclusion

The regions in Bulgaria (NUTS 2) are extremely differentiated by their economic development, which, after the economic crisis, marks, albeit weak, a turnaround. More specific analyses are needed with regard to the new increase in economic growth disproportions in 2015. There is no such strong trend in business demography indicators: three are the main indicators of the business economy, which are widening the gap – number of non-financial enterprises, enterprise birth net rate, and the sectoral structure of enterprises and employees.

The correlation analysis shows that the regional differences in the GDP/cap parameter are mostly related to the differences in the number of non-financial enterprises/1000 persons. The differences in economic growth are also moderately dependent on the regional differences in the number of industrial enterprises and their employees, reflecting the perception of structural theories about the factors of economic growth. Moreover, there is a negative (moderate) dependency between GDP/cap and the number of people employed in the service sector.

The study also acknowledges that the regions respond differently to individual socio-economic impacts. In the richest region of the country (SWR) the biggest changes in most indicators of business demography are observed; In the two least developed regions (NWR and NCR) the change is the weakest; The other three regions report similar average rates of dynamics. In the most backward areas (with very limited growth generators), there is a significant relationship between the average age of the population and the number of enterprise births.

The factor analysis of business demography suggests that high cyclical fluctuations in economic processes affect the impact of demographic resources on entrepreneurial initiative. Business demography is strongly influenced by economic processes on national and global levels. Our country is in a long recession that limits the business initiative. This explains the paradox that low interest rates do not stimulate entrepreneurial activity due to the lack of positive expectations from economic units. Agents' expectations are a subjective presumption that can hardly be influenced by macroeconomic and other incentives.

Expectations are in three directions: 1) government activity for improvement of national business environment; 2) adapting regional policy with specific and effective instruments

according to the regional specificity; 3) activating the factors of the internal business environment, mainly by improving human resources and transfer of innovations.

References

European Liberal Forum. (2015). Tackling Regional Disparities in Europe Through Growth. First Printing: 2015 ISBN 978-1-326-27492-4.

Eurostat − OECD Manual on Business Demography Statistics, Methodologies and working papers (2007), European Communities/OECD Introduction p.9, ISBN: 978-92-79-04726-8; ISSN: 1977-0375 [Online] Available: http://ec.europa.eu/eurostat/ramon/statmanuals/files/KS-RA-07-010-EN.pdf.

Eurostat. (2016). GDP at regional level [Online] Available: http://ec.europa.eu/eurostat/statistics-explained/index.php/GDP_at_regional_level [Accessed: March 2016].

Eurostat. (2016). General and regional statistics, European and national indicators for short-term analysis, Regional demographic statistics, Average of population [Online] Available: http://ec.europa.eu/eurostat/data/database [Accessed: March 2016].

Eurostat. (2016). Statistics Explained, Business demography statistics [Online] Available: http://ec.europa.eu/eurostat/statistics-explained/index.php/Business_demography_statistics [Accessed: November 2016].

Fritsch, M., Mueller, P. (2004). Effects of new business formation on regional development over time. – Regional Studies, Vol. 38, N 8, pp. 961-975, ISSN: 1360-0591, [Online] Available: http://www.tandfonline.com/doi/abs/10.1080/0034340042000280965 [Accessed: 18 August 2010].

Georgelis, Y., Wall, H. J. (2000). What makes region entrepreneurial? Evidence from Britain. – The Annals of Regional Science, Vol. 34, N 3, pp 385–403, ISSN: 0570-1864 (Print) 1432-0592 (Online).

ILS. (2013). Four factors for successful regions. [Online] Available: http://economix.bg/chetiri-faktora-za-uspeha-na-regionite [Accessed: 15 November 2013].

Karanovsky, B. (2014). Determinants of GDP, Inequality and the Risk of Poverty on a Regional Level. (Panel Data Econometrics Study Using Fixed and Random Effects). Ministry of Finance of the Republic of Bulgaria, August 2014, Presentation, p. 47.

López-García, P., Puente, S. (2006). Business Demography In Spain: Determinants Of Firm Survival. Documentos de Trabajo. N.º 0608, 2006, Madrid, ISSN: 0213-2710 (print), ISSN: 1579-8666 (on line), Imprenta del Banco de España, [Online] Available: http://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSeriadas/DocumentosTrabajo/06/Fic/dt0608e.pdf [Accessed: April 2006].

Manolov, T. (2016). Regional localization of business (example of Kardzhali region). Dissertation paper.

Nehrebecka N., Dzik, A. M. (2013). Business Demography In Poland: Microeconomic And Macroeconomic Determinants Of Firm Survival. Faculty of Economic Sciences, University of Warsaw, Working Papers, No. 8/2013 (93), [Online] Available: http://www.wne.uw.edu.pl/inf/wyd/WP/WNE_WP93.pdf.

NSI. Business demography, Metadata and methodology, Statistical concepts and definitions [Online] Available: http://www.nsi.bg/en/content/13218/business-demography [Accessed: 31 July 2016].

Nunes, A., Sarmento, E. (2010). Business Demography Dynamics in Portugal: A Non-Parametric Survival Analysis. Grupo de Estudos Monetários e Financeiros (GEMF), Faculdade de Economia da Universidade de Coimbra, ESTUDOS DO GEMF, N 9, [Online] Available: http://gemf.fe.uc.pt/workingpapers/pdf/2010/gemf_2010-09.pdf.

OECD. (2011). Entrepreneurship at a Glance 2011, 'Employment creation and destruction by employer enterprise births and deaths', OECD Publishing, p. 68, ISSN: 2226-6941 (online), 2226-6933 (print), [Online] Available: http://www.oecd-ilibrary.org/industry-and-services/entrepreneurship-at-a-glance-2010_9789264097711-en [Accessed: 28 June 2011].

Ottens, M. (2014). From birth to death: a closer look at business demography in selected EU countries and the Republic of Korea. Archive: Korea-EU – business demography , General and regional statistics, Statistics in focus 1/2014, ISSN: 2314-9647, Catalogue number: KS-SF-14-001-EN-N, [Online] Available: http://ec.europa.eu/eurostat/statistics-explained/index.php/Archive:Korea-EU_-_business_demography [Accessed: 18 April 2017].

Schrör, H. (2009). Business Demography: employment and survival. – Eurostat, Statistics in focus – Industry, trade and services, N 70/2009 European Commission, Eurostat, ISSN 1977-0316 [Online] Available: http://ec.europa.eu/eurostat/documents/3433488/5284008/KS-SF-09-070-EN.PDF/d43f5156-61fb-4f3a-8bd7-e6902e48c8de [Accessed: 8 September 2009].

World Bank Group. (2016). Doing Business 2016 Measuring Regulatory Quality and Efficiency. 13th edition, ISSN: 1729-2638 [Online] Available: http://www.doingbusiness.org/~/media/WBG/DoingBusiness/Documents/Annual-Reports/English/DB16-Full-Report.pdf [Accessed: 27 October 2015].