ECONOMIC SUBJECTS IN THE SELECTED REGIONS OF THE CZECH-POLISH BORDER

Karin Gajdová

1 Silesian University, School of Business Administration, Univerzitní nam. 1934/3, 73340 Karvina, Czech Republic
Email: gajdova@opf.slu.cz

Abstract. The paper analyzes the economic subjects in selected regions of the Czech-Polish border. The article focuses on the Czech Region Moravskoslezsko and two Polish regions, ie. Slaskie and Opolskie voivodship. These regions have much in common. But also they contrary to exhibit considerable differences with each other or against other regions of these countries. Enterprises are classified according to their actions into sectoral groups. It is a division according to NACE (resp. narrower concept is Structural business statistics - SBS). They noted significant differences in the development of various sectors in selected regions. Among the most vital sectors in the regions identified the following sectors: Sector (C) Manufacturing, Sector (F) Construction, Sector (G) Wholesale and retail trade and Sector (M) Professional, scientific and technical activities.

Keywords: comparison, economic subjects, NACE, regions, sectors.

Jel classification: J60, M21.

1. Introduction

Currently, from the view of the European Union, it is increasingly interested in enhancing cross-border cooperation between border regions. Mutual cooperation that may result in a better economic situation in the region, increasing the competitiveness of regions and reduce regional disparities negative towards other regions. Border regions are thus supported in different ways as well as economic (business) units in these regions. The improvement of the business community in the selected region also positively affects the economic situation of the region. These border regions are tracked and analyzed and searched for ways to improve their situation. The aim of this contribution is to map the situation and determine problem areas in terms of sectoral structure of enterprises in selected border regions, ie. Moravskoslezsko, Opolskie and Slaskie voivodship.

Within the paper are tracked and analyzed indicators of sectoral distribution of enterprises. It analyzed the number of enterprises in individual sectors, as well as the analysis of employment in individual sectors, and lastly also gross value added. All these indicators influencing economic events in the regions.

2. Methodology and data

The research deals with regions that receive maximum support from the European Union for cross-border cooperation. This research deals with two countries from European Union. These are countries located in the heart of Europe: the Czech Republic and Poland. These are countries that have a very high potential in all economic, social, transport and other areas, mainly because of the location in the center of Europe (Majerová, 2012). And their regions on the common borders have even greater potential. On the contrary they have a lot of problems and their economic development is not too beneficial. It is reason why the European Union and government of these countries (the Czech Republic and Poland) support these regions much in this period.

For this analysis were chosen regions at the level 2, they are regions NUTS II. It is 1 border region NUTS II in the Czech Republic (region Moravskoslezsko) and 2 border regions NUTS II in Poland (Slaskie and Opolskie voivodship). These are regions NUTS II which only have a common border of these two countries.
In these selected regions are analyzed economic subjects and it is visible in this paper. The economic subjects can be analyzed on the basis of their sectoral allocation. Every economic subject, its activities, it is included to the specific sector unit. In the European Union is defined a specific structure based on NACE. It is about a static classification of economic activities, which are used within the European Union since 1970. Using the NACE is compulsory for all member states of European Union.

NACE creates a framework for static data about the activities in many economic areas. In Czech Republic substituted this classification so called OKEČ, i.e. NACE classification. In Czech and Poland Republic is this classification of economic activities since 2008. Analysis of economic subjects according to NACE it is therefore often performed since 2008 (Hallet, 2002). NACE divides the economic activities (area of economic activities) in this way, that each economic subject, which performs an economic activity, assigns a code NACE.

Narrower concept of NACE, statistics, which works with this narrower concept is called Structural business statistics (SBS). This statistic is subsequently used within analysis of economic subjects.

The Structural business statistics is, according to Rugman and Collins (2009), founded on data about enterprises or parts of enterprises, which are often used as a regional data. Enterprises are classified according to classification of economic activities NACE. In case of that company performs more than one economic activity and the enterprise is included to the sector based on this economic activity, which brings the highest added value the economic unit.

For analysis in this paper were analyzed number of economic subjects, employment in selected sectors and gross value added. There was used time series analysis and development of these selected indicators. For gross value added was calculated average growth rate. We measure the average rate of growth by the geometric average of annual growth rates.

\[
G(g_{x1}, g_{x2}, ..., g_{xn}) = \sqrt[n]{g_{x1} \times g_{x2} \times ... \times g_{xn}} = \left( \prod_{i=1}^{n} g_{xi} \right)^{1/n}
\]

where: \( g \) = growth, annual changes,  
\( G \) = average growth rate of selected indicator.

### 3. Empiric analysis of the economic subjects

Within analysis of economic activities in sectoral allocation is the most important view on development of the number of economic units in particular regions. The development of the number of legal entities and individual entrepreneurs is essential for several reasons (Blom-Hansen, 2003). From the perspective of regional can say that the development of the number of businesses is significant from the point of view of municipalities and cities, because incomes of their taxes forms an important part of tax revenues in the municipal sphere.

Analysis of economic entities based on separation by classification of NACE is presented in following treatise by charts and graphs. In graphs and charts are, because of the clearer view, economic activity is always marked only by code classification of NACE. It is about: B = mining and quarrying, C = manufacturing, D = production and distribution of electricity, gas and heat, E = water supply, F = construction, G = wholesale and retail trade; repair and maintenance of motor vehicles, H = transport and storage, I = accommodation and catering, J = information and communication activities, L = activities in real estate, M = professional, scientific and technical activities, N = administrative and supportive activities.
In following Table 1 it can be seen the development of count of economic entities dividend according to classification of NACE in both of selected countries, i.e. in Czech and Poland Republic. Highlighted are the sectors, which are for these countries crucial from the point of view of count of economic entities and count of employed people in the sector and also in gross value added. Crucial is the sector of Manufacturing (C), the sector of Construction (F), the sector of Wholesale and Retail trade (G) and also the sector of Professional, Scientific and Technical activities. Enterprises are the most in this sector, but they show different trends. In the case of Czech Republic is situation in these sectors are very favorable, because are constantly increasing count of economic units of these sectors, that will have a positive impact for the whole country. Whereas in the Poland can be seen as a growing trend as well as declining. There is decreasing the number of economic units in the Manufacturing sector and in the Wholesale and Retail trade. It can say, that while the Czech Republic is increasingly focused on the Wholesale and Retail trade (20% increase) and the Manufacturing (14% increase) and within these sectors show here the highest percentage increase (Table 1), for the Poland it is exactly in these sectors contrarily and there is a decrease of number of economic units. But as opposed to the Czech Republic, in Poland there is significantly increases the count of economic units in Professional area, scientific and technical activities, i.e. about 14 % (compared with the Czech Republic where is the increase between 2008 and 2012 only 4.8 %).

The general view of all analyzed sectors from the point of count economic units can be seen, that the highest percentage increase since 2008 to 2012 in Czech Republic is in mentioned sectors (Manufacturing, Wholesale and Retail trade), but also in sector of water supply (i.e. about 44 %) and in sector of Production and distribution of electricity, gas and heat (i.e. about 27 %). In Poland there is the highest percentage increase in comparison 2008 and 2012 in the sector of Information and communication activities (34 %), activity in real estate (33 %) and Mining and quarrying (32 %). However, in the total number of economic units, these sectors are still on the lower limit.

It can say that the Czech Republic is becoming more industrialized country while the Poland is more converts to the country focused on the technical, technical, professional and specialized area.

Table 1. Development of number of economic subjects by classification NACE (number, 2008-2012).

<table>
<thead>
<tr>
<th>NACE</th>
<th>Czech Republic</th>
<th>Poland</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>818</td>
<td>871</td>
</tr>
<tr>
<td>C</td>
<td>157 163</td>
<td>161 888</td>
</tr>
<tr>
<td>D</td>
<td>1 760</td>
<td>2 175</td>
</tr>
<tr>
<td>E</td>
<td>5 281</td>
<td>5 847</td>
</tr>
<tr>
<td>F</td>
<td>158 989</td>
<td>164 599</td>
</tr>
<tr>
<td>G</td>
<td>225 699</td>
<td>239 064</td>
</tr>
<tr>
<td>H</td>
<td>40 747</td>
<td>40 921</td>
</tr>
<tr>
<td>I</td>
<td>59 183</td>
<td>61 947</td>
</tr>
<tr>
<td>J</td>
<td>34 899</td>
<td>37 550</td>
</tr>
<tr>
<td>L</td>
<td>41 927</td>
<td>46 711</td>
</tr>
<tr>
<td>M</td>
<td>165 297</td>
<td>171 910</td>
</tr>
<tr>
<td>N</td>
<td>40 159</td>
<td>41 448</td>
</tr>
</tbody>
</table>

% change 2008 – 2012 Czech Republic*  % change 2008 – 2012 Poland*

C 14.1% -8.8%  F 11.4% 4.9%  G 20.7% -10.2%  M 4.8% 14.1%  

Source: own processing, data by Eurostat.  
*Note: % change of number of economic subjects from 2008 to 2012 in selected (main) sectors.
According to the count of economic units the most important sector is still the sector of Wholesale and retail trade, Construction, Manufacturing and Professional, scientific and technical activities. According to the Czech Statistical Office in the sector of Manufacturing rank metallurgical, engineering, chemical, timber, textile industry and many others. The sector of Construction contains specialized and unspecialized construction activities. In the sector of Wholesale and retail trade; repair and maintenance of motor vehicles find any kind of sale of goods and services. In this sector are also included repair and maintenance of motor vehicles. And last selected sector is the sector of Professional, scientific and technical activities. These activities require a high level of education, training and they give to users the expert knowledge and experiences. This includes several sections, e.g. Legal and accounting activities, activities of management enterprises, management consulting, architectural and engineering activities, research and development, advertising and the market research etc.

On these selected key sectors is focused analysis in more detail, from the view of the count of employed people in these sectors. In the following Table 2 is available for the development of employment, specifically the count of employed persons in selected sectors of NACE. They introduced only followed regions Moravskoslezsko, Slaskie voivodship and Opolskie voivodship and also the total values for individual states.

In the overall view of the development in all sectors and all selected regions is mostly reported decreasing trend, i.e. it is still fewer employed people in these sectors. The highest decrease between 2008 and 2012 is in the Poland in the area of Wholesale and retail trade (G), where has been a decline of the number of employed people up to 241 304. The second highest decrease of the number of employed people can be seen again in the Poland in the Manufacturing (C), it is decrease about 224 616 of persons. In the same sector is also a significant decline in the Czech Republic, i.e. about 140 536 of persons. Contrarily the highest increase of the number of employed persons in the sector of Professional, scientific and technical activities (M), in the Poland is increase between 2008 and 2012 up to 54 788 of employed persons and in the Czech Republic is increase about 15 784 of employed persons. It can say that the count of employed persons is still more important in the sector of Professional, scientific and technical activities in both selected countries. Contrarily is a significant decline in both countries in the sector of Manufacturing.

In the Moravskoslezsko region is the count of employed persons as the most important the sector of Manufacturing, but in this sector is observed the largest decline. From 161 864 of employed persons in 2008 is decrease about 16 410 of persons from a total of 145 454 of employed persons in the sector. The highest increase is in the sector of Wholesale and retail trade, i.e. about 6 503 of persons and in the sector of Professional, scientific and technical activities about 1 537 of persons.

The sector of Professional, scientific and technical activities (M) is from the point of view increase of count of the employed persons also important for the Slaskie voivodship. There is a change between 2008 and 2012 from 59 854 of employed persons to 62 622. However, in the other selected sectors is a decrease of employed persons.

The worst situation is in the region of Opolskie voivodship, where is a decrease of the employed persons in the selected sectors. The largest decline is in the sector of Wholesale and retail trade (G).
Table 2. Development of employment in the selected sectors of NACE (number of employee, 2008 – 2012).

<table>
<thead>
<tr>
<th>Sector</th>
<th>Region</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Czech Republic</td>
<td>1 365 452</td>
<td>1 208 851</td>
<td>1 193 316</td>
<td>1 223 100</td>
<td>1 224 916</td>
</tr>
<tr>
<td></td>
<td>Moravskoslezsko</td>
<td>161 864</td>
<td>144 794</td>
<td>143 599</td>
<td>145 901</td>
<td>145 454</td>
</tr>
<tr>
<td>C</td>
<td>Poland</td>
<td>2 537 230</td>
<td>2 426 660</td>
<td>2 375 291</td>
<td>2 350 130</td>
<td>2 312 614</td>
</tr>
<tr>
<td></td>
<td>Slaskie voivodship</td>
<td>341 685</td>
<td>328 802</td>
<td>323 772</td>
<td>324 832</td>
<td>323 623</td>
</tr>
<tr>
<td></td>
<td>Opolskie voivodship</td>
<td>67 984</td>
<td>65 591</td>
<td>64 699</td>
<td>65 249</td>
<td>64 092</td>
</tr>
<tr>
<td></td>
<td>Czech Republic</td>
<td>412 713</td>
<td>409 209</td>
<td>410 352</td>
<td>399 018</td>
<td>395 093</td>
</tr>
<tr>
<td></td>
<td>Moravskoslezsko</td>
<td>42 422</td>
<td>42 066</td>
<td>41 982</td>
<td>40 927</td>
<td>39 351</td>
</tr>
<tr>
<td>F</td>
<td>Poland</td>
<td>x*</td>
<td>921 645</td>
<td>905 867</td>
<td>924 331</td>
<td>882 039</td>
</tr>
<tr>
<td></td>
<td>Slaskie voivodship</td>
<td>x*</td>
<td>121 119</td>
<td>118 581</td>
<td>120 660</td>
<td>116 393</td>
</tr>
<tr>
<td></td>
<td>Opolskie voivodship</td>
<td>x*</td>
<td>22 713</td>
<td>21 960</td>
<td>21 460</td>
<td>20 072</td>
</tr>
<tr>
<td></td>
<td>Czech Republic</td>
<td>684 444</td>
<td>676 152</td>
<td>684 170</td>
<td>703 287</td>
<td>710 737</td>
</tr>
<tr>
<td></td>
<td>Moravskoslezsko</td>
<td>64 015</td>
<td>68 006</td>
<td>67 322</td>
<td>70 249</td>
<td>70 518</td>
</tr>
<tr>
<td>G</td>
<td>Poland</td>
<td>2 475 808</td>
<td>2 278 321</td>
<td>2 285 222</td>
<td>2 264 590</td>
<td>2 234 504</td>
</tr>
<tr>
<td></td>
<td>Slaskie voivodship</td>
<td>277 161</td>
<td>251 616</td>
<td>250 373</td>
<td>251 417</td>
<td>248 747</td>
</tr>
<tr>
<td></td>
<td>Opolskie voivodship</td>
<td>46 951</td>
<td>43 370</td>
<td>43 714</td>
<td>40 796</td>
<td>37 677</td>
</tr>
<tr>
<td></td>
<td>Czech Republic</td>
<td>231 742</td>
<td>237 260</td>
<td>240 183</td>
<td>243 019</td>
<td>247 526</td>
</tr>
<tr>
<td></td>
<td>Moravskoslezsko</td>
<td>19 497</td>
<td>20 349</td>
<td>20 501</td>
<td>20 732</td>
<td>21 034</td>
</tr>
<tr>
<td>M</td>
<td>Poland</td>
<td>488 724</td>
<td>491 945</td>
<td>490 762</td>
<td>522 330</td>
<td>543 512</td>
</tr>
<tr>
<td></td>
<td>Slaskie voivodship</td>
<td>59 854</td>
<td>60 193</td>
<td>58 919</td>
<td>62 066</td>
<td>62 622</td>
</tr>
<tr>
<td></td>
<td>Opolskie voivodship</td>
<td>9 407</td>
<td>8 561</td>
<td>8 575</td>
<td>9 098</td>
<td>9 040</td>
</tr>
</tbody>
</table>

Source: own processing, data by Eurostat.
*Note: Data not available.

Another analytical part in economic entities is focused on the comparison of the count of employed persons in the selected sectors. It is about a comparison between regions of the NUTS2 in both countries, i.e. a comparison of all 24 regions NUTS 2 (8 regions of the Czech Republic, 16 regions of the Poland). The data are transformed into the graphic form for the clearer comparison. The regions are aligned by region with the lowest count of employed persons in the sector for region with the highest count of employed persons of the sector. That allows the formation of a clearer imagination about the position of the region to the other regions (Manzella and Mendez, 2009). This comparison is performed for the last available year, for 2012.

The Fig. 1. contains and overview of the regions according to the count of employed persons in the sector of Manufacturing in 2012. The highest count of employed persons in the sector of Manufacturing is in the region of Slaskie voivodship and it is in comparison with all other regions in both countries, i.e. with other 26 regions. It is about 323 623 of employed persons in this sector. Moravskoslezsko region is located exactly in the average of this comparison, i.e. on the 12th place with comparison of all 24 regions. In this sector is employed 145 454 of persons. The region Opolskie voivodship is located on the penultimate place. There is employed 64 092 of persons.

In the comparison of Czech regions is on the first place the region Jihovýchod (210 396 of employed persons), the Severovýchod region and Střední Morava. The last place (in the Czech Republic) hold Prague with the total count of employed persons 81 212 in the sector.
Another observed sector is the sector of Construction (Fig. 2). On the first place in the count of employed persons is in this case the region Mazowieckie voivodship, where are about 141 530 of employed persons. This region is followed by the region of Slaskie voivodship (116 393 of employed persons). The first four places of this imaginary ladder is occupied by Polish regions. At the sight of Czech regions is the best in this sector the Praha region, followed by the Jihovýchod region and Severovýchod region. On the last place of Czech regions is the Severozápad region (36 752 of employed persons). The Moravskoslezsko region is located on 8th place from the end in comparison with all regions of both countries and on the 7th place in comparison with Czech regions (it is the penultimate place in all eight regions in Czech Republic). The region Opolskie voivodship occupies the 3rd place from the end with the total count 20 072 of employed persons in the sector of Construction.

The third analyzed sector is the sector of Wholesale, retail trade; repair and maintenance of motor vehicles. The results are shown on the Fig. 3. Within this sector the Opolskie voivodship gets on the
last place in comparison with other 23 regions of NUTS 2 in both of countries. In Opolskie
voivodship is in the sector in 2012 employed 37 677 persons. The Moravskoslezsko region is located
on the 16th place in comparison with all regions and on the 5th place in comparison with Czech
regions. It employs 70 518 persons in 2012. Slaskie voivodship is on the third place with a total count
248 747 of employed persons.

Significant rebound from other regions is clearly visible in the region Mazowieckie voivodship,
where is in the area of Wholesale and retail trade employed 464 451 persons. In the Czech Republic is
the highest count of employed persons in the region of Praha (171 583 persons) and in comparison
with Polish regions is located on 5th place.

Fig. 3. Number of employed persons in the sector Wholesale and Retail trade in 2012

![Fig. 3](image)

Source: own processing, data by Eurostat.

The last selected key sector is the sector of Professional, scientific and technical activities (Fig. 4).
This sector is known for significant increase, what is important compared to other sectors. On the first
two places are located both central regions of both selected countries, i.e. the region of Praha and the
region Mazowieckie voivodship. These two regions are followed by region Slaskie voivodship,
where is employed 62 622 persons in the sector in 2012. The region of Moravskoslezsko is located on
11th place in comparison with all other regions with the total number 21 034 of employed persons.
Opolskie voivodship is on the penultimate place of this imaginary ladder with 9 040 of employed
persons in the sector.

Fig. 4. Number of employed persons in the sector Professional, scientific and technical activities in 2012

![Fig. 4](image)
Within the last part of the analysis of economic entities, it is advisable to compare the observed regions according to the gross value added. It was analyzed the gross value added of all sectors of NACE in 2000 – 2011. It was observed the development of the indicator, firstly for the states and subsequently for selected regions.

On the Fig. 5 it is possible to observe the development of the gross value added in the Czech Republic and the Poland. The gross value added is generally higher in the Poland, which is of course also the fact, that the Poland is greater than the Czech Republic. However at the sight of the development of the indicator in the Czech Republic is this development more stable. In the Poland is this development with significant fluctuations. The biggest leaps are visible between 2008 and 2012. The gross value added is at the highest level in 2008 (317 915 mil. euro). In the Czech Republic was the gross value added valued at 139 498 mil. euro in 2008.

**Fig. 5. Development of the Gross value added in all sectors of NACE in the Czech Republic and Poland (millions of euro, 2000-2011)**

The following picture (Fig. 6) then shows the development of the gross value added in the region of Moravskoslezsko, Opolskie and Slaskie voivodship. The lowest level is evident in the region of Opolskie voivodship, where is moving in values from 3 836 to 6 878 million euros (from 2000 to 2011). The region of Moravskoslezsko is moving range from 5 650 mil. euro to 14 353 mil. Euro (Fojtíková and Tuleja, 2013). And the highest value of the gross value added throughout the period in the region of Slaskie voivodship (22 185 mil. euro – 42 274 mil. euro). In this region is also the most obvious fluctuating development, which duplicate the development of the Poland, the biggest leaps are between 2008 and 2010.

**Fig. 6. Development of the Gross value added in all sectors of NACE in the selected regions (millions of euro, 2000-2011)**
The observation of development of gross value added is certainly important for comparison the situation of economic units in selected regions. However, clearer notion of the development will also bring the calculation of average growth rate of the gross value added. It can be seen on Fig. 7. The formula, that was used for the calculation of this indicator is presented in the introduction. From it clearly shows that the highest growth rate of the gross value added is in the Moravskoslezsko region, i.e. 8.84 %. It can say that it is the best situation in the region. In comparison of individual countries is better the Czech Republic than the Republic of Poland.

**Fig. 7.** Comparison of average growth rate of gross value added in 2000-2011 (%)

Even the gross value added in the Moravskoslezsko region grows with strongly pace, and remains the highest value of this indicator in the region Slaskie voivodship. The most alarming situation is in the region Opolskie voivodship, where is the lowest gross value added and in addition the growth rate is the lowest (in comparison with other selected regions).

### 4. Conclusion

Paper dealt with the economic subjects in selected border regions. Based on the analysis of structural business statistics, it was found that the most important sector in selected regions of Poland and the Czech Republic in terms of the number of economic units Manufacturing (C), Construction (F), Wholesale and retail trade (G) and Professional, scientific and technical activities (M). However,
from the point of view of development of economic entities is the Czech Republic, although more and more industrial countries, while the Poland more converts to the ground on the technical, technological, professional and vocational areas.

For the region Moravskoslezsko is the most important sector of wholesale and retail trade, where it is registered around 25 000 economic units. This sector is followed by the manufacturing sector which registered 16 416 economic units. These sectors also show a rising trend, which was an increase of 13.7% and 11.9%. For Polish regions is true the same in terms of the number of economic units, those are the highest in the sector G (Wholesale and retail trade), sector F (Construction) and in sector C (Manufacturing). However, these sectors show both Polish regions downward trend. In the case of the region Slaskie voivodship is pursued highest increase in the number of economic units in the sector of mining and quarrying (58.2%), real estate activities (48.1%) and Information and communication (36.4%). In the case of the region Opolskie voivodship is the highest increase observed in the sector of activity in real estate (34.9%) and in mining and quarrying sector (33.3%).

Selected regions still remain primarily focused (in terms of number of businesses) to wholesale and retail trade, manufacturing and construction. The same also applies to the number of persons employed. However, looking at the evolution of this indicator shows that there is a gradual decline in the number of people employed in these sectors. There is actually an increase in the number of people employed in the sector Professional, scientific and technical activities.

For summarizing the four graphs (which shows comparison of number of employed persons) it could say, that the best situation is in the region Slaskie voivodship, because in all selected sectors is in comparison with all other regions is located at the forefront. Slaskie voivodship is on the first position in the sector of Manufacturing in comparison with other regions in both of countries. Opolskie voivodship is almost always on the last places in all sectors. The worst is the sector of Wholesale and retail trade, where is on the last place, blind 23 other regions. Contrarily the most of these sectors is the sector of Construction in the region Opolskie voivodship. Behind it are two more regions. The region of Moravskoslezsko is located in the middle of these imaginary ladders. The regions in the Czech Republic are moving in observed sectors in average, while regions of the Poland are characterized with higher differences between regions.

5. Acknowledgement

This paper was supported by the project SGS/13/2015 "Influence of Selected Macroeconomic and Microeconomic Determinants on the Competitiveness of Regions and Firms in Countries of the Visegrad Group Plus".

References


