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The Use of European Funds in Polish and Czech Municipalities. A Study of the Lower Silesia Voivodship and Hradec Kralove Region

Marian Kachniarz¹, Szymon Szewranski¹, Jan Kazak¹

¹ Wroclaw University of Environmental and Life Sciences, Grunwaldzka str. 55; 50-357 Wroclaw, Poland

marian.kachniarz@upwr.edu.pl

Abstract. The paper presents an analysis of the use of EU funds by municipalities in two neighbouring regions - the Lower Silesian Voivodship (Poland) and the Hradec Kralove region (Czechia). In total, 580 communes were analyzed (168 on Polish and 412 on the Czech side). The main aim of paper was spatial analysis and the demonstration of differences in the distribution of structural funds. The hypothesis of the scale effect - greater efficiency in gaining subsidies by larger units was especially tried. The results of the research allow for a few key conclusions. Polish municipalities have a greater influence on shaping local politics, which means that they obtain more funds than their counterparts on the Czech side. Our research has not proved the economies of scale, both on the Polish and Czech side, and no significant spatial dependencies have been demonstrated.

1. Introduction

Poland and the Czech Republic became members of the European Union on May 1, 2004. It took effect as part of the biggest ever single enlargement in the history of this commonwealth – the EU accepted 10 new countries¹ to the group of its Member States. Their vast majority represented young democracies and emerging market economies, presenting a clearly lower level of development than the EU-15. In 2005 Czech GDP (based on purchasing power parity) amounted to 79% of the EU average, whereas in Poland it reached the level of 50% only. The European Union policy, based on the principle of cohesion oriented activities, aimed at reducing these developmental disparities. As a result, a significant transfer of funds was made within three consecutive programming periods (2004-2006, 2007-2013 and 2014-2020). Since May 2004 till January 2017 both Poland and the Czech Republic received funds amounting to 30% of their Gross National Income (GNI) from the EU budget. In effect, at the end of 2016, Czech GDP (PPP) reached the level of 88%, and in the case of Poland – 68% of the EU average, respectively [1].

Both in Poland and in the Czech Republic a significant part of the funds was consumed by local governments. In Poland it was over 30% of all funding, mostly consumed at the municipal level. In the Czech Republic this value was slightly lower – approx. 25% and predominantly consumed by the regional government. This diversification may result from a different structure of local government. The population of an average municipality in Poland is 15 000, whereas fragmentation of this local

¹ Apart from Poland and the Czech Republic also Estonia, Latvia, Lithuania, Slovakia, Hungary, Slovenia, Malta and Cyprus were accepted.



government level in the Czech Republic is 10 times higher – an average municipality has approx. 1 500 residents. Therefore, the question arises whether the diversified structure of administrative units on both sides of the border affects the efficiency of the EU funds implementation by the local communities?

The main purpose of the study is to conduct spatial analysis of the EU funds absorption in Polish and Czech municipalities. The research covered a total of 580 municipalities from the adjacent regions – Lower Silesia (168) and Hradec Kralove region (412). They focused on projects implemented directly by the municipal offices, excluding other initiatives implemented in their area (e.g. by private enterprises).

Local development policy conducted by local authorities is an expression of partial autonomy and empowerment of local communities. The activities carried out by the local government are particularly important in eliminating spatial developmental differences and in creating coherent territorial and economic systems, particularly in terms of sustainable development and spatial order [2]. The subject literature offers numerous definitions of local development [3], [4]. Their consistent feature is highlighting continuous increase in the level of competition and higher economic potential of the local system. In addition, some of them also focus on its supra-local dimension – it is difficult to achieve regional goals without initiating and stimulating local development processes. Therefore, decentralized local development policy should be combined with stimulating these processes through regional and central governments [5].

The subject literature devotes much attention to the reasons behind spatial diversity of developmental processes. Some studies emphasize the important role of decentralization processes and the increasing local autonomy [6], whereas others indicate the importance of institutional efficiency [7], [8]. In terms of the latter aspect, we come across the entire group of empirical studies which lead to the conclusion that the catching-up process is facilitated by the EU's cohesion policy, however, it is not guaranteed. Economic and social convergence depends, in most cases, on proper institutional capacity of each municipality to absorb funds and transform the effects of these programmes into sustainable economic and social growth [9].

Given the subject matter of this article, attention should be paid to the group of studies on economies of scale in the functioning of local governments. They seek correlations between the local government size and the efficiency of its functioning. Tavares [10] and Swianiewicz [11] reviewed such studies. Many authors carefully summarize their research results as ambiguous. Some of them claim that the differences in unit costs of small and large administrative units remain lower than expected. This situation reflects the fact that the optimal size of municipalities is a typical "wicked problem" with no unambiguous answer. Similar findings were collected after examining the economies of scale in Polish local governments [12] and the ones in the Czech Republic [13].

In order to implement the activities undertaken by the authorities it is necessary to provide their funding sources. In addition to public revenue and public income also funds from the European Union budget, funds from the aid provided by Member States of the European Free Trade Agreement (EFTA) are separately listed. The EU funds have a significant share in financing pro-development expenditure of both Polish and Czech local governments. It is estimated at the level of approx. 30% of capital expenditure [14]. The extent of these financial sources absorption may eventually contribute to higher standard of living in individual municipalities [15].

2. Research methodology

2.1. The subject of research

In order to answer the question regarding the differences in the EU funds' absorption by Czech and Polish local governments, it was decided to choose two neighbouring regions – Hradec Králové and Lower Silesia. They are connected by a bordering mountain range of the Sudetes and feature similar socio-economic characteristics [16]. Both regions, however, differ in terms of their local government structure. The average fragmentation of municipalities is 10 times higher on the Czech side. As a result, an average Lower Silesian municipality is inhabited by approx. 15 000 residents, whereas Hradec

Kralove region – only by 1 500 residents. The capital of Lower Silesia – Wrocław has 637 000 residents and the population of Hradec Kralove is 92 000 – comparable to other Lower Silesian cities like Wałbrzych, Legnica and Jelenia Góra. The research covered a total of 580 municipalities – 168 from Lower Silesia and 412 from Hradec Kralove region. In effect, the number of Polish municipalities, taken into account in the presented study is more than twice lower than in the case of Czech municipalities.

The conducted analyses covered projects carried out by the municipal administration, without taking into account other initiatives implemented in their area. Since the purpose of the study was determining the activities taken up by local governments in attracting the EU funds, other groups of beneficiaries, such as private entrepreneurs, state administration etc., were excluded from the analysis.

The research covered funds from the 2007-2013 programming period which, following the rule of $n+2$ programmes realisation meant, in practice, including the budget years 2007-2015 in the conducted analysis. Both on the Polish and Czech side, the amount of subsidies from the EU sources for co-financing projects was taken into account. This does not mean the total value of implemented projects, additionally covering own contribution of the municipalities, ineligible expenditure and subsidies from domestic sources.

2.2. Data sources

The collected data referred to subsidies from the EU structural funds. Rural development programmes (RDPs) as well as Norwegian and Swiss funds and also those from countries belonging to the European economic area were not taken into account. The information on the value of funds absorbed by the Czech municipalities originated from the database on the EU projects held by the Czech Ministry of Regional Development (Ministerstvo pro místní rozvoj) [17]. In the case of Poland, the data from municipal budget reporting presented in the Local Data Bank of the Central Statistical Office [18] were used. In both cases, financial data for the years 2007-2015 were taken into account. The information on population number in individual municipalities was collected from databases of relevant statistical offices. In the Czech Republic it was the regional database of the Czech Statistical Office (Český statistický úřad, ČSÚ) [19]. Regarding Poland, the data originated from the aforementioned Local Data Bank of the Central Statistical Office. The geolocation of data and municipalities was performed on the basis of NUTS codes (in the Czech Republic) and TERYT (in Poland) using ArcGIS 10.6 software program.

2.3. Research methods

The first research stage consisted in the selection and initial analysis of the values characteristic for income (subsidies) from the EU funds in both Polish and Czech municipalities. Next they were summed up for the years 2007-2015. As the data were presented in national currencies (CZK in the Czech Republic and PLN in Poland), they were converted into EUR at the exchange rate as of February 5, 2018. The exchange rates of national banks were adopted (NBP in Poland and ČNB in the Czech Republic). Next, the values obtained were brought down to a comparable form by calculating them per one resident of an individual municipality. In the second stage, the obtained data (EUR/per capita) were compared against the size of a municipality. The relevant criterion adopted was the number of residents. It was followed by conducting correlation analyses between these two data sets. Pearson linear correlation coefficient was used to analyse the strength of the discussed correlation. The following scale was used to assess correlations between variables:

$0 \leq r \leq 0.3$	weak correlation
$0.31 < r \leq 0.6$	moderate correlation
$0.61 < r \leq 1$	strong correlation

In order to complete this task, a graphical analysis of the correlation was performed in the form of graphs presenting the dispersion of the obtained results. These graphs were supplemented by the trend

line in the form of R^2 regression coefficient. To illustrate the trends, the analysed municipalities were classified into six size groups. Next, the medians presenting values of the obtained subsidies were calculated for them.

The third research stage consisted in visualizing the results in the form of map cartograms. For this purpose, the administrative division maps of the country and the classification methods available in ArcGIS 10.6 programme were used. It was decided to use Jenks natural breaks method – municipalities were grouped into classes with their boundaries designated where there were relatively large differences between data values. This stage aimed at detecting possible spatial correlations and regional variations in the obtained results.

3. Results and discussions

The initial analysis of the collected characteristics' values allows concluding that the size of subsidies obtained by the municipalities was highly diverse. On the Polish side, the minimum value was EUR 48 (Zawidów), whereas the maximum one was as much as EUR 10.779 per capita (Zagrodno). On the Czech side the respective values were as follows: EUR 2 (Kvasiny) and EUR 6.932 per capita (Jetřichov). The median value in Lower Silesia was EUR 999 per capita and in Hradec Kralove region – EUR 108 per capita. The median value shows that the size of subsidies obtained by the Lower Silesian municipalities was over 9 times higher than in the Czech municipalities. These values themselves prove the greater importance of the EU funds in the practice of Polish municipalities functioning. Therefore, the impact of administrative structures on the scope of performed tasks is clearly visible. Extensively fragmented Czech municipalities generally have a smaller scope of competence. Their delegation to regional and national level means that the EU subsidies are being transferred along with these competences.

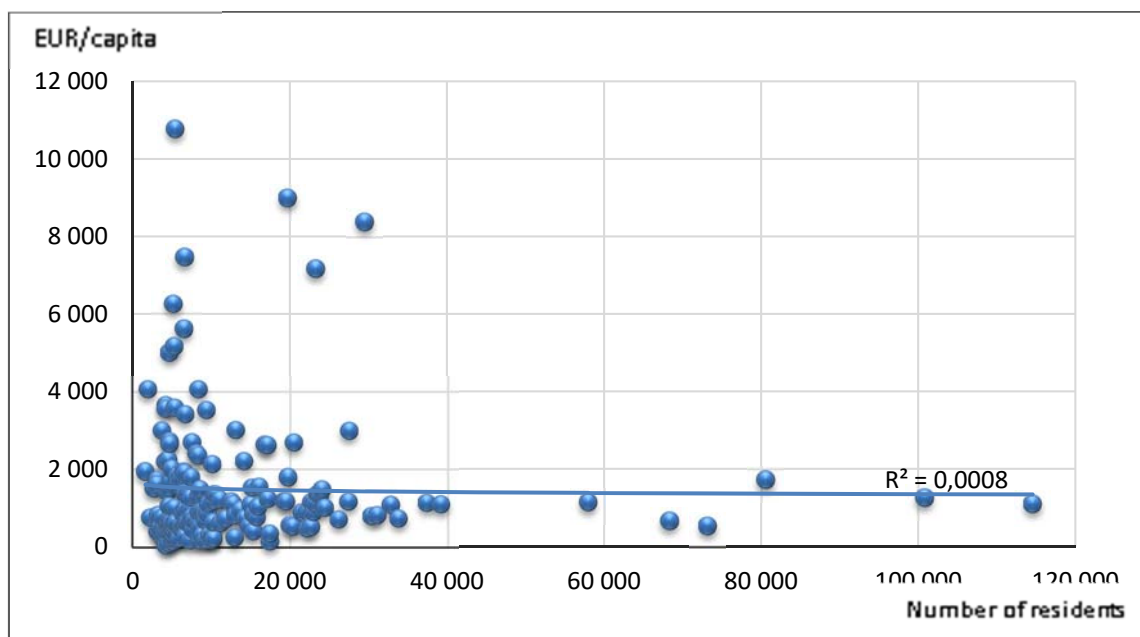


Figure 1. The amount of subsidies (EUR/per capita) vs. the size of municipalities

Comparisons of the amount of absorbed subsidies against the size of municipalities were carried out separately for the municipalities on Polish and Czech side. In the first case, the value of the correlation coefficient between the subsidy size (EUR per capita) and the number of population in the municipality (economies of scale effect) was 0.0566. On the Czech side the correlation value was even lower and amounted to 0.0075. In both cases it practically indicates the absence of such correlation. Graphic

analysis of the data is presented on Figure 1. On Polish side the value of R^2 coefficient was 0.0008, whereas on the Czech one 0.0169, which means that the relative subsidy value is hard to be explained by its correlation with the municipality size. Such approach also lacks grounds due to an extensive dispersion of the obtained results. It is more justified to decline any presence of linear correlation in this case.

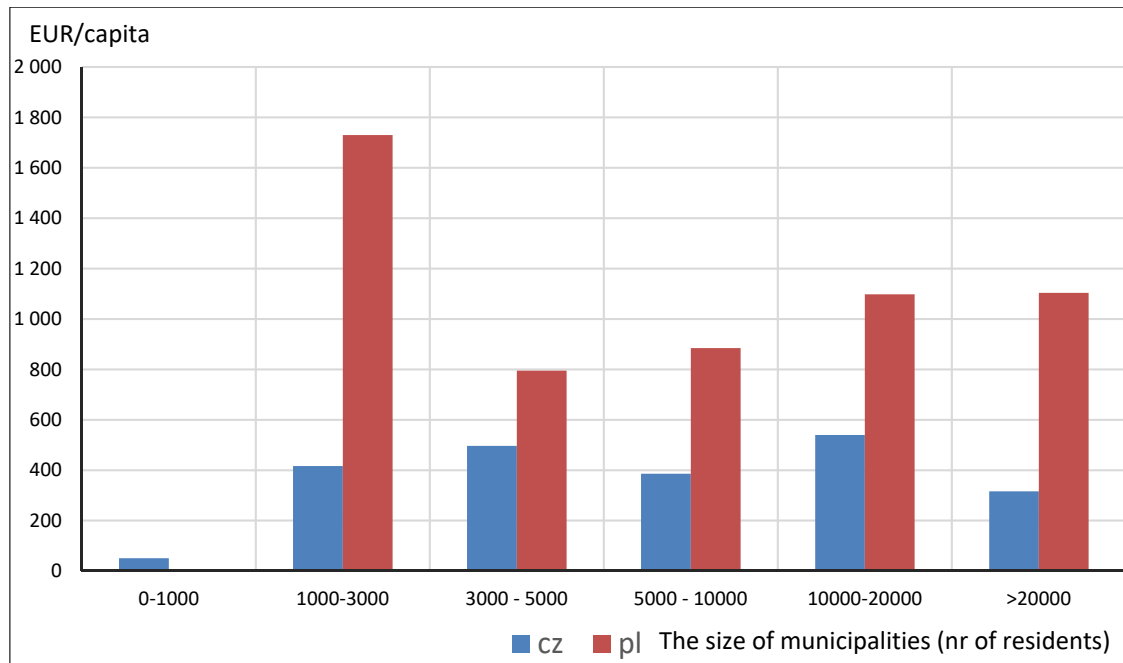


Figure 2. The median of the amount of subsidy in individual municipalities

The situation does not change either after classifying the analysed municipalities into smaller groups and calculating the medians of subsidies for them. Figure 2 presents the results of such analysis. The smallest group (0-999 residents) does not include any Lower Silesian municipality, therefore it covers only Czech municipalities. Apart from the dominating values in Polish municipalities, the absence of linear correlation between the amount of subsidies and the size of municipalities is clearly visible. On the Polish side, the relatively highest subsidies (1 730 EUR/per capita) are granted to the smallest municipalities (1 000 – 2 999 residents). In the next group (3 000 – 4 999 residents) the discussed value is the lowest (795 EUR/per capita) and stabilizes at the level of 1 100 EUR/per capita in larger groups of municipalities. On the Czech side the situation is slightly different – the smallest municipalities (<1 000 residents) are characterized by the lowest subsidies (only 51 EUR/per capita). It results from smaller competencies of the smallest units. It is worth highlighting that such situation does not occur on the Polish side, where all municipalities, regardless of their size, have the same scope of competence. In subsequent groups of municipalities these values increase to reach two peaks (approx. 500 EUR/per capita) in the groups of 3 000 – 4 999 and 10 000 – 19 999 residents. In the remaining groups (1 000 – 2 999, 5 000 – 9 999 and > 20 000) these values are lower (approx. 300 – 400 EUR/per capita).

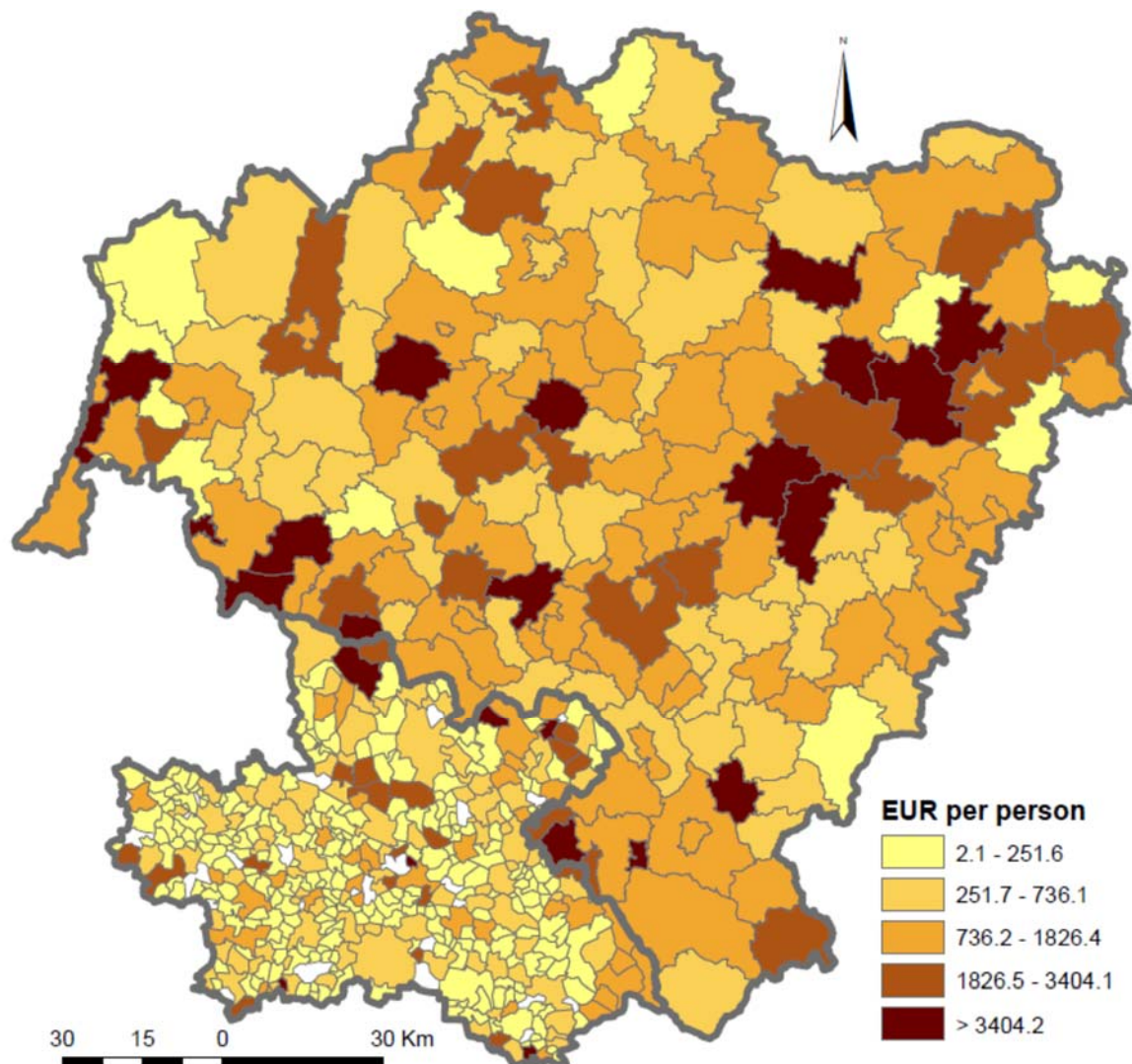


Figure 3. Spatial distribution of subsidies per resident in the municipalities of Lower Silesia and Hradec Kralove region

The above research results clearly show that the correlation between the relative amount of EU subsidies received (per capita) and the municipality size cannot be confirmed. It applies to both the Lower Silesian municipalities and the ones located in Hradec Kralove region. Therefore, it can be concluded that the economies of scale are not present in this respect.

The final stage of the conducted research was the spatial analysis of subsidies value per capita. The underlying motive was to study the efficiency of functioning depending on the location. The results are presented on Figure 3. It is hard to identify spatial correlations on the Polish side. On the Czech side some centres of increased activity, grouped primarily around larger cities, can be detected. Peripheral areas are usually characterized by lower subsidies. Such polarization type of model may result from the diversity of municipal sizes – small municipalities (< 1 000 residents) with smaller competences dominate in the areas distant from cities. As opposed to municipalities in Poland, Czech municipalities have diversified competencies depending on their population number. As it has already been indicated, lower competences may result in relatively smaller amounts of subsidies.

4. Conclusions

The average Lower Silesian municipality is 10 times larger than the one located in Hradec Kralove region. Such diversity in the size of municipalities is reflected in the scope of competences and the scale of some services decentralization. Therefore, Polish municipalities remain more frequent direct beneficiaries of the EU projects than their counterparts on the Czech side. On the Czech side, the regional authorities and the central government administration are of greater significance in the implementation of structural programs. It is also reflected in the average amount of subsidies absorbed by municipalities – in Poland the median value was 999 EUR/per capita against only 108 EUR/per capita in the Czech Republic. Therefore, in accordance with Devas's and Delay's [6] standpoints, the scope of decentralization depends on the fragmentation degree of the basic level of field administration. Analogically, our research shows that Polish municipalities exert higher impact on the local politics development.

Despite the diversity of funds consumed by the municipalities, both on Polish and Czech side, the economies of scale effect have not been proven in our research. Correlations between the size of municipalities and the amount of funds obtained in both regions were very low. The graphic analysis does not show any linear correlation due to an extensive dispersion of results. It was confirmed by the analysis covering groups of municipalities classified by their size. On the Polish side, the signs of the dis-effect of scale can even be detected – the smallest municipalities were characterized by the highest median values of the obtained EU funds (EUR/per capita). On the Czech side, the implementation of funds in individual groups of municipalities was more balanced. Our results remain in line with the earlier observations regarding this problem both on the Polish [12] and Czech [13] side. Therefore, non-reflective argument of economies of scale as the basis for consolidation projects should be cautiously used. Institutional factors seem to be of higher importance here.

The conducted spatial analyses allowed analysing places characterised by the concentration of the EU funds implementation. It is hard to find spatial correlations on the Czech side, the amount of EU subsidies depended on the efficiency in obtaining them rather than in the location. A slightly different picture was characteristic for the Polish side featuring more extensive polarization – the centre of higher activity were grouped in the Wrocław agglomeration. It probably reflects on the larger income potential of the municipalities, however this thesis should become the subject of further, in-depth research.

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