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## QUANTIFICATION OF THE SIZE OF LOCAL PUBLIC ADMINISTRATION: EMPIRICAL STUDY OF POLISH REGIONS

**Abstract.** The issue of the size of public administration is commonly researched. Most of the times this topic is tackled from a macroeconomic perspective, considering local and central administration together. That is why this paper uniquely takes on the local perspective only, analysing the size of local government (i.e. size of public administration at the local level) in Polish regions during the period of 2009–2013. Based on the existing literature, we chose five variables of the size of local administration at the commune level connected with employment and reflecting costs related to the functioning of local administration structures. All indicators were expressed per capita. With the usage of ANOVA, we proved significant differences in the size of public administration across regions for all variables. To compare the size of local governments across regions, we ranked all variables individually, and then we calculated the average ranking for all variables. Our findings have clear implications for policy makers, providing information about the regions with the biggest/smallest size of public administration at the local level. Our study suggests simple and accessible tool for continuous reporting on the size of public administration in order to monitor costs also in the upcoming years. The results of the monitoring could also be used for the establishment of an incentive program for regional policy representatives.

**Keywords:** size of local administration, local government, measurement of government size, bureaucracy size.

### 1. INTRODUCTION

The problem of measuring the size of a government, as well as attempts to optimise its size from the point of view of the economy is the topic of continuous debate and abounds in numerous attempts of researchers (see: Scully, 2000, 2002,

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2003; Handoussa and Reiffers, 2003; Tanzi and Schuknecht, 2007; Forte and Magazzino, 2011; Magazzino, 2012; Di Matteo, 2013; Kolařík *et al.*, 2014, Di Liddo *et al.*, 2015, Afonso and Jalles, 2016; Obydenkova and Salahodjaev, 2017, p. 7, and many others). The scholars mentioned above highlight the problem of methodology in measuring the size of a government and including its adaptation to the lower levels of territorial division of a country. This fact is particularly important because the size of public administration, and particularly of local administration is important at least for a few reasons and it expands far beyond academic discussion.

The size of public administration is a synthetic indicator of the bureaucracy in a country (see: Evans and Rauch, 1999; Dahlström *et al.*, 2010), and shows the costs that it creates for the community which is funding its functioning. Thanks to the developed methodology of government size measurement it becomes possible to make an economic evaluation of the achievements of the authorities from the point of view of the size of its structures (Karras, 1996). At the same time, knowledge about the needs and expectations of the society, as well as assessing the effectiveness of implementation of the tasks of civil servants to the society's satisfaction, should move the discussion about the size of public administration to the lowest level of territorial division of the country (Sirait, 2017). In Poland it is created by local government, which has a number of rights to set the local law. Moreover, it has the highest financial autonomy (among all local government units), is placed closest to the inhabitants and spends funds co-created by citizens. Combining the effectiveness of satisfying the collective needs with the objective limitation of public funds, a natural question arises about the size of the structures of the local authorities responsible for their execution. The cost of its operation is connected with an objective competition between the scale and range of viable public tasks, financed from the same local budget.

The lowest level of territorial division of a country shows considerable variation because of its generic characteristics (in Poland it is possible to have urban communes, rural communes, urban-rural communes and cities with district status), the size of budgets, and the level of socio-economic development. Those differences are an argument to preserve the correlation between the size of the local government and individual conditions of a specific territory (Fukushige and Shi, 2016). The objective criterion here is the number of inhabitants for whom public administration services are provided. In this case, both hypertrophy of public administration and its small size are unfavourable. Meanwhile, despite the justification for the government size measurement, the studies of its scale are provided mainly for the whole country, not for the local level. The existing literature on the size of public administration does not exhaust this concept and it does not indicate a single, unified measurement method which would move from the central level down and fit all of the components of public administration in Poland.

Keeping in mind the objective justification for measuring public administration size at a local government level and setting its size to local conditions, the authors adopted the goal to fill in that blank space in research. The purpose of this article is to develop – on the basis of available official statistics – tools that provide measurement of public administration size at the local level in Poland. Those tools include several complementary dimensions. It is especially important to improve the reliability of measurements and to ensure their credibility. It is necessary to ensure their substantive correctness, according to the number of analysed comparative perspectives. Several points of view not only provide a wider comparative study, but also increase the methodological credibility of the tools.

As an object of analysis, Poland could be described in several aspects. Those aspects are necessary in order to understand the country's specifics and build a background for further analysis. Poland is a country with a level of government spending equal to 46.9% of GDP, while the overall tax burden equals 76.0% of domestic income. At the same time, public debt is equivalent to 51.3% of GDP (The Heritage Foundation, 2017). The territorial division of the country includes: 16 regions, 314 districts, 66 cities with district status, and 2478 communes, including: 302 urban communes, 1555 rural communes, and 621 urban-rural communes (The Central Statistical Office of Poland, 2017). Based on the general government (GG) finance statistics for the year 2015 (data for 2016 for the whole GG sector are not available yet), all territorial units generated 20.5% of entire GG revenue. The share of territorial units' expenditures in the entire GG expenditures was equal to 19.4%. Those figures show the level of fiscal decentralization and inform about the scale of redistribution, through the territorial division of the country (Polish Ministry of Finance, 2017).

In 2016, the scale of employment in public administration (including defense and compulsory social security) was 647.5 thou. people. Time worked per one employee was almost equal to the average for all sections of national economy, but the average monthly gross wage was almost 25% higher than the average for all the sections. Those figures implicate questions about the proper size of public administration structures. Focusing only on public administration, we can observe another interesting fact. The number of people working in public administration structures in Poland (excluding defense and compulsory social security) is 447.2 thou. (i.e. 181.1 thou. people work in state administration, 265.1 thou. people work in local government administration, and 996 people work in local government appeal councils). According to those facts, the majority of public administration structures concentrate at the local level and redistribute not the majority, but a minority of public resources. This is another, although not the last argument why it is necessary to analyse the structures of public administration (The Central Statistical Office of Poland, 2017).

The main goal of this article is to build a rating based on all the analysed criteria to show the size of public administration at the local level in the context

of regions in Poland. Implementation of the main purpose is combined with the development of detailed ratings, showing the size of local administration for each of the benchmarks individually over the period of 2009–2013. The adopted research concept makes it possible to verify the extent in which each of the adopted criteria of comparison individually relates to the results of the ranking based on all the comparison criteria. In other words, the planned research gives an answer to the question of which of the regions examined during the analysed period had the biggest/smallest size of public administration. The obtained information may be used by policy makers to investigate the particular costs of regions in detail and to inspect whether some of the costs could be reduced in order to increase the efficiency of publicly spent resources. The paper further continues with the theoretical framework of the study. The third part of the study describes the collected variables and the empirical approach. The fourth section concludes the paper with suggestions for upcoming research.

## 2. THEORETICAL FRAMEWORK

The first phase of work on the assessment of the size of local administration in Poland is an analysis of methodological approaches applied so far to measure it. Analysis of the literature and the research concepts, despite their diversity, allows to mark some features to standardize the way in which research devoted to the measuring of public administration size is provided. The mentioned characteristics are expenditures associated with the functioning of the public administration (which should be considered in terms of the value of its actions), as well as the number of officials employed in it.

Heller and Tait (1983) express the size of local administration in the number of jobs created in local government structures. A similar position is taken by other authors, including Weiher and Lorence (1991), and Mackenzie (1991, p. 41). Hemming (1991, p. 32), in turn, describes the size of local administration with the level of its total expenditures, and Kalseth and Rattso (1995, pp. 239–251), use the level of expenditures made by local authorities to optimise the size of the local administration.

Baqir (1999, p. 2) uses a slightly different measure. The author uses two different measures to describe the structures of local administration. The first one is total expenditures on local administration, related to commune revenue, and the second one is the number of local government employees in relation to the number of local community. Ivanov *et al.* (2002, pp. 179–217) use three slightly different measures to determine government structure size. The first one is the total value of expenditures necessary to maintain the local administration structures. The second one combines the total value of local government expenditures on public administration with

the total value of budget expenditures in a given year. Finally, the third measure links local government expenditures on public administration with the number of community members. This measure can be defined as a relative burden indicator of the local community through the costs of local authorities' functioning. Garrett and Rhine (2006) also use expenditure indicators in measuring the structures of local government. In their research they collate expenditures on public administration with the number of members of the local community (same as Ivanov *et al.*, 2002). Moreover, the authors extend their analysis by factors responsible for local government growth expressed by increased spending on public administration.

A number of financial measures describing the size of public administration are based on the size of employment. Representatives of such an approach are in particular Sellers *et al.* (2003, p. 9) and Higgins *et al.* (2006), who independently of financial measures of public administration size, use indicators based on the size of employment. In this place it should be noted that such a measure as the level of public administration employment is considered in research from two points of view. The first of them gives an answer to the question about the number of people employed in local government units (i.e. reported number of employed persons), while the second one relates employment in local governments to the total size of employment in public administration (i.e. central and local administration structures are added together).

Garrett and Rhine (2006) next to the financial measures use a measure based on the size of employment in all public administration structures. It is necessary to point out that unlike other authors, they do not compile employment in local government with the total size of employment in public administration in the country. Authors relativize public administration employment with the level of total employment on the territory under the local government. In that way they create a synthetic measure of etatisation in local administration on the basis of overall employment on the local government's territory.

Another approach to the studies is presented by Phillips and Chen (2007, p. 134). The authors use shares of local government expenditures in the entire (central and local) public administration expenditures intended for consumption as a measure of local public administration size, next to the classic measure linking expenditures on public administration with total local government expenditures. Moreover, the authors move the analysis devoted to financial measures as quantifiers of local governments sizes to the revenue side of the local budgets. For this purpose, Phillips and Chen relate local government revenue to public spending on consumption, and in that way create a measure expressing the degree of possibility to cover by the revenue all current expenditures (i.e. consumption expenditures) related to the cost of local government structures maintenance. Dollery and Robotti (2008, p. 28) use a measure of local government structure in the form of "the cost of public services provision" in the area of the territorial unit and express it through the value of local government expenditures on public services related to

the number of inhabitants of the local community. At the same time, the authors express the concept of public administration size from a spatial point of view. In accordance to this concept, local administration structures could be measured with the ratio of local government employees to the territory occupied by the entity.

Labonte (2010) in his work refers to a measure of public administration diversifying central administration (i.e. central government) and local administration (i.e. local and supra-local government). For this purpose, the author uses the total amount of expenditures incurred on each of these structures, but also the value of public expenditures per capita, and finally also the scale of employment in public administration. At the same time, Labonte expands on the presented measures, and creates a new indicator that refers to the value of the entire public administration revenues. Therefore, the submitted stand should be taken as the most comprehensive approach to measuring the size of public administration structures. In that approach, the author combines measures based on employment and measures based on finances. Additionally, Labonte expands the educational value of public administration size measures, by dividing entire public resources into budgetary revenues and expenditures.

Boex (2012) expresses the size of public administration not only through the overall level of expenditures incurred by a local government, but argues that size of the local government should be measured by the level of expenditures decentralization, defined as the value of local government spending on own tasks. The author reiterates the position of Labonte about the appropriateness of the expression of decentralised administration through revenues, and argues that it is necessary to use that measure to examine local government size. In support of his position, Boex proves the lack of adequacy between the costs of public tasks realisation and efficiency of budgetary revenue sources.

Pevcin (2012, pp. 705–724) extends the measures of public administration using total expenditures per capita incurred by local government authorities to commune tasks realisation. Another approach is represented by Anderson, who uses employment in commune structures as a measure of local government size. Moreover, Anderson explores the size of public administration not only from the point of view of the local level, but through each of levels of public administration structures (Anderson, 2012, p. 35). A similar approach is presented in the works of such authors as Bardes *et al.* (2014, p. 392), and Garand *et al.* (2014, p. 613).

The newest works devoted to public administration size use similar measures. Obydenkova and Salahodjaev (2017, p. 7) use general government consumption expenditure (% of GDP) as a measure of government size. A similar approach is presented by Stephan *et al.* (2015). The authors express government size using total government expenditure as a percentage of GDP, same as Di Liddo *et al.* (2015), Sabra (2016) and Sriyana (2016). A slightly different approach is presented by Afonso and Jalles (2016). To express government size, the authors use transfers and subsidies (expressed as percentage of GDP), the tax system (expressed as top marginal tax rates), government consumption expenditures (expressed as percent-

age of total consumption), and the number of government enterprises. At the same time Sineviciene and Railiene (2015) use total general government revenue (% of GDP) as a measure of the size of government. Moreover, Bournakis and Tsoukis (2016) describe the size of government with tax revenue as a share of GDP. Finally, Skica *et al.* (2016) use a mix of measures to describe government size. The authors use a wide range of different measures of general government size, based on revenues, expenditures, deficit and debt, as well as public employment.

The review of works devoted to the methodology of public administration size measurement allows several conclusions to be formulated. The first one is the fact of a predominance of works devoted to public administration size measurement based on public administration in the whole country, and a minority of works devoted to measurement of public administration only at a local level. Secondly, although the presented methodological approaches relate to each other, the results given by each of them are completely different. A perfect example of this fact is employment, presented from the point of view of entire public administration structures, local government employees in all local government units, and finally the number of local government employees in relation to the territory under the local authority's control. Thirdly, the above research review justifies elaboration of the methodology based not on one, but on several measures of public administration size, meaning measures based on the scale of employment in local government structures and financial measures. This approach is a reference to the existing literature canons of the assessment of the size of public administration, and opens the field for their modification and adaptation to local government structures in Poland.

### 3. DATA AND EMPIRICAL APPROACH

Zhang *et al.* (2016) or Andrews and Boyne (2009) point out that it is important to analyse the size of the public sector with the lowest available administrative units. Inspired by their research, the purpose of this study is to investigate the size of local public administration in Polish regions during the period 2009–2013. To realise this goal the data that describes the local public administration located in every Polish region were used. Our empirical approach is based on the comparison of five indicators of the size of the public administration. Firstly, the collected variables are described and for each indicator the average values per capita over the analysed period are presented. Secondly, analysis of variance (ANOVA) is used to investigate whether there were statistical differences between the variables across regions. Finally, a ranking for each of the indicators is created and an average ranking is calculated to identify regions with the largest and smallest sizes of local government.

Table 1 presents the five indicators which are used for empirical analysis and their definitions. The selected variables are:

1. Average employment in local government administration by regions (in persons).
2. Expenditures of communes for salaries and personal expenses (in PLN).
3. Expenditures of communes for communal administrative offices (in PLN).
4. Expenditures of communes for external services (in PLN).
5. Expenditures of communes for purchases (in PLN).

All variables express employment and expenditures of communes located in Polish regions. They do not present the level of employment and expenditures in regional administrative structures.

Table 1. Variables selected for the study describing the size of local government at the commune level by region in Poland

Variable	Description
Average employment in local government administration by region (in persons)	It reflects the average number of employees in the local government and cities with district rights in cross-section of regions.
Expenditures of communes for salaries and personal expenses (in PLN)	It indicates the value of expenses of local government units at the commune level for salaries and rewards for employees and officials, derivatives, payroll (social insurance and health fund work), councillors' allowances of members of committees and teams.
Expenditures of communes for communal administrative offices (in PLN)	It indicates the value of expenses of local government units at the commune for the functioning of the commune buildings (i.e. commune offices) and administration.
Expenditures of communes for external services (in PLN)	It indicates the value of expenses of local government units at the commune level for the purchase of different types of services: Internet, mobile, translation, repairs, etc.
Expenditures of communes for purchases (in PLN)	It indicates the value of expenses of local government units at the commune level for a variety of purchases: materials, equipment, software, paper, food, equipment and armaments, energy, etc.

Source: authors' elaboration based on the Polish Ministry of Finance (2017), the Central Statistical Office of Poland (2017) and Moja Polis (2017).

All variables have been calculated per capita in order to make sure that they are comparable across regions (Dvouletý, 2017). Moreover, the financial variables were adjusted for inflation by GDP and converted into real prices of 2010. GDP deflator was obtained from the EUROSTAT database (2017).

Table 2 represents the average values for the variables for the period of 2009–2013. The analysed variables were obtained from the databases of the Polish Ministry of Finance (2017), the Central Statistical Office of Poland (2017) and Moja

Polis (2017). During the analysed period, an average of five people per thousand of inhabitants were employed in public administration at the commune level by region. On average, 1 299 PLN per capita was spent on salaries and personal expenses of communes, and 425 PLN per capita was spent on external services. Expenditures of regions on purchases were on average 198 PLN per capita, and expenditures on administrative offices were on average 290 PLN per capita.

Table 2. Average values of indicators over 2009–2013 (Regions are ordered based on the size of the last column's indicator. All variables calculated per capita and financial variables adjusted for inflation with a GDP deflator)

Region	Average employment in local government administration by region (in persons)	Real expenditures of communes for salaries and personal expenses (in PLN)	Real expenditures of communes for external services (in PLN)	Real expenditures of communes for purchases (in PLN)	Real expenditures of communes for communal administrative offices (in PLN)
Podkarpackie	0.004	1,299.753	295.664	180.669	254.713
Małopolskie	0.004	1,318.758	465.397	199.104	255.834
Kujawsko-pomorskie	0.005	1,310.201	399.445	196.523	264.924
Lubelskie	0.004	1,318.416	295.280	172.060	270.345
Wielkopolskie	0.004	1,224.695	435.984	191.808	270.859
Podlaskie	0.005	1,348.631	334.635	201.008	276.366
Śląskie	0.004	1,365.307	409.175	214.390	280.576
Świętokrzyskie	0.005	1,259.256	340.598	193.695	285.555
Pomorskie	0.004	1,322.115	571.342	189.611	286.424
Warmińsko-mazurskie	0.005	1,262.173	322.321	188.472	287.249
Opolskie	0.004	1,270.929	337.553	195.876	292.760
Lubuskie	0.005	1,244.281	298.614	199.828	301.186
Łódzkie	0.005	1,263.934	451.144	212.398	314.348
Zachodnio-pomorskie	0.005	1,264.936	437.811	191.693	320.093
Dolnośląskie	0.005	1,207.351	592.544	205.732	321.657
Mazowieckie	0.005	1,502.278	816.728	240.516	366.480
Average	0.005	1,298.938	425.265	198.336	290.586

Source: authors' elaboration based on EUROSTAT (2017), Polish Ministry of Finance (2017), Central Statistical Office of Poland (2017) and Moja Polis (2017).

Table 2 also reveals substantial heterogeneity across regions. To test whether there were statistically significant differences, we employed analysis of variance (ANOVA).

The results of the test for each of the variables are presented in Tab. 3. At a 1% level of statistical significance, we were able to reject the null hypotheses stating that the indicators of the size of public administration were on average the same, and we proved that each of the variables was different across Polish regions during the analysed period.

Table 3. Results of ANOVA, testing statistically significant differences across regions (N = 80)

Variable	F-Statistics	P-value	Significant differences
Average employment in local government administration by region (in persons)	23.07	0.00	Yes
Real expenditures of communes for salaries and personal expenses (in PLN)	24.03	0.00	Yes
Real expenditures of communes for external services (in PLN)	110.47	0.00	Yes
Real expenditures of communes for purchases (in PLN)	13.47	0.00	Yes
Real expenditures of communes for communal administrative offices (in PLN)	3.82	0.00	Yes

Source: authors' elaboration.

To compare the size of local government across regions, all variables were ranked individually, and then a simple average across the obtained rankings was calculated to obtain the final ranking (see Tab. 4). When it comes to average employment, the lowest employment was in Małopolskie, followed by Wielkopolskie and Śląskie. On the other hand, the highest employment was in Zachodniopomorskie, Warmińsko-mazurskie and Świętokrzyskie. Expenditures of communes for salaries and personal expenses were lowest in Dolnośląskie, Wielkopolskie and Lubuskie and the highest ones were in Mazowieckie, Śląskie and Podlaskie. Expenditures of communes for external services were lowest in Lubelskie, Podkarpackie and Lubuskie, and highest in Mazowieckie, Dolnośląskie and Pomorskie. Expenditures of communes for purchases were lowest in Lubelskie, Podkarpackie and Warmińsko-mazurskie, and highest in Mazowieckie, Śląskie and Łódzkie. And finally, expenditures on administrative offices were lowest in Podkarpackie, Małopolskie and Kujawsko-pomorskie, and highest in Mazowieckie, Dolnośląskie and Zachodniopomorskie.

Table 4. Calculated rankings for Polish regions over 2009–2013  
(regions are ordered based on the last column's average rank)

Region	Average employment in local government administration	Real expenditures of communes for salaries and personal expenses	Real expenditures of communes for external services	Real expenditures of communes for purchases	Real expenditures of communes for communal administrative offices	Average rank
Podkarpackie	6	9	2	2	1	4.0
Lubelskie	7	11	1	1	4	4.8
Wielkopolskie	2	2	10	6	5	5.0
Warmińsko-mazurskie	15	5	4	3	10	7.4
Małopolskie	1	12	13	10	2	7.6
Opolskie	5	8	6	8	11	7.6
Świętokrzyskie	14	4	7	7	8	8.0
Lubuskie	12	3	3	11	12	8.2
Kujawsko-pomorskie	13	10	8	9	3	8.6
Pomorskie	4	13	14	4	9	8.8
Podlaskie	9	14	5	12	6	9.2
Śląskie	3	15	9	15	7	9.8
Dolnośląskie	8	1	15	13	15	10.4
Zachodnio-pomorskie	16	7	11	5	14	10.6
Łódzkie	11	6	12	14	13	11.2
Mazowieckie	10	16	16	16	16	14.8

Source: authors' elaboration.

The average ranking is depicted also in the map below (Fig. 1). The smallest local government size during the analysed period of 2009–2013, according to our analysis, was found in Podkarpackie, Lubelskie and Wielkopolskie. On the other hand, the largest size of local government was found in Zachodniopomorskie, Łódzkie and Mazowieckie. We believe that the obtained rankings have two main important implications for Polish policy makers. Firstly, they provide overview of the size of local public administration for the years 2009–2013. The obtained

information may be used by policy makers to investigate the particular costs of local administration across regions in detail and to inspect whether some of the costs could be reduced in order to increase the efficiency of public spending.

The conducted analysis reveals that some of the regions (i.e. local administration located in their territory) are more cost-efficient compared to others. More cost-efficient regions could serve as inspiration for the less efficient ones. Secondly, we believe that we have offered to policy makers a simple and accessible tool for continuous reporting on the size of public administration in order to monitor costs also in the upcoming years. The results of the monitoring could also be used for the establishment of an incentive program for regional policy representatives.

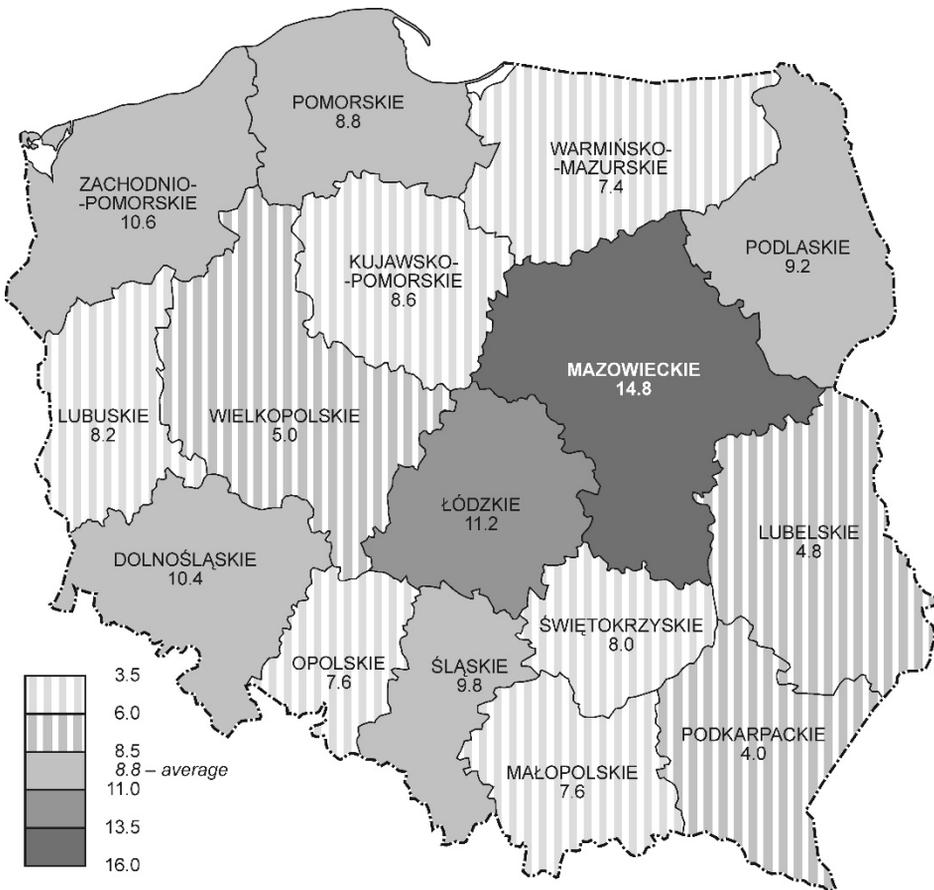


Fig. 1. Average ranking depicted on the map of Poland

Source: authors' elaboration.

#### 4. DISCUSSION AND CONCLUSIONS

The problem of measuring government size, as well as attempts to optimise that size from the point of view of the economy is nowadays a topic discussed by many economists and regional policy makers. Scholars highlight the need to analyse the size of the public administration at the level of the lowest administrative units. That is why this paper addresses the local perspective only, analysing the size of public administration in Polish regions during the period of 2009–2013. Based on the existing literature, we chose five variables of the size of local administration at the commune level, connected with employment and reflecting costs related to the functioning of local administration structures. All indicators were expressed per capita in order to achieve comparability across regions. With the usage of ANOVA, we proved statistically significant differences in the size of public administration across regions for all variables. To compare the size of local governments across regions, all variables were ranked individually, and then the average ranking was calculated for all variables. Our analysis has therefore important implications for policy makers, showing regions with the largest/smallest size of public administration. Following this approach, we might discuss the following implications for the regional policy makers.

According to our results, policy makers should focus not only on the average ranking, but also or even mainly on the separate rankings. It is especially important to reveal the reasons which decided about the particular region's location in the overall ranking. According to this point of view, to improve the situation in Podkarpackie it is necessary to reduce real expenditures for salaries and personal expenses. They are connected with the scale of employment in local administration. In other words, to improve the situation of local administration in Podkarpackie it is necessary to reduce employment in local government structures, because the costs of salaries and personal expenses are a result of the scale of employment. Similar measures could be proposed to the Lubelskie region.

In the case of Wielkopolskie, high expenditures for external services are responsible for its place in the ranking. In Warmińsko-mazurskie, two reasons decide about the region's position. The first one is employment in local government administration, and the second one are expenditures on communal administrative offices. Next to Warmińsko-mazurskie the ranking has Małopolskie. To make public administration structures healthier it is necessary to solve three problems: high expenditures for external services, high salaries and personal expenses, and finally high expenditures for purchases.

Opolskie and Małopolskie are on the same position in the public administration structure ranking, but the problems of those regions are slightly different. The biggest weakness of these regions is a high level of expenditures on communal administrative offices. At the same time, Świętokrzyskie has the biggest problem

with the scale of employment in local administration. This is the main reason responsible for its place in the ranking.

To improve the situation in local administration structures in Lubuskie, policy makers have to focus on three types of problems. First, the local authorities in the Lubuskie region need to reduce the scale of employment in public administration. As a result, the scale of expenditures on administrative offices will decrease, and at the same time the expenditures for purchases should decline.

In the case of administration structures of Kujawsko-pomorskie, at first sight the situation is similar to the Podkarpackie region, but the problem exists on an even larger scale and it is not only connected with the scale of employment and the costs of salaries. There are two additional problems. The first one is connected with expenditures for external services, and the other one with expenditures for purchases. Regional authorities might devote more attention to becoming self-sufficient, rather than staying dependent on external services, which are commonly quite expensive.

The main problems for the Pomorskie region are high expenditures for external services and high personal expenses per capita. Another reason why Pomorskie administration structure is placed 10th in the ranking is connected with expenditures for communal administrative offices. In other words, in this case the number of local government employees is smaller than in the other regions, but the costs are much higher. Moreover, only three regions have higher costs of the functioning of public administration structures (including the Mazowieckie region, with the capital of the country).

The biggest problems for Podlaskie are connected with two variables. The first one is expenditure for salaries and personal expenses. In comparison with Pomorskie public administration structures, the relationship between employment and its costs looks much better in the case of Podlaskie. The second problem refers to expenditures for purchases. To improve the ranking position of Podlaskie, it is necessary to solve these problems of local administration structures. The place of Śląskie in the ranking is a result of the same factors (i.e. expenditures for salaries and personal expenses, and expenditures for purchases). The only difference is that the cost of public administration structures in relation to the scale of employment in Śląskie looks much worse than in Podlaskie.

Dolnośląskie could be described as the region with the lowest cost of public administration structures in the whole country. At the same time, the region has the second position from the point of view of high expenditures for external services and for administrative offices, and the fourth position from the point of view of high expenditures for purchases. At the same time, Zachodniopomorskie has the biggest number of local government employees, and the third highest level of expenditures for administrative offices. Quite high expenditures for external services remain an unsolved problem.

The Łódzkie region could be described as a region with high expenditures for purchases, and almost equally high spending for communal administrative offices,

and external services. There was one more thing that decided about the region's position in the ranking: the level of employment in public administration structures. Only five regions in the whole country have a larger number of local officials.

Finally, the biggest public administration structures are found in the Mazowieckie region, which holds the capital of Poland. Local administration structures spend the highest amount of money on administrative offices, purchases, external services, salaries and personal expenses. Paradoxically, it is not so obvious. We cannot speak of 'the case of the capital' here. It is because of the scale of employment in the Mazowieckie region. It is the seventh biggest in the whole ranking. It is thus necessary to examine local government budgets and find the reasons why smaller public administration structures cost more than in the other regions. There is probably space for some savings, and an opportunity to improve the efficiency of spending.

The presented analysis provides only the first step in the process of evaluation of the public administration structure and therefore there several limitations which need to be stated. We have studied public administration from an aggregated perspective and therefore we could not dive into the decision making processes and local conditions, which might be different for each of the studied regions. This study is also limited by the analysed period of years 2009–2013. We believe that it might be interesting to extend the study onwards to validate the presented findings. Thus, it is very important to carefully investigate the sources of improvements and cost efficiency with respect to regional conditions. This might be a challenging topic for future research too. Nevertheless, even now the results allow us to formulate some recommendations for policy makers. They need to look more carefully at local administration structures, from both the financial and the employment point of view. We provide policymakers with a simple and accessible tool for continuous reporting on the size of public administration in order to monitor costs also in the upcoming years. This might serve as a starting point for deeper analysis of local administration, indicating 'candidate regions' with extreme values for local administration. The obtained information may be furthermore used by policy makers to investigate the particular costs of local administration across regions in detail and to inspect whether some of the costs could be reduced in order to increase the efficiency of public spending. The results of the monitoring could also be used for the establishment of an incentive program for regional policy representatives.

Moreover, our study fills the gap in regional research on the size of public administration in Central and Eastern European (CEE) countries and we believe that our empirical approach may serve as inspiration for other scholars in the field. We would also like to encourage policy makers to cooperate more with researchers within empirical research and to analyse the size of public administration at the lowest available administrative levels, such as LAU 1. Such analyses may serve as an important tool for debates about the efficiency of public administration.

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