DIVERSIFICATION SYNTHETIC INDICATOR FOR EVALUATING THE FINANCIAL CAPACITY OF LOCAL GOVERNMENT. THE CASE OF POLISH VOIVODESHIPS.

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Abstract

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Financial situation is a fundamental issue for the local government. Financial problems could result in insolvency that is why the analysis of financial situation is essential not only for current management, but also for the protection against side effects of economic downturn. One of the most important determinants of the development of the local government unit is its financial situation, which has an undeniable impact on the whole activities conducted by the local government. The aim of the article is to present the financial situation of the territorial self-government – the voivodeship, and its changes in the years 2009–2014. The voivodeships which are in good financial situation are more competitive and efficient in conducting development policy. The best voivodeships in 2014 and 2011 were Mazowieckie and Dolnośląskie, in 2009 – Mazowieckie and Łódzkie; in 2014 were Lubuskie and Opolskie, in 2011 – Kujawsko-pomorskie and Warmińsko-mazurskie, and in 2009 – Lubuskie and Warmińsko-mazurskie. The value of the index in 2014 fluctuated between 0.16 and 0.59, in 2011 between 0.22–0.64, and in 2009 – 0.16–0.64. The resulting measure depends on the number and type of variables taken for testing. It allows you to identify weaker areas and improved functioning of the unit, if its own position in relation to competitors. The behavior indicated methodology, and partial variables, allows the assessment of individuals between countries.

Keywords: financial situation, budget, income, expenses, synthetic indicator

INTRODUCTION

Modern economy is an economic interlinking system. The regions are developing tanks to the use of their potential and economic prospects (Prus, Wawrzyniak, 2011, 77–92.). Therefore taking actions which aim at increasing the competitive potential of the area is considered important (Barej, 2011). Delegating powers to regional level of local government structures brought up the need of effective and creative management of resources which are in the unit's disposal and which

affect its development and external investments (Busłowska, 2011). The degree of development of individual voivodeships¹ affect the level of their competitiveness. Currently basic factors which affect this process include: modernity, diversity and innovation of the economy, level of development of infrastructure and human capital, natural environment, structure of settlement network, state of infrastructure, financial situation, structure of economy (Sokołowicz, 2008).

¹ in the three level local government in Poland: the basic gmina, the intermediate poviat, the regional voivodeship

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I: Selected variables describing the financial situation of the of voivodeships (per capita)

sphere of income	'	sphere of expenses						
X1. total income	S	X8. total expenses	S					
X2. own income	S	X9. investments expenses	S					
X3. from personal income tax	S	X10. total current expenses	D					
X4. from corporate income tax	S	X11. expenses on debt service	D					
X5. general subventions	D	X12. expenses on agriculture and hunting	S					
X6. grants from the state budget	D	X13. expenses on transport and communication	S					
X7. income from property	S	X14. expenses on housing economy	S					
		X15. expenses on education and upbringing	S					
		X16. expenses on culture and national heritage protection	S					
		X17. expenses on health care	S					
		X18. expenses on public administration	D					
		X19. expenses on social assistance	D					

S – stimulant; D- destimulant. Source: own authoring

The self-government is the employer, the ordering party, the client and the investor. Its activities have direct or indirect influence on the development of the local economy. It is the pillar of the system of public authorities in Poland. The list of tasks of local government includes, inter alia, maintenance and development of the technical infrastructure (roads, bridges), maintenance and development of social infrastructure (education, health service, institutions of culture) and concern for public safety and spatial order (Borodo, 2012; Olak, Pawlik, 2013). Territorial self-government as the subject of economic, political and social life of the region plays an active role in the creation of qualitative and quantitative transformations (Sokołowicz 2008). Factors affecting this process include finance, modernity, variety and innovation of regional economy, the quality of spatial management, the level of infrastructure development and the human capital (Prus, Marszewska, 2009, 267-271). The development of territorial self-government units is long-term process of transformations which is targeted and leads to the improvement of present state (Soboń, Rogozińska-Mitrut, 2000, 3-12) and to the creation of new and the improvement of existing useful features of the unit (Graczyk 2008; Pawlik 2011).

MATERIALS AND METHODS

The aim of the article is to present the financial situation of the territorial self-government – the voivodeship, and its changes in the years 2009–2014. Adopting these years as a reference point resulted from the availability of comparable data. The level of financial situation was determined by the synthetic index method based on the simple characteristics, which are presented in

Tab. I. The data from Central Statistical Office – Local Data Bank were used for the calculations.

At first the variables were chosen based on statistical, substantial and formal criteria. Then the analysis of variables was done. Variables characterized by high spatial changeability (coefficient of variation above 0.20) and high correlation under the extracted groups (coefficient above 0.75) were removed from the set (Zeliaś 2000; Wysocki 1996). The level of the coefficient of variation lay between 0.19–1.22 in 2014, 0.13–1.34 in 2011 and 0.17–2.13 in 2009. Coefficient of correlation had values from –0.80 to 0.98 in 2014 and –0.73 to 0.99 in 2009. X2, X3, X4, X6, X7 (income zone) and X9, X11, X12, X13, X14, X15, X16, X17, X18, X19 (expenditure zone) fulfilled the criteria used.

In the next destimulants changed for stimulant² and stage the normalization of diagnostic variables was done using the unitarization method. It requires the use of the following formula:

$$X = \frac{x_{ij} - \min_{i} x_{i}}{\max_{i} x_{i} - \min_{i} x_{i}},$$

where:

X.....indicates the unitarized value of a feature for the studied unit,

xij....indicates the value of *j* feature for a studied unit,

max.maximum value of j feature, min..minimum value of j feature (Wysocki, Lira 2005).

² by the formula: $x_{ij} := \frac{1}{x_{ij}}$, where x_{ij} - the value of the object number i (i = 1,2...n) characteristic number j (j = 1,2...p).

In case of lack of the model's, the maximum level of accounted indexes values are taken into assessment – $\max\{x_{ij}\}$.

The construction of financial situation indicator is based on non-model method, by means of a formula:

$$s_i = \frac{1}{p} \sum_{j=1}^p x_{ij} (i = 1, 2, ..., p)$$
,

where:

Si..... synthetic meater of financial situation of the municipality in the studied period,

 x_{ij} features of the synthetic index structure,

p......amount of partial indexes used the construction of aggregate measure of financial situation.

The indicator takes a value between [0.1]. Higher value of the index indicates a better situation of the object, lower value - weaker (Dziekański 2015; Bury, Dziekański 2012, 7–29).

Synthetic indicator allows you to divide into groups of individuals analyzed, comprising units statistically similar in terms of financial situation. The analysis made it possible to divide the municipality into 5 groups (distributed 0.20), ie.: $0.80 \le S_i < 1.00$ very good (A); $0.60 \le S_i < 0.80$ good (B); $0.40 \le S_i < 0.60$ average (C); $0.20 \le S_i < 0.40$ poor (D); 0.00 < S_i < 0.20 very poor (Dziekański, 2011, 247–259; Zeliaś, 2000).

At the end they were cleaned by synthetic indicator linear objects (assigning unit to a specified group) by decreasing the value of synthetic indicator. Conducted an assessment of disparities in the level of the indicator's financial situation and examined the relationship between each of the synthetic index (selected units), as well as from own revenue and capital expenditure

The applied method enables the comparison of the degree of the financial situation of one unit in relation to the other. The results obtained enable, inter alia, to identify weak and improved areas of activity of the unit (e.g. through the analysis of the intrigued variables, identify areas of expanded analysis). Their value depends on the number and type of accepted variables, or the range of their complexity.

RESULTS AND DISCUSSION

Financial capacity as a multifaceted element

fundamental factor in determining situations of local self-government are the financial resources and properly planned budget being a tool in the management and planning process. The need to finance tasks by local governments determines their equipment in the specified supply sources (Kosek-Wojnar, Surówka, 2007, 67). The Constitution of Republic of Poland specifies that the income of local government units (LGU) include their own revenues, general

subsidies from the state budget and specific grants. Own revenues include revenues from local taxes and fees, property income, participation in taxes constituting to the state budget income and others, for example, inheritances and gifts (Kożuch, 2008).

In order for the territorial self-government units to fulfil their role in shaping the living and managing situations of the local communities in an active way, they must be equipped in the proper financial resources. The equipment in funds adequate to statutorily imposed tasks is important for the appropriate functioning of these units and their authorities. The proper and effective realization of public tasks by the territorial self-government units is determined by the existence of rational financial system of these units and most importantly the system of their income and budgetary expenses. The financial system should guarantee the proper amount of resources for the tasks, the ability of their unconstrained disposal and most importantly should secure the stability of income (Famulska 2009, Filipiak, Flejterski 2008).

Budget as a primary instrument of socio-economic policy indicates how to shape revenues in view of economic effects and social objectives, and how to spread the burden of public expenditure. Budget analysis allows obtaining information about the sources of financing local government and the directions of its development. It is very vital to get to know, evaluate and interpret properly financial phenomena as well as processes and problems related to the management of the financial resources by local governments. Information about financial situation allows entities of local government to manage public financial resources rationally and fulfill its obligations towards the local community appropriately (Sevic 2006).

Financial situation, as a complex phenomenon, depends, inter alia, from the task performance, achieving budgetary balance, as well as increasing the assets. Its level is influenced by, inter alia, the level of income, financial independence, the amount of investments, the ability to obtain extra-budgetary funds, financial result. These values indicate the level of fulfillment by the government of current tasks resulting from the needs of the residents, and also point to the possibility of incurring liabilities in order to conduct and finance the investments (Ossowska, Ziemińska, 2010, 73-85). It is the ability to finance services using accumulated income in given socio-economic and institutional situations, or settling the liabilities in the given period of time. The financial position is shaped, in addition to measures of a financial nature, by a lot of external situations (economic growth, unemployment, inflation rate, socio-economic situation, processes not influenced by local authorities) and internal situations (pension, location, activating human resources, raising economic activity, improvement of management, the use of natural resources and environmental values associated with a given area (Bieniasz, Gołaś, 2015, 27–37).

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II: Groups Polish of voivodeship's due to the Financial situation indicator in 2009–2014	ΤT·	Groups Polish of	roirodeshin's due to th	e Financial situation	indicator in 2009-2014
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Voivodeship	2009	gr	2010	gr	2011	gr	2012	gr	2013	gr	2014	gr
Mazowieckie	0.64	В	0.63	В	0.64	В	0.55	В	0.61	В	0.59	В
Dolnośląskie	0.37	D	0.47	C	0.50	В	0.59	В	0.57	С	0.57	В
Pomorskie	0.32	D	0.46	С	0.41	С	0.51	В	0.54	С	0.46	С
Śląskie	0.41	С	0.39	D	0.41	С	0.43	В	0.50	С	0.42	С
Lubelskie	0.20	D	0.23	D	0.26	В	0.24	D	0.36	D	0.36	D
Podlaskie	0.41	С	0.26	D	0.30	В	0.28	D	0.36	D	0.35	D
Łódzkie	0.43	С	0.39	D	0.39	В	0.36	D	0.39	D	0.34	D
Podkarpackie	0.26	D	0.30	D	0.33	В	0.27	D	0.34	D	0.34	D
Zachodniopomorskie	0.29	D	0.33	D	0.35	В	0.30	D	0.36	D	0.34	D
Małopolskie	0.41	С	0.33	D	0.35	В	0.35	D	0.36	D	0.33	D
Wielkopolskie	0.41	С	0.38	D	0.40	С	0.32	D	0.36	D	0.33	D
Kujawsko-Pomorskie	0.28	D	0.28	D	0.22	D	0.26	D	0.34	D	0.32	D
Świętokrzyskie	0.31	D	0.26	D	0.27	D	0.32	D	0.30	D	0.28	D
Warmińsko-Mazurskie	0.16	Ε	0.24	D	0.22	D	0.26	D	0.35	D	0.28	D
Lubuskie	0.39	D	0.27	D	0.25	D	0.18	Е	0.26	D	0.23	D
Opolskie	0.29	D	0.29	D	0.23	D	0.21	D	0.24	D	0.16	E

 $gr - group; \ 0.80 \le S < 1,00 \ very \ good \ (A); \ 0.60 \le S < 0.80 \ good \ (B); \ 0.40 \le S < 0.60 \ average \ (C); \ 0.20 \le S < 0.40 \ poor \ (D); \ 0.00 < S < 0,20 \ very \ poor, (E);$

Source: own authoring

Financial situation of the voivodeships in Poland and its diversification

Territorial self-government is a very important element – not only social, but also economic – both in the terms of region and the whole country. The social expectations and needs are increasing while the resources of territorial self-government units are limited, which, as a result, enhances the need of rational and effective management of public funds. Therefore, in order to achieve the maximum usability and the fullest satisfaction of social expectations, the self-government units have to constantly increase the efficacy and use the human and financial potential they dispose of at best (Efektywność ...).

Synthetic assessment of the financial situation of the voivodeships in Poland indicates various level of studied units. In 2014 the situation of all the voivodeships generally deteriorated (in comparison to the previous years) – each of them moved further from the model (Tab. II).

The best voivodeships where: in 2009 – mazowieckie (0.64) and łódzkie (0.43), in 2011 – mazowieckie (0.64) and dolnośląskie (0.50) and in 2014 mazowieckie (0.59) and dolnośląskie (0.57). At the end of the ranking were: in 2009 – lubuskie (0.20) and warmińsko-mazurskie (0.16), in 2011 – kujawsko-pomorskie (0.22) and warmińsko-mazurskie (0.22) and in 2014 lubuskie (0.23) and opolskie (0.16). The value of the index fluctuated in the 2014 between 0.16

(opolskie) and 0.59 (mazowieckie), in 2011 – 0.22 (warmińsko-mazurskie) – 0.64 (mazowieckie), in 2009 – 0.16 (warmińsko-mazurskie) – 0.64 (mazowieckie³). Small shifts in time may be observed between the groups. The information about the level of synthetic inform about the direction of the processes (transformations) and indicate in which unit the transformations were the biggest and in which the smallest.

The year 2014 compared to 2011 in the aspect of variety amongst financial situations didn't change (standard deviation 0.11), at a simultaneous drop of spread from z 0.48 in 2009 to 0.43 in 2014 (-0.05). The difference between the levels in the financial situations of the best and worst graded has shrunk over the following year 0.48 (in 2009); 0.42 (2011); 0.43 (2014; Tab. III).

A little diversity of synthetic indicator the financial health of Polish voivodeships shows the ratio – max/min; – min/mediana; – max/median. The relationship between quartile 3 and quartile 1 shows a decrease span measure financial situation. Slight differences in measures of dispersion (variation) can be interpreted as a slight variation measure of financial situations.

The longer the graph, the data are more scattered, take more difference values. The smaller graph indicate little disparity between the values analyzed. Slight differences in the level of the median in the years analyzed. Observations can be seen as extreme mazowieckie.

³ Good position of mazowieckie voivodeship in the ranking and the assessment of financial situation is the result of the position of Warsaw – the capital city of Poland, big economic potential, well-developed infrastructure, etc.

III: Diversification of synthetic indicator of Polish voivodeships in 2009-2014

	2009	2010	2011	2012	2013	2014
min	0.16	0.23	0.22	0.18	0.24	0.16
max	0.64	0.63	0.64	0.59	0.61	0.59
range (max-min)	0.48	0.40	0.42	0.41	0.37	0.43
standard deviation	0.11	0.11	0.11	0.12	0.11	0.11
average (arithmetic)	0.35	0.34	0.35	0.34	0.39	0.36
variance rate (stand.deviation/average)	0.32	0.31	0.33	0.36	0.28	0.31
differential coefficient (max / min)	4.00	2.74	2.91	3.28	2.54	3.69
differential coefficient (min / mediana)	0.46	0.73	0.65	0.58	0.67	0.47
differential coefficient (max / mediana)	1.86	2.00	1.88	1.90	1.69	1.74
differential quartile (q3/q1)	1.43	1.46	1.56	1.45	1.23	1.21
dispersion rate (q1/me)	0.83	0.85	0.76	0.84	0.94	0.91
dispersion rate (q3/me)	1.19	1.24	1.18	1.22	1.16	1.10

q-quartile (q1-quartile 1) Source: own authoring

In the year to year the value of financial situation synthetic indicator in the years 2009-2014 presents both positive and negative relations. Positive transformations took place in all the voivodeships (which may be interpreted as progress), as well as the negative transformations (which may be interpreted as regress). Information in the synthetic ranking shows us the direction in which the given commune is heading developmentally (Tab. IV; Fig. 1).

Structure of income and expenditure in selected voivodeships

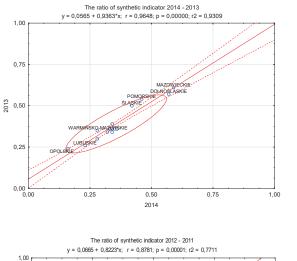
The finance is the basis of public tasks realization and decide of the situations of economic situations and investment activity of the unit. In addition, the costs of current tasks realization, as well as the availability of external sources of funding, also decide of the scale of investment activity. The limitation of financial resources becomes a problem in comparison with the range of realized tasks (Gonet, 2013). Based on figure 2 it can be said, that in a group of voivodeships in the Poland there is both a positive and negative correlation that is dependant on the relation between the synthetic financial situation inicator and the expenditure investment and own income. A division into 2 groups, which form a visible 2 groups of financial situations.

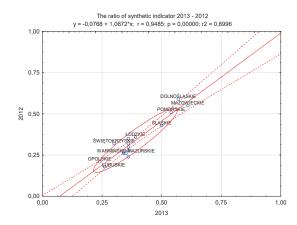
Observations can be seen as extreme Mazowieckie. We are able to see that the leading units have a high relationships own income to total income is caused by the high financial situation indicator (Śląskie, Pomorskie in 2009, Wielkopolskie, Pomorskie, Dolnośląskie in 2014). In other cases

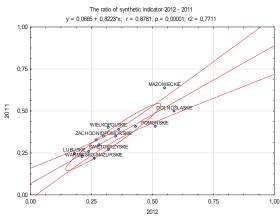
IV: The Change in the financial capacity of Polish voivodeships (year to year)

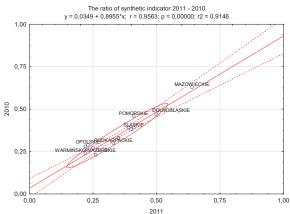
		L .v				
Voivodeship	2010/2009	2011/2010	2012/2011	2013/2012	2014/2013	2014/2009
Dolnośląskie	0.44	-0.11	0.24	0.06	-0.15	0.44
Kujawsko-Pomorskie	-0.16	0.04	0.19	-0.06	-0.07	-0.10
Lubelskie	0.27	0.06	0.18	-0.03	0.00	0.54
Lubuskie	0.00	-0.21	0.18	0.31	-0.06	0.14
Łódzkie	0.50	-0.08	0.18	0.35	-0.2	0.75
Małopolskie	-0.05	0.05	0.05	0.16	-0.16	0.02
Mazowieckie	-0.20	0.06	0.00	0.03	-0.08	-0.20
Opolskie	-0.37	0.15	-0.07	0.29	-0.03	-0.15
Podkarpackie	0.15	0.13	-0.08	0.50	0.00	0.80
Podlaskie	-0.09	0.00	-0.08	0.08	-0.13	-0.21
Pomorskie	0.00	-0.21	-0.09	0.14	-0.33	-0.45
Śląskie	-0.02	0.02	-0.14	0.11	-0.03	-0.08
Świętokrzyskie	0.14	0.06	-0.14	0.20	-0.06	0.17
Warmińsko-Mazurskie	0.15	0.10	-0.18	0.26	0.00	0.31
Wielkopolskie	-0.07	0.05	-0.20	0.13	-0.08	-0.20
Zachodniopomorskie	-0.31	-0.07	-0.28	0.44	-0.12	-0.41

Source: own authoring









1: *The change financial situation (year to year)* Source: own authoring

a lower relationships own income to total income is caused by a weak financial situation ranking (Warmińsko-Mazurskie, Zachodniopomorskie, Lubuskie in 2009; Warmińsko-Mazurskie, Podlaskie in 2014). Where we have a high relationships investments expenses to total expenses is most frequently the lower financial situation indicator (Warmińsko-Mazurskie, Lubelskie in 2009 and 2014, Fig. 2).

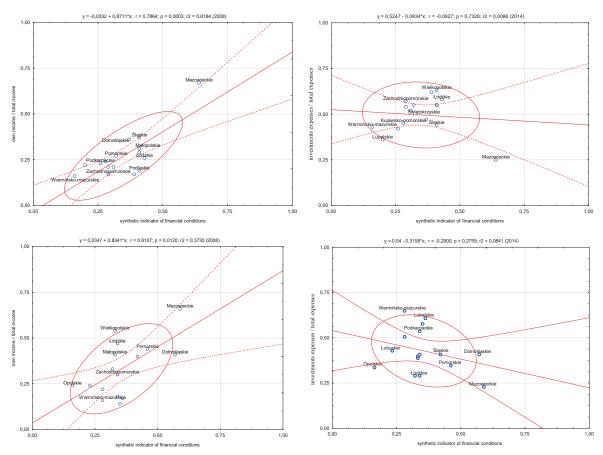
The share of personal income in the structure of overall income in the budget of a given unit is the basic way of determining its financial independence (in both its income and its expenditure) (Zawora 2015, 164–172). The share of investment expenditure in the commune's overall expenditure, used as a measure of spending independence, allows us to understand the capabilities and freedom commune's have for managing their municipal funds (Surówka 2013).

The level of general subventions falls in the best voibodeship and grows in the poorest (in 2014 and 2009 – 0.05–0.09 in mazowieckie and 0.23–0.16 in opolskie). Grants from the state budget grow more in opolskie (0.19–0.07; in mazowieckie 0.08–0.06, 2014 to 2009).

Expenses are the derivative of activities performed by local government. These expenses are of a current

(in Mazowieckie 0.77–0.71 in 2014 and 2009; in Opolskie 0.66–0.46) and capital nature. Investments in financial economy of the voivodeship are a factor which characterizes the development possibilities. Their amount decreased considerably in Opolskie (in 2014 to 2009; 0.34–0.54), and in Mazowieckie voivodeships (0.23–0.25)(Sobczyk, 2010, 125–136; Kowalska, Knapik, Bogusz 2015).

In case of expenditure the state restricts their free formation by each territorial unit, by setting a list of obligatory tasks and situations of realization of these and other tasks in a form of norms or minimum sizes (for example, degree of pollution of sewage released to a sink, the level of teachers' salary). As a result, first the voivodeships has to predict the funds for compulsory tasks, and secondly, for other purposes, even those considered as more important (Dziekański 2012; Sipikal, Pisár, Labudová 2013, 30–40).



 $2: \ \ The own to total income\ and\ capital\ to\ total\ expenditure\ relations\ in\ Polish\ voivodeships\ in\ 2008\ and\ 2014$ Source: own authoring

V: The Structure of budget in Polish voivodeships in 2008 and 2014

v. The Structure of budget in 1										
	A	В	C	D	Е	A	В	C	D	E
			2009					2014		
Dolnośląskie	0.36	0.09	0.07	0.47	0.51	0.41	0.16	0.14	0.41	0.57
Kujawsko-Pomorskie	0.24	0.25	0.06	0.45	0.54	0.33	0.26	0.15	0.29	0.68
Lubelskie	0.22	0.3	0.09	0.36	0.62	0.17	0.19	0.12	0.61	0.38
Lubuskie	0.17	0.16	0.06	0.62	0.38	0.24	0.27	0.24	0.43	0.57
Łódzkie	0.26	0.12	0.04	0.58	0.42	0.47	0.18	0.12	0.29	0.69
Małopolskie	0.31	0.11	0.07	0.55	0.45	0.41	0.13	0.15	0.4	0.59
Mazowieckie	0.67	0.09	0.06	0.25	0.71	0.66	0.05	0.08	0.23	0.77
Opolskie	0.21	0.16	0.07	0.54	0.46	0.24	0.23	0.19	0.34	0.66
Podkarpackie	0.23	0.29	0.10	0.42	0.56	0.18	0.24	0.11	0.54	0.45
Podlaskie	0.19	0.22	0.05	0.55	0.45	0.14	0.21	0.09	0.58	0.42
Pomorskie	0.27	0.10	0.10	0.55	0.44	0.44	0.15	0.13	0.35	0.64
Śląskie	0.37	0.11	0.06	0.44	0.53	0.4	0.11	0.06	0.41	0.57
Świętokrzyskie	0.21	0.19	0.08	0.52	0.48	0.22	0.25	0.13	0.51	0.49
Warmińsko-Mazurskie	0.16	0.24	0.07	0.43	0.57	0.16	0.18	0.13	0.65	0.34
Wielkopolskie	0.29	0.05	0.06	0.63	0.36	0.54	0.1	0.15	0.39	0.61
Zachodniopomorskie	0.17	0.17	0.07	0.57	0.43	0.3	0.22	0.15	0.41	0.58

 $A = own\ income\ /\ total\ income;\ B = general\ subventions\ /\ total\ income;\ C = Grants\ from\ the\ state\ budget\ /\ total\ income;\ D = investments\ expenses\ /\ total\ expenses\ ;\ E = total\ current\ expenses\ /\ total\ expenses$ Source: own authoring

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CONCLUSION

The assessment of local government functioning and its development abilities can be done through the prism of finance. Financial processes are shaped by, interalia, institutional, organizational, political and generally economic factors (Wyrębek 2010). The formation of the revenues and the directions of funds allocation are the result of quantitative and qualitative need reported by the local communities in connection to the current financial situation of the unit (Sochacka–Krysiak, 2003, 161).

The financial situation is a complex phenomenon which is difficult to measure on the basis of one feature. Creating a synthetic variable, which aggregates a series of determinants of this phenomenon, is a way of assessing the financial situation. This variable is a tool of comparative analysis which focuses on the study of subjects in terms of various features.

The assessment of financial situation may be useful to the assessment of the effectiveness of functioning of the self-government and its financial possibilities. It should be carried out on the basis of measurements describing in a complex way the budgetary relations, the budgetary amounts referring to the number of residents or the description of debt and the ability of its service. The choice of features can have a significant impact on the results obtained. Initially, the selected set of variables was tested for their technical and statistical significance. Then, individual variables were normalized and a synthetic index was built and they were grouped.

The analysis of financial situation, based on selected variables, indicates a difficult situation of the voivodeships. The values of the synthetic indicator improved, deteriorated or remained at the same level. The best voivodeships in 2014 were: mazowieckie (0.59) and dolnośląskie (0.57), in 2011 – mazowieckie (0.64) and dolnośląskie (0.50), in 2009 – mazowieckie (0.64) and łódzkie (0.43). At the end of the ranking were in 2014 lubuskie (0.23) and opolskie (0.16), in 2011 – kujawsko-pomorskie (0.22) and warmińsko-mazurskie (0.22), in 2009 – lubuskie (0.20) and warmińsko-mazurskie (0.16). The value of the index fluctuated in 2014 between 0.16 (opolskie) and 0.59 (mazowieckie), in 2011 – 0.22 (warmińsko-mazurskie) and 0.64 (mazowieckie), in 2009 – 0.16 (warmińsko-mazurskie) and 0.64 (mazowieckie).

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