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IMPACT OF SUBSIDIES ON THE FINANCIAL POSITION OF LOCAL GOVERNMENT BUDGETARY ESTABLISHMENTS IN POLAND

The article presents an assessment of the impact of subsidies received from the budget of a local government unit on the financial situation of local government budgetary establishments in Poland. As a result of the change in the financial law in 2009, budgetary establishments operate only at the local government level. Despite the fact that legislators decided that the sphere of tasks of budgetary establishments is strictly defined in the law, it is justified to assess the impact of the subjective subsidy transferred from the local government budget on the generated revenues. The article verifies the hypothesis, that the amount of the subsidy depends on the generated revenues. The hypothesis was verified using Pearson's linear correlation coefficient vector and Kruskal-Wallis analysis of variance. All analyses were performed with the Statistica v.12 package.

Key words: local government, budgetary establishment, subsidy, revenues, budget of local government, costs of budgetary establishments.
JEL Codes: H40, H41, H43.

Introduction

As a result of changes in the financial law budgetary establishments currently operate only at the level of local government. The entities perform only public utility tasks. The exhaustive list of tasks that may be carried out by the local government budgetary establishments is specified in the Act on Public Finance. The law does not allow the budgetary establishment to perform other public service tasks beyond the statutory delegation. The financial management of a budgetary establishment shall be conducted on the basis of a financial plan, a fixed element of which shall be revenue from its operations. The research problem addressed in the article is related to the demonstration of the relationship between the subsidy transferred from the budget of the local government and the amount of generated income. Considering the adopted research problem, the hypothesis was formulated that the amount of the subsidy largely depends on the generated revenues. To verify the hypothesis, statistical tests which are discussed in the further part of the study were used.

Literature Review

The Act on Public Finance of 27 August 2009 is a legal act regulating the general principles of financial management for local government budgetary establishments[1]. In

[1]The Act on Public Finance of 27 August 2009 (Journal of Laws 2017 item 2077 as amended).

addition, the Regulation of the Minister of Finance of 7 December 2010 on the method of financial management of budgetary units and local government budgetary establishments is a legal act that thoroughly regulates the method of financial management of budgetary establishments[2]. In the meaning of the Act on Public Finance, budgetary establishments are classified as legal and organisational forms of public finance sector units. They perform paid public tasks, which means that the revenue collected is used to cover the costs generated. Thus, it can be concluded that the activity of budget establishments is similar to business activity[3]. The scientific literature emphasises that budget establishments operate in socially useful spheres, where the functioning of private entities, due to the low rate of return of the undertakings, would not be profitable, and would require incurring large expenditures disproportionate to financial returns[4].

The change in the financial law in 2009 established that the functioning of these organizational forms is possible only at the local government level. It should be emphasised that the functioning of budgetary establishments at the strictly local government level was clearly limited only to matters concerning e.g. housing management and management of commercial premises, waterworks and water supply, sewage system, removal and treatment of municipal sewage, maintenance of cleanliness and order, sanitary facilities, landfills and disposal of municipal waste or matters concerning physical culture and sport, including recreational areas and sports facilities[5].It is not legally allowed for the budgetary establishment to perform other tasks, which are listed in the provisions of specific local government systems.

As in the case of other organizational forms included in the public finance sector, the financial management of the budgetary establishment is conducted on the basis of an annual financial plan. Individual elements of the financial plan are specified in the provisions of the Act on Public Finance. The construction of the plan consists of: revenues, costs and other charges, current assets, receivables and liabilities at the beginning and at the end of the period and settlements with the local government budget[6]. The costs of the budgetary establishment apply to all expenses related to the process of current and investment activity[7]. In addition to its own revenue, the current activity of a budgetary establishment may be subsidised in this respect either with funds from foreign sources or with a subject matter subsidy, which compensates for the costs of producing services in order to ensure that the price of these services remains available to the public[8].

P. Swianiewicz presents accurate comments on the financial economy of local

[2]The Regulation of the Minister of Finance of 7 December 2010 on the method of financial management of budgetary units and local government budgetary establishments is a legal act that thoroughly regulates the method of financial management of budgetary establishments. (Journal of Laws 2015 item 1542).
[3]Miszczuk A., Miszczuk M., Żuk K.: Gospodarka samorządu terytorialnego, Wydawnictwo Naukowe PWN, Warszawa 2007, s. 127.
[4]Chojna – Duch E.: Prawo finansowe. Finanse publiczne, Oficyna Prawa Polskiego, Warszawa 2017, s.490.
[5]Explanatory Memorandum to the government draft bill of the Act on Public Finance – Sejm printed matter No. 1181.
[6]Act of 27 August 2009.
[7]Dolnicki B.: Samorząd terytorialny, Wolters Kluwer, Warszawa 2016, s. 121.
[8]Samelak A.: (red.) Samorządowy zakład budżetowy. Funkcjonowanie i przekształcenie w spółkę prawa handlowego, C.H. Beck, Warszawa 2012, s. 137-139.

government budgetary establishments. According to this researcher, the possibility of transferring subsidies to finance investment tasks is connected with the fact that budgetary establishments do not make depreciation write-offs, and if a possible surplus of working capital at the end of the year is paid to the budget, they cannot collect funds for development[9]. According to data presented by the Central Statistical Office in the last five years, total revenues of budgetary establishments amounted to over PLN 2,338billion.Revenues from the sale of services and product components accounted for over 63% of total revenues (at the end of 2018, this amount was PLN 1,648 billion, while in 2016 revenues were at a similar level and amounted to PLN 1,743 billion, i.e. 64% of total revenues). Budgeting costs are relatively high. At the end of 2018, they amounted to PLN 2556 billion, i.e. more than 36% of these costs are associated with the purchase of materials and services rendered. The cost level and structure are similar over the past ten years.

The diversification of local government budget expenditure by sector was the subject of research by P. Swianiewicz. According to the researcher's analysis, the largest share in the total expenditure of current budgetary establishments concerned the housing sector (29.7% of total expenditure). Expenditure on carrying out tasks related to broadly understood municipal economy came second(26.1%). The smallest expenses were incurred for physical culture and sport (6.3%)[10]. The share in the current expenditure of enterprises excluding subsidies from the local government budget has the largest share in the tasks implemented by local government budgetary enterprises in the area of housing (38.3%). The smallest share was recorded in tasks performed in the area - physical culture and sport (5.7%). The author of these studies also presented interesting results in the context of the share of budget subsidies in the running costs of local government budgetary establishments. According to research by P. Swianiewicz, the largest share of subsidies in running costs in 2009 occurred in the tasks implemented from the scope of education and transport.

Implementation of public tasks can be financed or co-financed by both grants and subsidies. The use of sovereigns and subsidies is the basic form of regulating the financial supply of public finance units by the state budget. In other words – the transfer of purchasing power within the sector, and in some cases also outside the sector[11]. It should be noted that the current provisions of financial law do not allow the possibility of transferring subsidies from the state budget to local government budgetary establishments. Statements describing sovereignty as compensatory subsidies are found in the scientific literature. They are used to balance local government budgets and they are not refundable even if the budget is closed with a surplus[12]. It should also be mentioned that the iron rule in force in the economy of budgetary establishments is that changes can be made to the financial plan during the year only on condition that the subsidies from the local government budget are not increased[13].An important problem

[9] Swianiewicz P.: Finanse samorządowe. Koncepcje, realizacja, polityki lokalne, MUNICIPIUM, Warszawa 2011, s.146.
[10] Swianiewicz P.: Finanse samorządowe…, op. cit., s. 224 i nast.
[11] Wernik A.: Finanse publiczne, PWE Warszawa 2014, s. 39.
[12] Kosek – Wojnar M., Surówka K.: Podstawy finansów samorządu terytorialnego, PWN Warszawa 2007, s. 95.
[13] Ziółkowska W.: Finanse publiczne. Teoria i zastosowanie, Wydawnictwo Wyższej Szkoły Bankowej Poznań, 2012, s. 177.

related to subsidies is reliably measuring the effectiveness of implemented tasks financed from subsidies. This mainly concerns entities not included in the public finance sector but using public funds in the form of subsidies. Another complication, which one encounters when measuring efficiency and effectiveness in terms of the identification of inputs and outputs, is that many public services are interlinked. This is the case, for example, when the outputs of one public service are used as inputs by another [14].

Methodology and Data

Figures necessary for the analysis were obtained from Poland's Central Statistical Office (GUS). The subject of the research were revenues of local government budgetary establishments. The analysis covered the period from 2011 to 2016. The results obtained were presented individually, atthe level of local government units which had established a local government budgetary establishment. This means that for the purpose of determining the results and presentation, stratification was performed on: communal, district, municipal and provincial budgetary establishments.

Quantitative traits were evaluated in the study. In order to characterize the structure of the tested variables, basic descriptive statistics in the form of measurements of position and variability were calculated. The vector of Pearson's linear correlation coefficients was calculated in order to determine the force of correlation between variables. Due to the diversity of variance, the non-parametric Kruskal-Wallis analysis of variance was also used to verify the significance of differences. For all analyses, the statistical significance level of 0.05 was assumed. All the analyses were performed with the Statistica v.12 package[15]

– Pearson linear correlation coefficient.

$$r = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{n \cdot S_x \cdot S_y}$$

s_x, s_y – standard deviations of variables X and Y, respectively,

$\bar{x}, \bar{y}$ – arithmetic means of variables X and Y, respectively,

n – observations.

A correlation matrix was calculated to determine the relationships between all the features studied, whereas in order to assess the statistical significance of individual explanatory variables (X) in relation to the explained variable (Y), the correlation vectors were determined. To analyse the significance of differences for dependent variables on the basis of grouping variables, non-parametric Kruskal-Wallis analysis of variance was applied. The application of this test was due to the lack of standardisation of distributions by subgroups and, in particular, to the fact that dependent variables were created by averaging the results of variables measured on a ranged scale. Basic assumptions of the Kruskal-Wallis test: There are k populations in which the tested feature has continuous distributions and the data can be considered on a serial scale. By

[14]Mandl U, Dierx A, Ilzkovitz F.: The effectiveness and efficiency of public spending, European Commission Directorate-General for Economic and Financial Affairs Publications, 2008, pp. 4.

[15]Sobczyk M.:Statystyka. Aspekty praktyczne i teoretyczne, Wydawnictwo UMCS, 2006, s. 12-15.

$F_1(x)$, $F_2(x)$,…, $F_k(x)$ we denote the distribution function of the populations under consideration. Verification of the hypothesis:
H_0: $F_1(x) = F_2(x) = \ldots = F_k(x)$
To the alternative
H_1: $F_1(x) \neq F_i(x)$ for certain pairs ($i \neq j$)
Hypothesis verification: the test is based on a formula:

$$H = \frac{12}{n(n+1)} \sum_{i=1}^{k} \frac{T_i^2}{n_i} - 3(n+1)$$

Where $n = n_1 + n_2 + \ldots + n_k$ aT_i (i=1, 2, …, k) represents the sum of the ranks in each sample separately.

An amendment was introduced due to the tied ranks. It means dividing the received H statistics by the value of the P correction specified by the formula:

$$P = 1 - \frac{\sum(k^3 - k)}{n^3 - n}$$

Where k is the number of measurements having the same tied rank, the summation runs through all groups of tied ranks. After significant differences were found in the non-parametric analysis of variance, it was necessary to identify the groups between which they occurred. For this purpose, multiple comparison tests of average ranks for all samples were used.

The author intentionally adopted a five-year period for the study – taking into account the changes in the law on public finances from 2009. It should be noted that the provisions of this law entered into force on 1 January 2010.One of the major changes in the financial perspective was the liquidation of state budgetary establishments. The legislators decided to leave this organizational form only in local governments. This means that local government budgetary establishments only implement the tasks of their own local government. They may receive subsidies for various types of tasks. The assumed time range of research may indicate trends in the financing of budgetary establishments by local government units. So these are preliminary studies, which the author intends to extend and later publish the results in a monograph. The data for the analysis were downloaded from the Central Statistical Office.

Results

As was indicated at the beginning, the fundamental objective of the study was to verify the hypothesis, that there is a link between the generated revenues and the amount of the subsidy transferred from the local government budget. The analysis of the basic statistics showed that the average for subsidies transferred from the budget was 13.69 and for total revenues was 114.48.

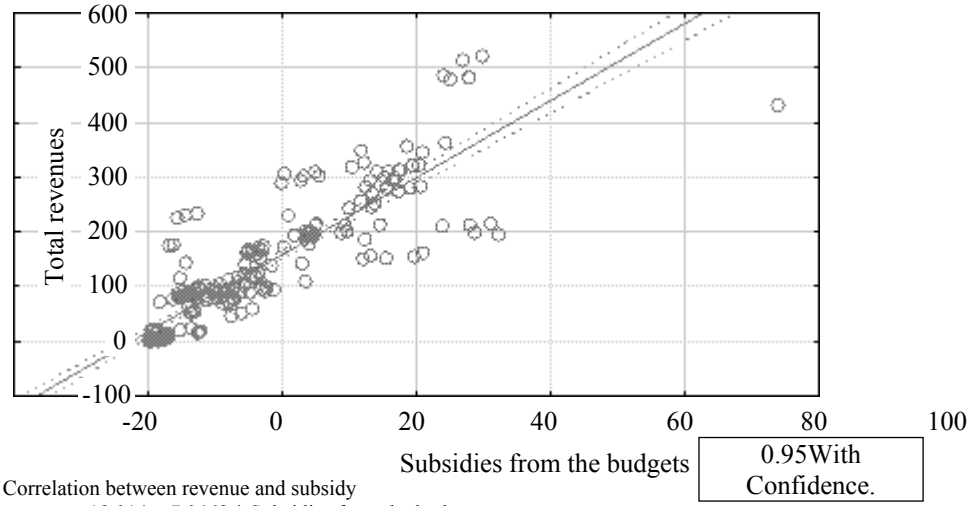
Table 1. Results of the analysis for the variable subsidies and total revenues

Tested variable	Average	Standard deviation	r (X,Y)	R^2	t	p
Subsidies from the budgets	13.69	14.76				
Total revenues	114.48	118.05	0.88	0.78	29.84	0.00

Source: author's own calculations.

The established standard deviation for the examined variables was 14.76 for subsidies, while for total revenues it was: 118.05. Detailed results are presented in Table 1.

It should be emphasized that the analysis allowed for a very strong positive correlation between total revenues and the subsidy from the budget r = 0.88, therefore it can be stated that the variability of the generated revenues 78% of the time, explains the variability of the subsidy from the budget. These results are also confirmed by the following scatter plot $p<0.05$.



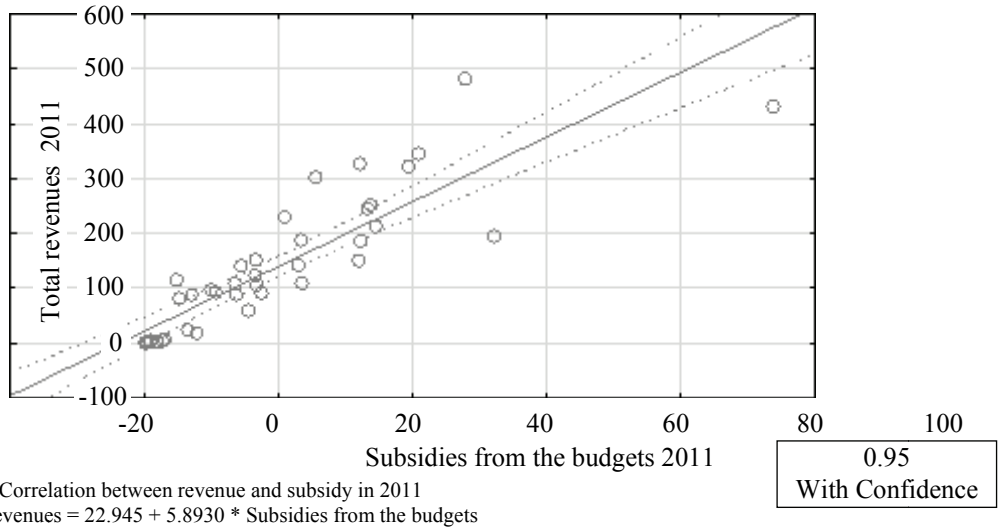
Plot 1. Correlation between revenue and subsidy
Total revenues = 18.014 + 7.0468 * Subsidies from the budgets
Correlation: r = .88128

In order to show the full picture, the same statistical analyses were also conducted with a breakdown by year. Detailed results are presented in Table 2.

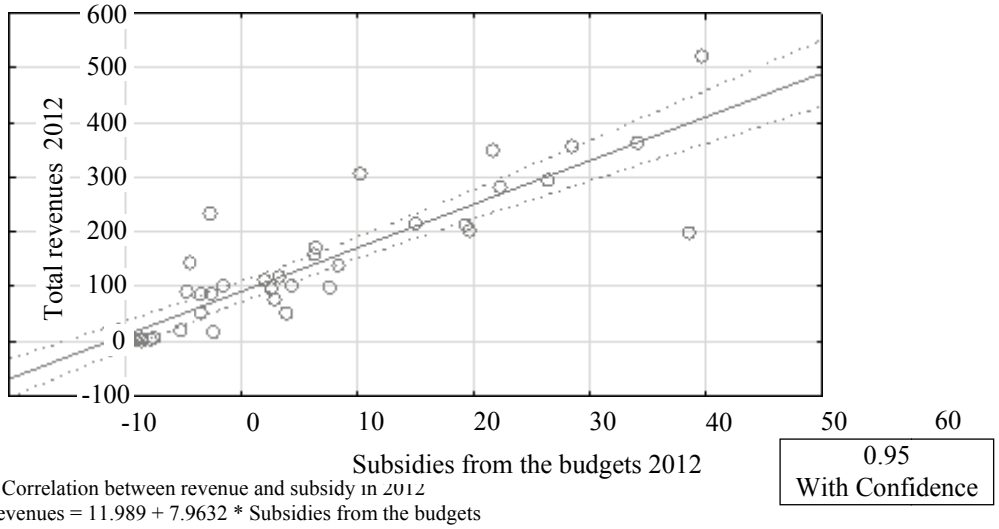
Table 2. Basic statistics for selected variables (total subsidies and revenues) for 2011-2016

Year	Pair of variables	Average	St. deviation	r (X,Y)	R^2	t	p
2011	Subsidies from the budgets	17.56	18.66				
	Total revenues	126.40	125.19	0.88	0.77	11.91	0.00
2012	Subsidies from the budgets	13.98	14.30				
	Total revenues	123.31	127.61	0.89	0.80	12.68	0.00
2013	Subsidies from the budgets	12.24	13.07				
	Total revenues	110.88	119.73	0.91	0.84	14.59	0.00
2014	Subsidies from the budgets	12.37	13.27				
	Total revenues	108.00	112.89	0.89	0.80	12.66	0.00
2015	Subsidies from the budgets	13.09	14.27				
	Total revenues	110.23	113.51	0.88	0.78	11.96	0.00
2016	Subsidies from the budgets	12.81	14.39				
	Total revenues	107.58	113.59	0.87	0.77	11.43	0.00

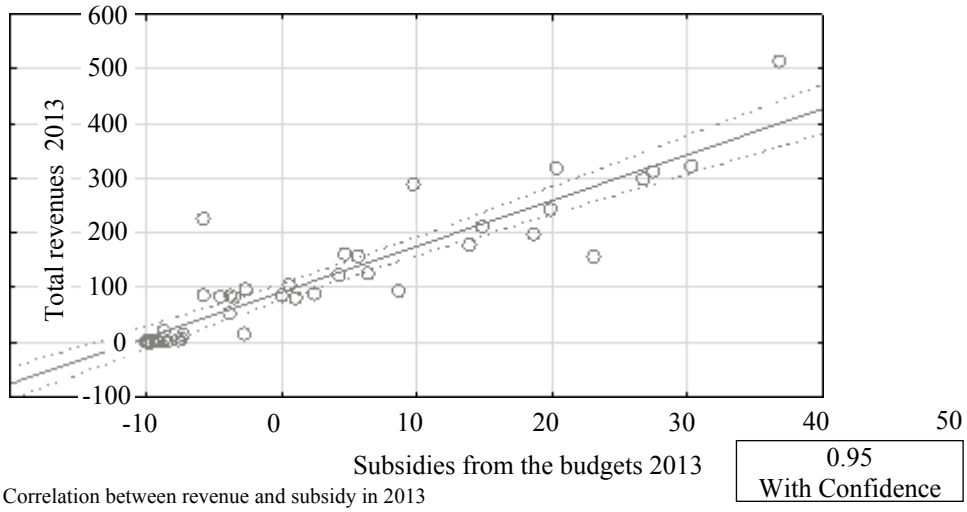
Source: author's own calculations.



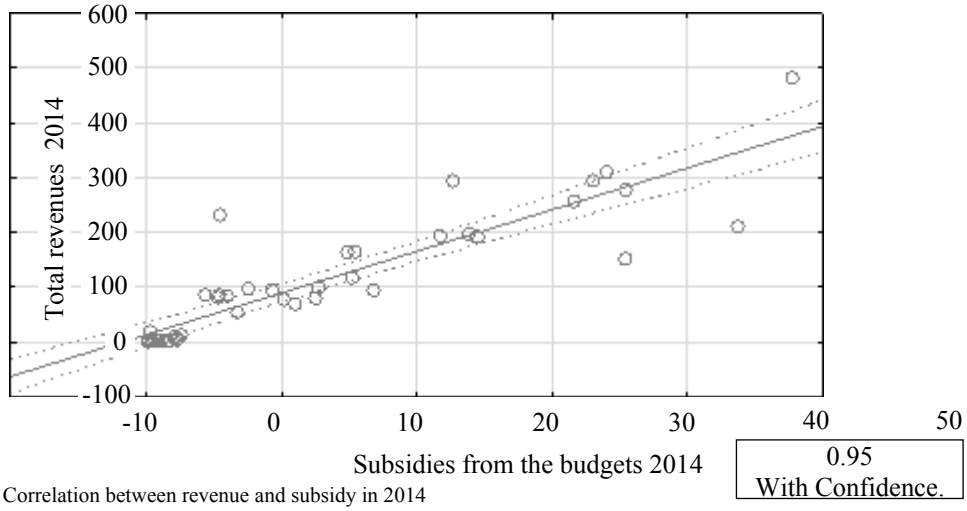
Plot 2. Correlation between revenue and subsidy in 2011
Total revenues = 22.945 + 5.8930 * Subsidies from the budgets
Correlation: r = .87834



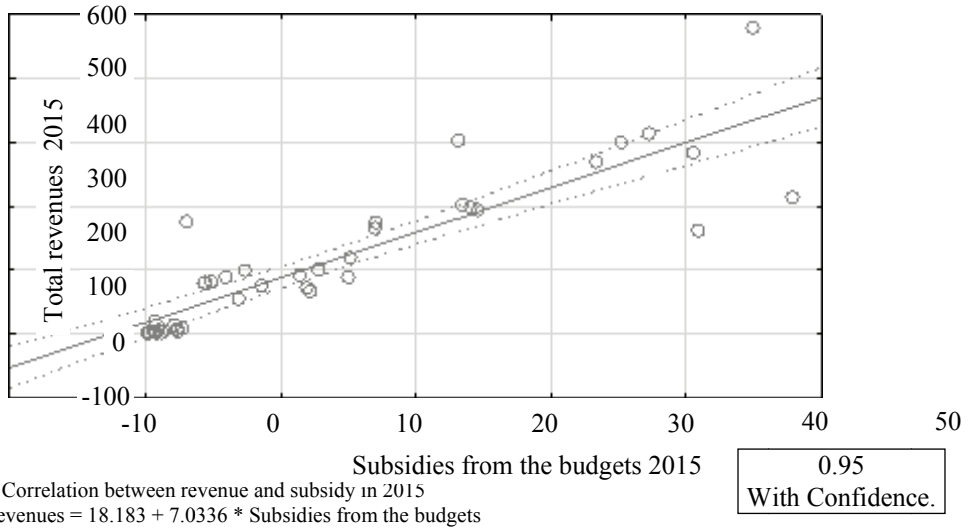
Plot 3. Correlation between revenue and subsidy in 2012
Total revenues = 11.989 + 7.9632 * Subsidies from the budgets
Correlation: r = .89268



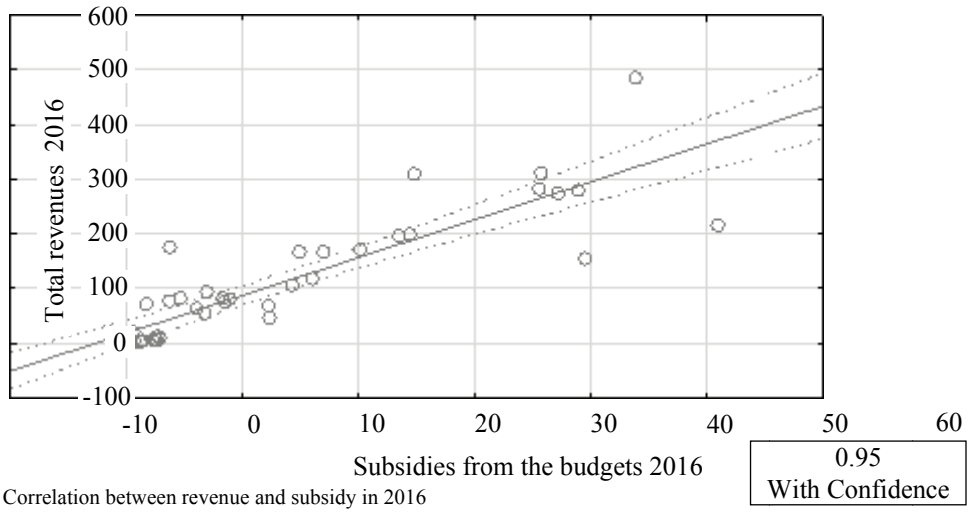
Plot 4. Correlation between revenue and subsidy in 2013
Total revenues = 8.4196 + 8.3712 * Subsidies from the budgets
Correlation: r = .91394



Plot 5. Correlation between revenue and subsidy in 2014
Total revenues = 14.035 + 7.5937 * Subsidies from the budgets
Correlation: r = .89233



Plot 6. Correlation between revenue and subsidy in 2015
Total revenues = 18.183 + 7.0336 * Subsidies from the budgets
Correlation: r = .88409



Plot 7. Correlation between revenue and subsidy in 2016
Total revenues = 19.127 + 6.9070 * Subsidies from the budgets
Correlation: r = .87498

The subject of the research was also to present the shape of individual variables divided into communal, district, municipal and provincial local government budgetary establishments. The figures in Table 3 clearly indicate that, in statistical terms, the generation of revenues is dominated by communal and municipal budget establishments (average 188.58 in 2012 and average 176.77 in 2011). Equally in the case of the analysed variable – subsidies from budgets – the highest averages were recorded in communal and municipal budget establishments. The averages for this variable were 21.85 in 2011 and 27.48 in 2011, respectively. Detailed results are presented in Table 3.

Table 3. Basic statistics of variables divided into types of local government units in the years 2011-2016.

Year	Variables	Communal		District		Municipal		Provincial	
		Average	Stand. dev.	Average	Stand. dev.	Average	Stand. dev.	Average	Stand. dev.
2011	Total revenues	179.48	85.92	2.59	1.91	176.77	141.91	7.75	7.85
	From the sale of products, assets and services	136.90	62.70	1.31	1.36	107.42	83.63	6.27	8.40
	Subsidies from the budgets	21.85	10.28	0.64	0.81	27.48	23.84	1.80	1.54
	Total costs	195.54	91.18	2.52	1.83	185.03	152.00	7.97	7.92
	Corporate income tax (CIT)	0.91	0.63	0.02	0.01	0.91	1.07	0.03	0.05
	Costs of materials and services	83.28	39.66	0.80	0.66	103.39	99.01	3.32	3.82
	Contributions to the budget	0.91	0.68	-	-	0.83	0.75	0.02	-
2012	Total revenues	188.58	93.30	2.10	1.58	152.19	144.32	7.01	6.40
	From the sale of products, assets and services	130.99	63.68	1.19	0.92	86.79	82.28	5.68	6.71
	Subsidies from the budgets	19.94	10.59	0.63	0.68	19.41	16.77	1.62	1.11
	Total costs	191.43	93.56	2.17	1.62	152.35	142.80	7.40	6.55
	Corporate income tax (CIT)	0.85	0.66	0.00	0.00	0.94	1.14	0.01	0.02
	Costs of materials and services	77.76	38.96	0.74	0.58	77.51	75.22	2.82	2.79
	Contributions to the budget	0.69	0.43	-	-	1.24	1.80	0.18	0.09
2013	Total revenues	176.17	86.73	2.51	1.56	136.17	138.91	7.36	6.58
	From the sale of products, assets and services	118.05	58.98	1.28	1.00	75.44	71.56	5.70	7.06
	Subsidies from the budgets	18.94	10.41	0.70	0.73	15.98	15.15	1.73	1.27
	Total costs	177.39	86.02	2.60	1.58	135.06	136.69	7.26	6.73
	Corporate income tax (CIT)	0.87	0.65	0.01	0.01	0.84	1.20	0.00	-
	materials and services	70.20	36.14	0.88	0.60	65.89	71.10	2.63	2.83
	contributions to the budget	0.99	1.34	-	-	0.78	0.73	0.26	0.06
2014	Total revenues	170.93	84.94	3.55	2.37	124.92	127.35	7.52	7.50
	From the sale of products, assets and services	110.95	56.38	1.71	1.57	65.28	64.14	6.01	8.00
	Subsidies from the budgets	18.33	9.98	1.02	0.76	16.02	16.38	1.62	1.04
	Total costs	168.52	83.62	3.53	2.35	123.53	125.44	7.53	7.47
	Corporate income tax (CIT)	0.85	0.64	0.01	0.01	0.83	1.35	0.00	
	materials and services	63.46	33.01	1.06	0.62	59.68	63.88	2.92	3.29
	contributions to the budget	0.88	1.04	0.08	-	0.87	0.63	0.11	-
2015	Total revenues	172.81	88.23	4.44	3.54	130.04	126.24	10.03	9.49
	From the sale of products, assets and services	112.01	57.80	2.12	1.89	66.46	61.16	8.48	10.05
	Subsidies from the budgets	19.20	11.30	0.91	0.75	17.63	17.47	2.34	
	Total costs	171.61	86.64	4.16	2.74	127.93	124.56	9.93	9.33
	Corporate income tax (CIT)	0.87	0.60	0.01	0.01	0.92	1.11		
	materials and services	63.46	34.14	1.27	0.90	60.50	60.11	3.71	3.76
	contributions to the budget	1.06	0.88	0.01	-	0.80	0.83	-	-
2016	Total revenues	169.57	86.96	4.72	3.09	125.64	130.25	9.94	9.52
	From the sale of products, assets and services	108.97	56.52	2.17	1.94	64.23	62.38	8.36	10.19
	Subsidies from the budgets	18.79	11.05	1.04	0.97	17.10	18.40	2.38	-
	Total costs	167.37	85.19	4.68	2.95	123.36	127.32	9.68	9.46
	Corporate income tax (CIT)	0.92	0.64	0.01	0.01	0.84	1.16	0.24	-
	materials and services	61.76	33.47	1.50	1.42	57.53	61.07	3.66	3.44
	contributions to the budget	1.27	1.29	0.17	0.22	1.25	1.90	0.08	-

Source: author's own calculations.

Conclusions

The analysis made it possible to obtain an answer to the research problem formulated in the introduction, that the amount of local subsidies transferred to the general budget depends on the generated revenues from local governments. On the basis of the obtained results, it can be indicated that in the analysed period there was a strong positive correlation between the revenues realised by the budgetary establishments and the subsidy transferred from the budget. As far as the issue of the amount of generated income is concerned, depending on the local government unit, which is the founding body for the budgetary establishment, the results obtained are not surprising. As it turned out, the communal budget establishments accumulate the highest income. The second place was occupied by the district budgetary establishments. The results of the analysis clearly indicate the existence of a relationship according to which the variability of revenues has a significant impact on the amount of subsidies from the budget. The conducted research may be helpful for further statistical analyses, especially in the context of the share in revenues of designated subsidies allocated for investments in budgetary establishments. From a pragmatic point of view, the obtained results may prove to be useful for local government policymakers in deciding on financial planning in budget establishments.

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Wpływ dotacji na sytuację finansową samorządowych zakładów budżetowych w Polsce

Streszczenie

Artykuł sprowadza się do oceny wpływu dotacji otrzymanych z budżetu jednostki samorządu terytorialnego na sytuację finansową samorządowych instytucji budżetowych w Polsce. W wyniku zmiany prawa finansowego w 2009 r. Zakłady budżetowe działają wyłącznie na poziomie samorządu terytorialnego. Pomimo faktu, że ustawodawcy zdecydowali, że sfera zadań zakładów budżetowych jest ściśle określona w prawie, uzasadniona jest ocena wpływu subiektywnej subwencji przekazywanej z budżetu samorządu terytorialnego na generowane przychody. Artykuł weryfikuje hipotezę, zgodnie z którą kwota dotacji zależy od generowanych przychodów. Hipotezę zweryfikowano za pomocą wektora współczynnika korelacji liniowej Pearsona i analizy wariancji Kruskala-Wallisa. Wszystkie analizy przeprowadzono z pakietem Statistica v.12.

Słowa kluczowe: samorząd lokalny, budżet, dotacja, przychody, budżet samorządu, koszty zakładów budżetowych.
JEL Codes: H40, H41, H43.

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