

Influence of Investment Expenditures on the Result of Municipal Budgets in Poland

Piotr Sołtyk

Department of Public and Finances, Cracow University of Economics

Abstract *The purpose of this paper is an attempt to show the influence of investment expenditures on the results of local government budgets. From a practical point of view, the results of the research may be used by local government decision-makers to more effectively plan investments in municipalities. To achieve the assumed research goal, quantitative research was required. The analysis of aggregated numerical data was carried out using the Pearson correlation coefficient (Pearson's r). It was also necessary to use the coefficient of determination R^2 (the coefficient of fitting the regression model to the data). The time period of the study is 2003-2019.*

Keywords: *investment, municipal finances, local government, investment expenditures*

Date of Submission: 03-07-2022

Date of Acceptance: 16-07-2022

I. INTRODUCTION

The variety of public tasks carried out by municipalities forces them to incur public expenses. In modern times the local government is the main entity – investor through which expenditures on various investments are made in Poland. It is similar in other European countries. Indeed, according to research conducted by D. Wyszowska, A. Wyszowski “(...) in 2019 in OECD countries the public sector spent less than USD 1.2 trillion on public investments (2.7% of GDP), which accounted for 15% of total investments” (Wyszowska, Wyszowski, 2009).

In Poland property (investment) expenditures constitute a significant share of total public expenditures, being at the level of over 50%. Local government investments began to have a significant impact on Poland's GDP growth in connection with its accession to European Union structures. This revival of investment processes in municipalities and poviats resulted primarily from the possibility of receiving external financial transfers in the form of grants. Also, a large impact on the level of investment development of local government units (LGU) was also dictated by the quick need to carry out changes in the technical infrastructure. In some territorial governments – particularly those in the eastern part of Poland – the investments made have a serious impact on decisions to choose a job or to develop a family. Investment expenditures cause financial changes in the local government budget. Shortage of financial means with simultaneously realized investments usually causes a negative balance of the municipality budget. The investments realized by local government from which there will be a possibility to draw certain income to the budget will contribute not only to a change living conditions of the population for better but they will also positively influence the financial condition of LGUs.

II. THE ROLE OF THE MUNICIPALITY IN THE PERFORMANCE OF PUBLIC TASKS

Modern local government is undoubtedly an important element of the multidimensional system of public administration which was created to carry out specific public tasks. A local government operates only at the local and regional levels, having specific competencies and income to carry out public tasks (Kosek-Wojnar, Surówka, 2002).

When analyzing the substance of the legal aspects, it should be recognized that local government is one of the basic political and legal institutions of the modern state, is normalized in legal acts of the highest order, including the Constitution (Niewiadomski, 2001). This fundamental legal act, which is of cardinal importance in the functioning of any democratic state, at the very beginning indicates the assurance of decentralization of public power and also a meaningful assurance for local government units' ability to perform public tasks (Niewiadomski, 2004).

Regulations of the Constitution of the Republic of Poland provide for local government participation in the exercise of public authority. And under separate laws – the provisions of the Constitution of the Republic of Poland create the basis for local government to carry out the majority of public tasks on its own behalf and on its own responsibility (Constitution of the Republic of Poland). The activities of modern local government involves the implementation of both their own tasks – which serve to meet the individual needs of the local community, as well as tasks delegated by the state. The latter are set by the state. This places local government units in a

special position in comparison with other state bodies that carry out public tasks which do not have this attribute (the Constitution of the Republic of Poland). Irrespective of the ordering party for particular types of tasks, it should be borne in mind that considerable funds are necessary for their implementation (Page, Goldsmith, 1987).

The size and structure of expenditures depend on the income situation of local government units – especially own income (taxes, local fees). The size of investment projects planned in municipal budgets to improve the lives of local community residents is also of considerable importance. In general, the multitude of expenditures on building technical infrastructure on the one hand unquestionably contributes to improving the attractiveness of the municipality and the life of its inhabitants and, on the other hand, causes certain financial consequences for the municipality budget (cf. Nikolov, 2006). Undoubtedly, one of the cardinal factors of exemplification may be, for example, excessive burdening of the local government budget with property – investment expenditures, which without ensuring greater income receipts may result in the formation of a negative budget balance – (deficit).

The phenomenon of increasing the stream of property (investment) expenditures without a sufficient number of financial resources is risky and highly dangerous to the current liquidity of local government units. The imprudence and, at the same time, highly flexible arbitrariness of local government decision-makers in the process of expenditure allocation – not only due to the appearance of a deficit may generate various dysfunctional risks but may also be the cause of more negative incidents, such as loss of the ability to currently settle various types of payment titles, including, in particular, financial obligations and liabilities towards staff.

III. ECONOMIC SIGNIFICANCE OF INVESTMENT EXPENDITURES INCURRED BY MUNICIPALITIES

Implementation of public tasks regardless of the type of public entity requires public financial resources in the form of expenditures. To put the notions in order it has to be stressed here, however, that not all financial means allocated by the local government decision-makers can be defined as budget expenditures. This is as a result of the division made in the provisions of the Public Finance Act of 27 August 2009 which explicitly stratifies public funds into expenditures and disbursements (Act, 2009).

According to S. Owsiak, public expenditure is a fact without which it would be difficult to imagine the efficient functioning of local communities and society as a whole (Owsiak, 2017). The researcher points out that the content of public expenditures is contained in their name, because “they are incurred for the implementation of public tasks in order to satisfy collective and/or individual needs the importance of which is so high that public authorities decide either to finance them fully or partially from public funds” (Owsiak, 2017). Through the expenditures, local government is able to carry out public tasks and provide a whole range of social services. From a macroeconomic point of view, public expenditure incurred on the purchase of consumer goods and services and capital goods directly affects the size of aggregate demand (Lis, 2011).

Moreover, the economic sense of public expenditure is that it results in the allocation of goods, that is, the use of part of the gross domestic product (Dylewski, Filipiak, Gorzałczyńska-Koczkodaj, 2014). The size and scope of expenditures made by local governments, as well as expenditures made from the state budget, depend on several factors. However, it should be pointed out that the most important ones include: economic factors, political factors and social factors (Lis, 2011). It should be noted, though, that the amount of income collected in the budget, the size of the liabilities, especially the long-term ones, as well as the current financial condition of the municipality are of great importance in the projection of the local government expenditures – in particular investment expenditures.

For the purposes of various analyses, a division of expenditure into current and property ones, and those allocated according to the tasks performed (expenditure on own tasks and commissioned tasks) is most often considered (Juja, 2011). The division of expenditures into current and property ones results from the provisions of the Public Finance Act, indicating at the same time which titles they refer to. Bearing in mind the statutory classification, the current expenditures include in particular: salaries and contributions, expenditures related to statutory tasks, benefits to natural persons and grants for current tasks (the Act of 2009).

In the activity of local government, also property (investment) expenditures may not be neglected. The essence of this type of expenditures is specially to reduce the disproportion in development and culture of particular local communities or regions. In accordance with legal requirements they are used to finance investment projects, including purchases of fixed assets. This type of expenditures plays a special role in the implementation of projects with the share of funds from the European Union budget.

Property (investment) expenditures also include the purchase and acquisition of shares as well as contributions to commercial law companies (the Act of 2009). The amount of LGU expenditures on investment projects is shaped not only by financial capabilities, but also by the nature of the public tasks implemented (Alińska, Dworakowska, 2015).

In particular, these are various types of investment projects in the area of broadly understood municipal services (water supply and sewage systems, energy facilities, sewage treatment plants, waste incineration plants) construction of roads, bridges or investments improving the condition of the natural environment. Not insignificant are also the investments made by municipalities in such spheres of inhabitants' life as: culture, education, national heritage or health care.

Investment activities undertaken by the local municipality government authorities in the abovementioned spheres of people's life may contribute to changing the decisions of the young generation and thus to reducing the phenomenon of young people migrating to agglomerations. The investments carried out by the local municipality government from which it will be possible to draw certain income to the budget will contribute not only to a change of living conditions of the population for better but they will also positively influence the financial condition of the municipality.

IV. STATISTICAL METHODS IN OWN RESEARCH

In order to achieve such a formulated objective of the study and the adopted research hypothesis, it was necessary to use appropriate statistical methods. With this in mind, the analysis of the aggregated numerical data was conducted using the Pearson correlation coefficient – to measure the strength and direction of the linear relationship between the two variables. *It was also necessary to use the coefficient of determination denoted R^2 – (coefficient of fitting the regression model to the data)*. It expresses the proportion of the variation in the dependent variable that is predictable from the independent variable.

The following classification was used to interpret the strength of the correlation:

- $|r|=0$ – no correlation,
- $0,0<|r|\leq 0,1$ – negligible correlation,
- $0,1<|r|\leq 0,3$ – poor correlation,
- $0,3<|r|\leq 0,5$ – average correlation,
- $0,5<|r|\leq 0,7$ – high correlation,
- $0,7<|r|\leq 0,9$ – very high correlation,
- $0,9<|r|<1,0$ – almost full correlation,
- $|r|=1$ – full correlation,

The significance level was taken as $\alpha = 0.05$. Statistical analysis was performed using the R statistical package.

V. RESULTS OF THE ANALYSIS AND DISCUSSION

The Pearson correlation coefficient was used to examine the linear correlation between investment property expenditures and the formed budget result of municipalities located in each voivodeship in 2003-2019. The obtained results of the study are presented in the following table – Table 1

Voivodeship	r		p	Upper 95% CI	Lower 95% CI
Dolnośląskie	-0.65	**	0.005	-0.24	-0.86
Kujawsko-pomorskie	-0.60	*	0.011	-0.17	-0.84
Lubelskie	-0.58	*	0.014	-0.14	-0.83
Lubuskie	-0.62	**	0.009	-0.19	-0.85
Łódzkie	-0.61	**	0.010	-0.18	-0.84
Małopolskie	-0.54	*	0.025	-0.08	-0.81
Mazowieckie	-0.57	*	0.018	-0.12	-0.82
Opolskie	-0.73	***	< .001	-0.39	-0.90
Podkarpackie	-0.63	**	0.007	-0.21	-0.85
Podlaskie	-0.55	*	0.022	-0.10	-0.82
Pomorskie	-0.61	**	0.009	-0.18	-0.84
Śląskie	-0.38		0.133	0.12	-0.73
Świętokrzyskie	-0.72	**	0.001	-0.37	-0.89
Warmińsko-mazurskie	-0.71	**	0.002	-0.34	-0.89
Wielkopolskie	-0.56	*	0.019	-0.11	-0.82
Zachodniopomorskie	-0.50	*	0.041	-0.03	-0.79

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 1. *Linear correlation between expenditures*

on property investments and the budget result in individual voivodeships in 2003-2019
Source: own calculations based on CSO [Central Statistical Office] data for 2003-2019.

The results obtained from the own survey indicate the presence of significant linear correlations between expenditures on property investments and the result of the municipal budget in 2003-2019. The correlation in individual voivodeships was as follows:

Dolnośląskie voivodeship: $r = -0.65^{**}$, 95% CI [-0.24, -0.86], $p = 0.005$ – direction of correlation turned out to be negative, strength of correlation turned out to be high, i.e. as investment property expenditures increase, the property result significantly decreases. This relationship is shown graphically in Figure 1.

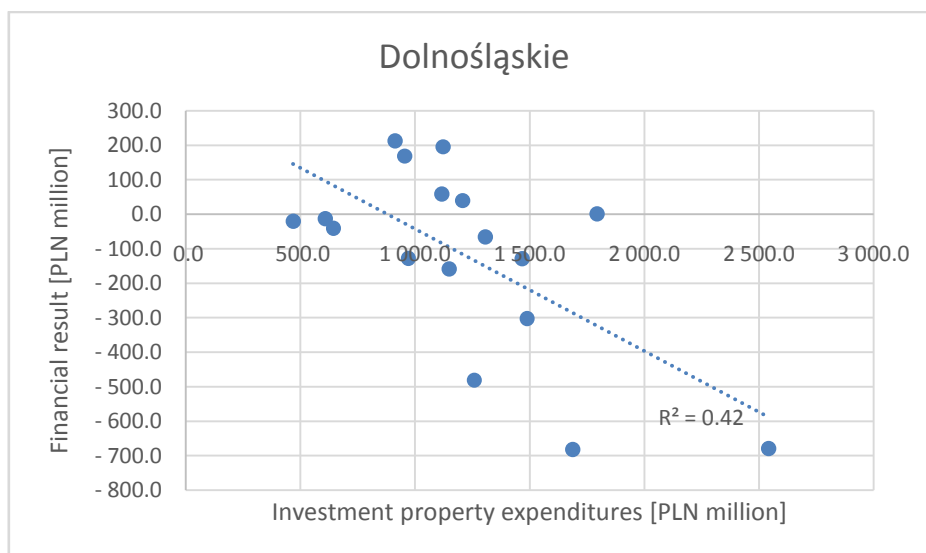


Figure 1. Linear correlation between investment property expenditure and financial result in dolnośląskie voivodeship in 2003-2019
Source: own study.

The coefficient of determination R^2 was 0.42, which means that the variability of investment property expenditures explains 42.0% of variability of the financial result in dolnośląskie voivodeship in 2003-2019.

Kujawsko-pomorskie voivodeship: $r = -0.60^*$, 95% CI [-0.17, -0.84], $p = 0.011$ – direction of correlation turned out to be negative, strength of correlation turned out to be high – as investment property expenditures increase, the property result significantly decreases. Graphically, the results of the study are shown in Figure 2.

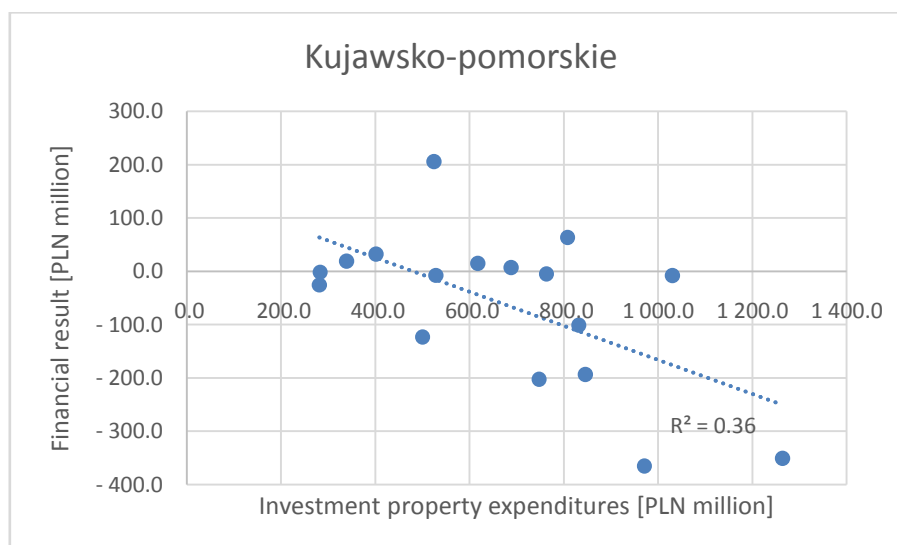


Figure 2. Linear correlation between investment property expenditure and financial result in kujawsko-pomorskie voivodeship in 2003-2019
Source: own study.

The coefficient of determination R^2 was 0.36, which means that the variability of investment property expenditures explains 36.0% of variability of the financial result in kujawsko-pomorskievoivodeship in 2003-2019.

Lubelskievoivodeship: $r = -0.58^*$, 95% CI [-0.14, -0.83], $p = 0.014$ – direction of correlation turned out to be negative, strength of correlation turned out to be high – as investment property expenditures increase, the property result significantly decreases. The result of the study is presented in Figure 3.

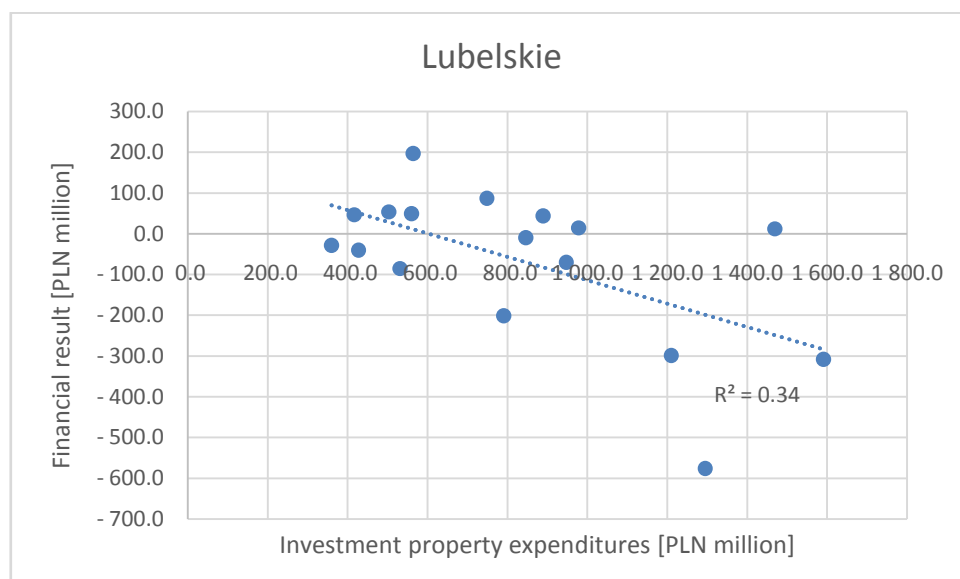


Figure 3. Linear correlation between investment property expenditure and financial result in lubelskievoivodeship in 2003-2019
Source: own study.

The coefficient of determination R^2 was 0.34, which means that the variability of investment property expenditures explains 34.0% of variability of the financial result in lubelskievoivodeship in 2003-2019.

Lubuskievoivodeship: $r = -0.62^*$, 95% CI [-0.19, -0.85], $p = 0.009$ – direction of correlation turned out to be negative, strength of correlation turned out to be high – as investment property expenditures increase, the property result significantly decreases. Graphically, the result of the analysis is shown in Figure 4

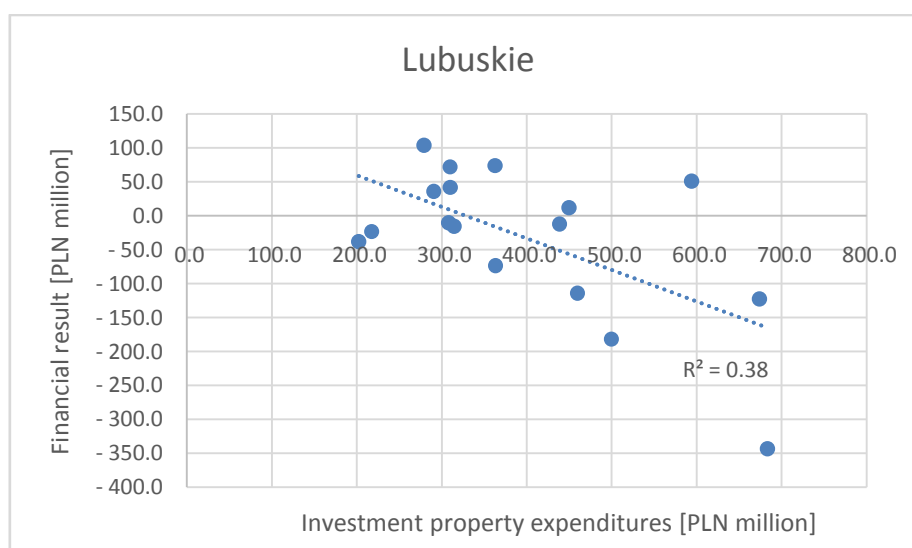


Figure 4. Linear correlation between investment property expenditure and financial result in lubuskievoivodeship in 2003-2019
Source: own study.

The coefficient of determination R^2 was 0.38, which means that the variability of investment property expenditures explains 38.0% of variability of the financial result in lubuskievoivodeship in 2003-2019.

Łódzkievoivodeship: $r = -0.61^*$, 95% CI [-0.18, -0.84], $p = 0.010$ – direction of correlation turned out to be negative, strength of correlation turned out to be high – as investment property expenditures increase, the property result significantly decreases. The result of the study is presented in Figure 5.

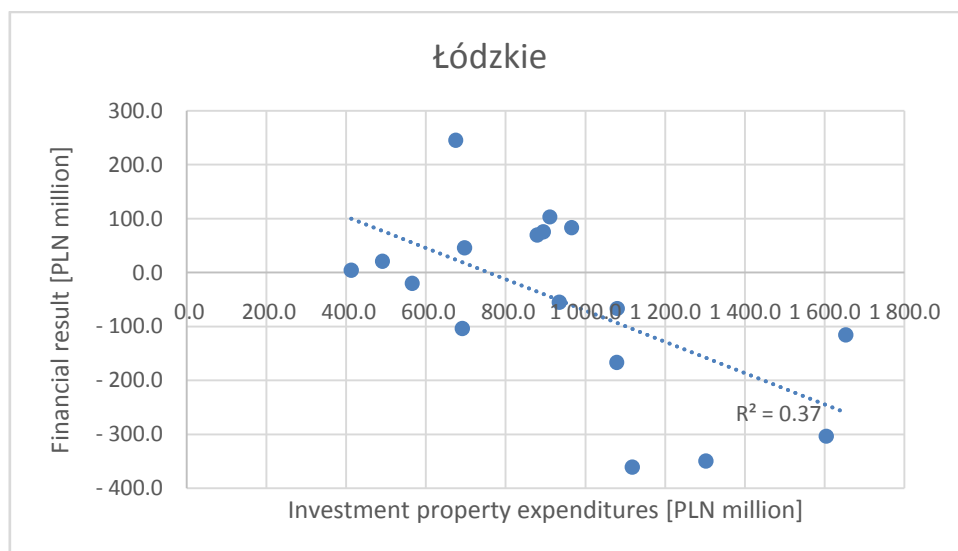


Figure 5. Linear correlation between investment property expenditure and financial result in łódzkievoivodeship in 2003-2019
Source: own study.

The coefficient of determination R^2 was 0.37, which means that the variability of investment property expenditures explains 37.0% of variability of the financial result in łódzkievoivodeship in 2003-2019.

Małopolskievoivodeship: $r = -0.54^*$, 95% CI [-0.08, -0.81], $p = 0.025$ – direction of correlation turned out to be negative, strength of correlation turned out to be high – as investment property expenditures increase, the property result significantly decreases. The result of the analysis is shown in Figure 6.

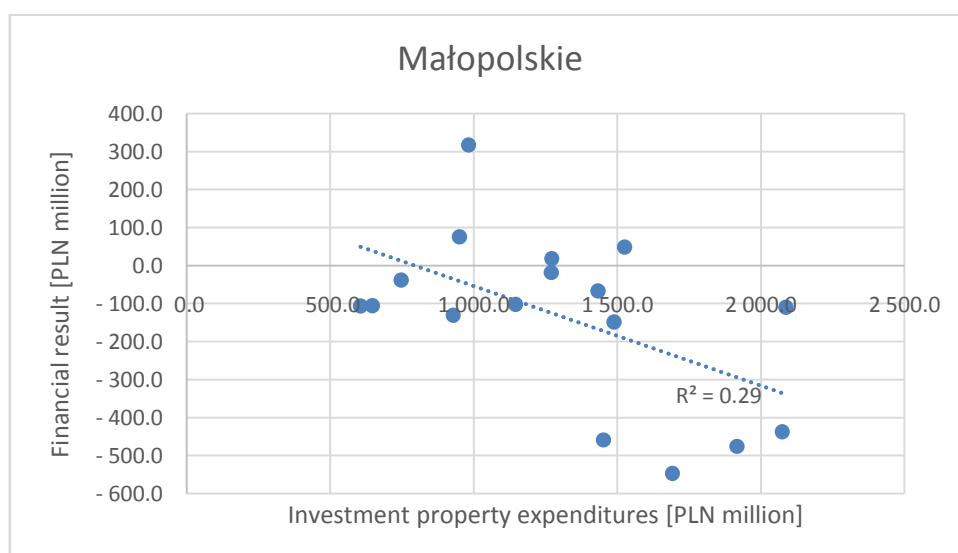


Figure 6. Linear correlation between investment property expenditure and financial result in małopolskievoivodeship in 2003-2019
Source: own study.

The coefficient of determination R^2 was 0.29, which means that the variability of investment property expenditures explains 29.0% of variability of the financial result in małopolskievoivodship in 2003-2019.

Mazowieckievoivodship: $r = -0.57^*$, 95% CI [-0.12, -0.82], $p = 0.018$ – direction of correlation turned out to be negative, strength of correlation turned out to be high – as investment property expenditures increase, the property result significantly decreases. The result of the analysis is shown in Figure 7.

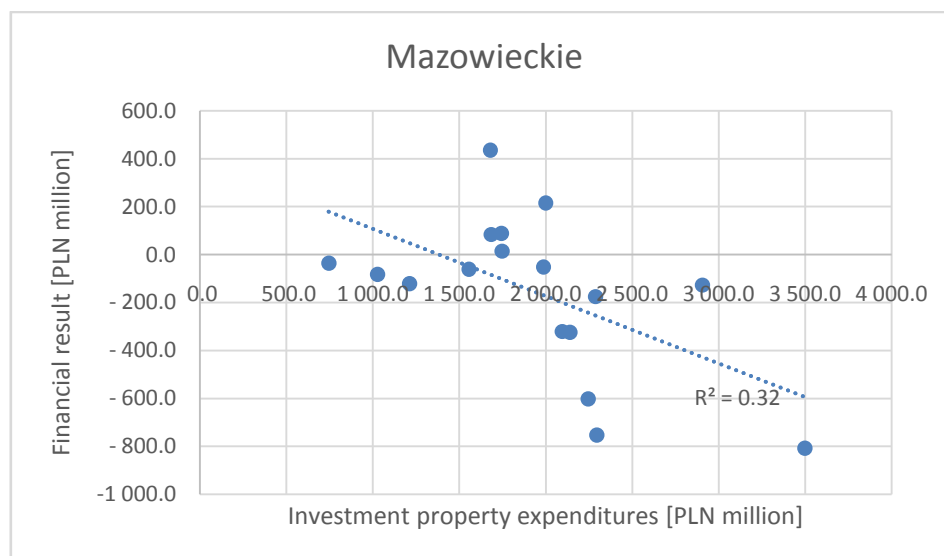


Figure 7. Linear correlation between investment property expenditure and financial result in mazowieckievoivodship in 2003-2019
Source: own study.

The coefficient of determination R^2 was 0.32, which means that the variability of investment property expenditures explains 32.0% of variability of the financial result in mazowieckievoivodship in 2003-2019.

Opolskievoivodship: $r = -0.73^{***}$, 95% CI [-0.39,-0.90], $p < .001$ – direction of correlation turned out to be negative, strength of correlation turned out to be very high – as investment property expenditures increase, the property result significantly decreases. Graphically, the result of the study is shown in Figure 8.

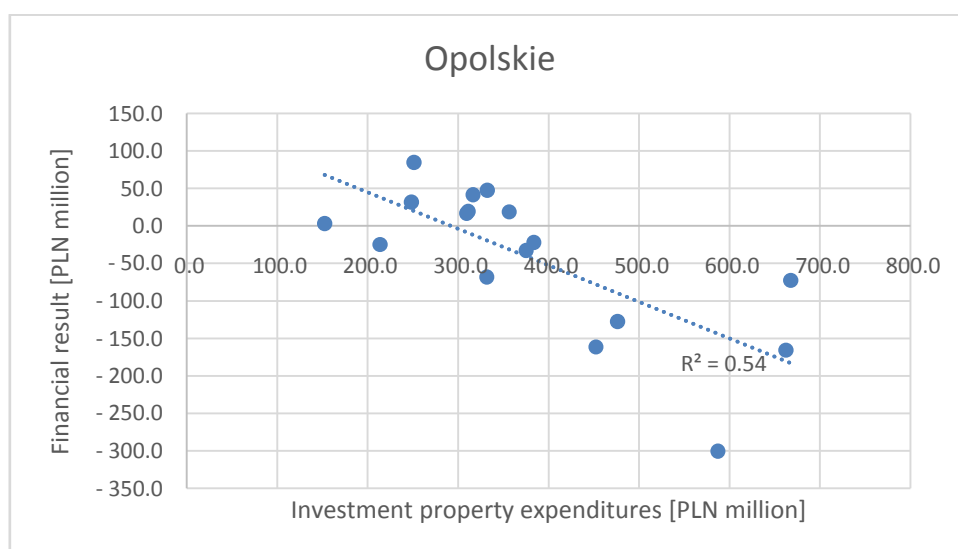


Figure 8. Linear correlation between investment property expenditure and financial result in opolskievoivodship in 2003-2019
Source: own study.

The coefficient of determination R^2 was 0.54, which means that the variability of investment property expenditures explains 54.0% of variability of the financial result in opolskievoivodeship in 2003-2019.

Podkarpackievoivodeship: $r = -0.63^{**}$, 95% CI [-0.21,-0.85], $p = 0.007$ – direction of correlation turned out to be negative, strength of correlation turned out to be high – as investment property expenditures increase, the property result significantly decreases. Graphically, the result of the analysis is shown in Figure 9.

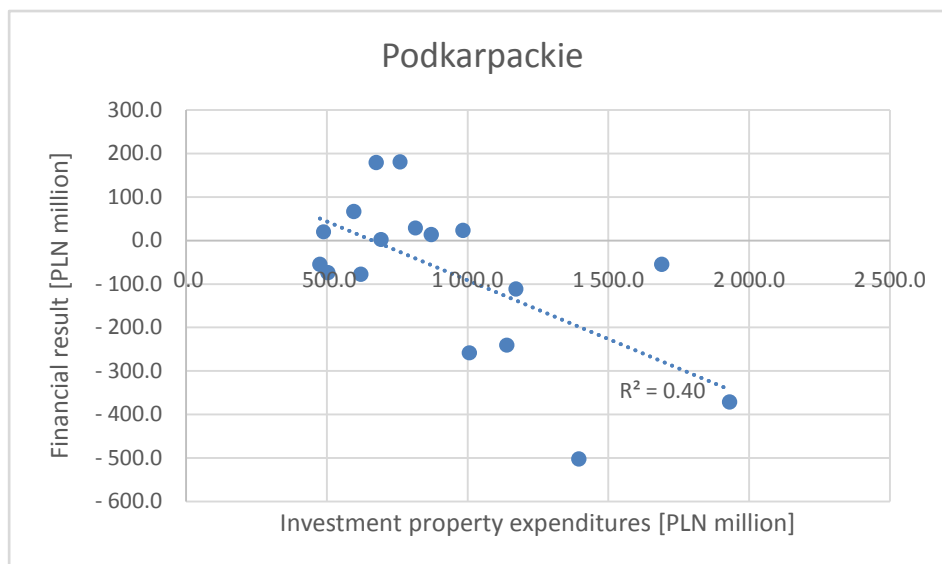


Figure 9. Linear correlation between investment property expenditure and financial result in podkarpackievoivodeship in 2003-2019

Source: own study.

The coefficient of determination R^2 was 0.40, which means that the variability of investment property expenditures explains 40.0% of variability of the financial result in podkarpackievoivodeship in 2003-2019.

Podlaskievoivodeship: $r = -0.55^*$, 95% CI [-0.10,-0.82], $p = 0.022$ – direction of correlation turned out to be negative, strength of correlation turned out to be high – as investment property expenditures increase, the property result significantly decreases. The result of the study is presented in Figure 10.

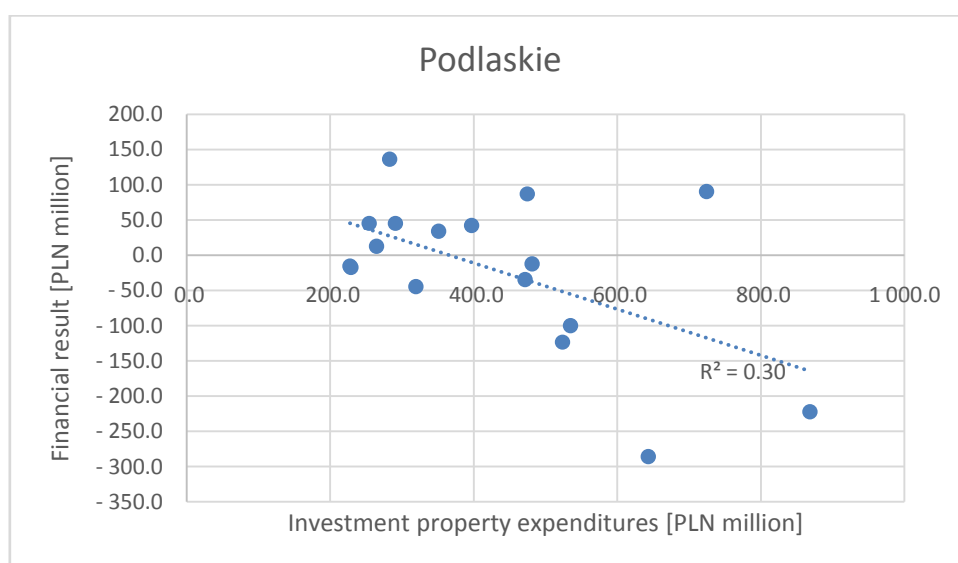


Figure 10. Linear correlation between investment property expenditure and financial result in podlaskievoivodeship in 2003-2019

Source: own study.

The coefficient of determination R^2 was 0.30, which means that the variability of investment property expenditures explains 30.0% of variability of the financial result in podlaskievoivodeship in 2003-2019.

Pomorskievoivodeship: $r = -0.61^{**}$, 95% CI [-0.18,-0.84], $p = 0.009$ – direction of correlation turned out to be negative, strength of correlation turned out to be high – as investment property expenditures increase, the property result significantly decreases. The result of the analysis is shown in Figure 11.

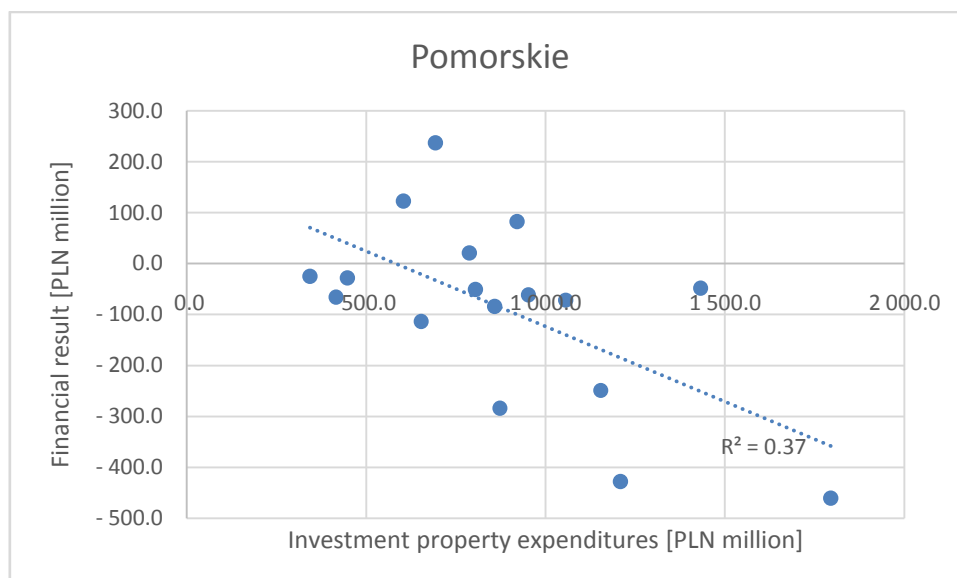


Figure 11. Linear correlation between investment property expenditure and financial result in pomorskievoivodeship in 2003-2019

Source: own study.

The coefficient of determination R^2 was 0.37, which means that the variability of investment property expenditures explains 37.0% of variability of the financial result in pomorskievoivodeship in 2003-2019.

Świętokrzyskievoivodeship: $r = -0.72^{**}$, 95% CI [-0.37,-0.89], $p = 0.001$ – direction of correlation turned out to be negative, strength of correlation turned out to be very high – as investment property expenditures increase, the property result significantly decreases. Graphically, the results of the study are shown in Figure 12.

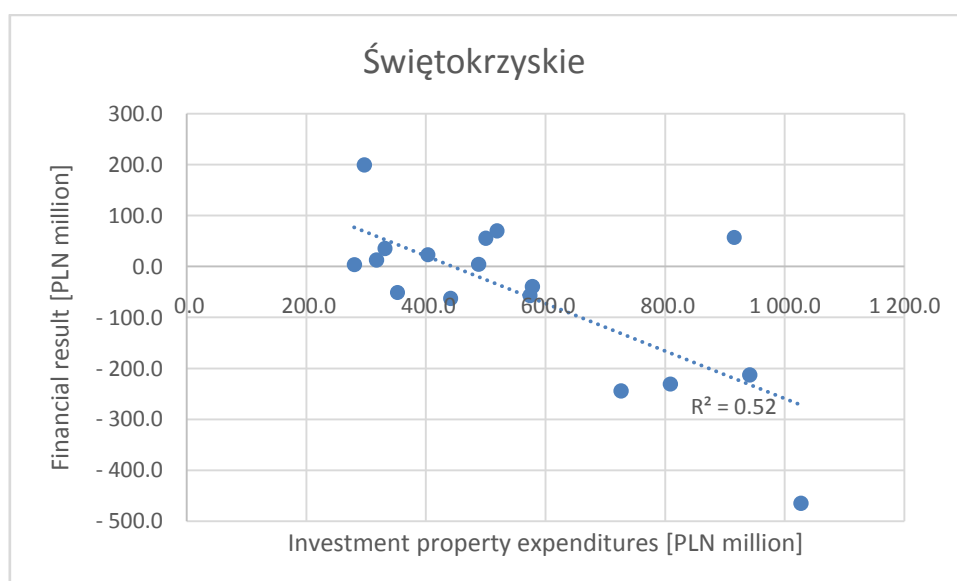


Figure 12. Linear correlation between investment property expenditure and financial result in pomorskievoivodeship in 2003-2019

Source: own study.

The coefficient of determination R^2 was 0.52, which means that the variability of investment property expenditures explains 52.0% of variability of the financial result in pomorskievoivodeship in 2003-2019.

Warmińsko-mazurskievoivodeship: $r = -0.71^{**}$, 95% $CI[-0.34,-0.89]$, $p = 0.002$ – direction of correlation turned out to be negative, strength of correlation turned out to be high – as investment property expenditures increase, the property result significantly decreases. The result of the analysis is shown in Figure 13.

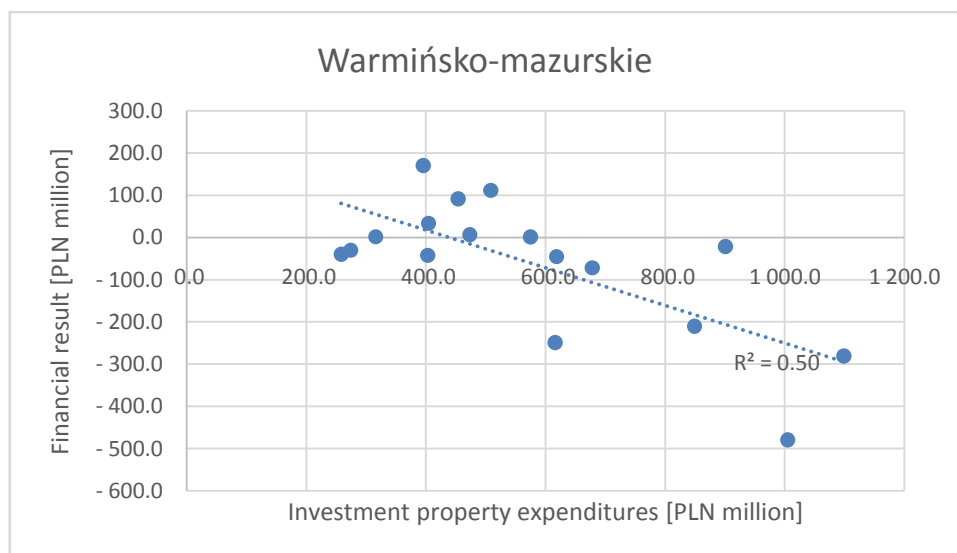


Figure 13. Linear correlation between investment property expenditure and financial result in warmińsko-mazurskievoivodeship in 2003-2019
Source: own study.

The coefficient of determination R^2 was 0.50, which means that the variability of investment property expenditures explains 50.0% of variability of the financial result in warmińsko-mazurskievoivodeship in 2003-2019.

Wielkopolskievoivodeship: $r = -0.50^*$, 95% $CI[-0.11,-0.82]$, $p = 0.019$ – direction of correlation turned out to be negative, strength of correlation turned out to be high – as investment property expenditures increase, the property result significantly decreases. The result of the analysis is shown in Figure 14.

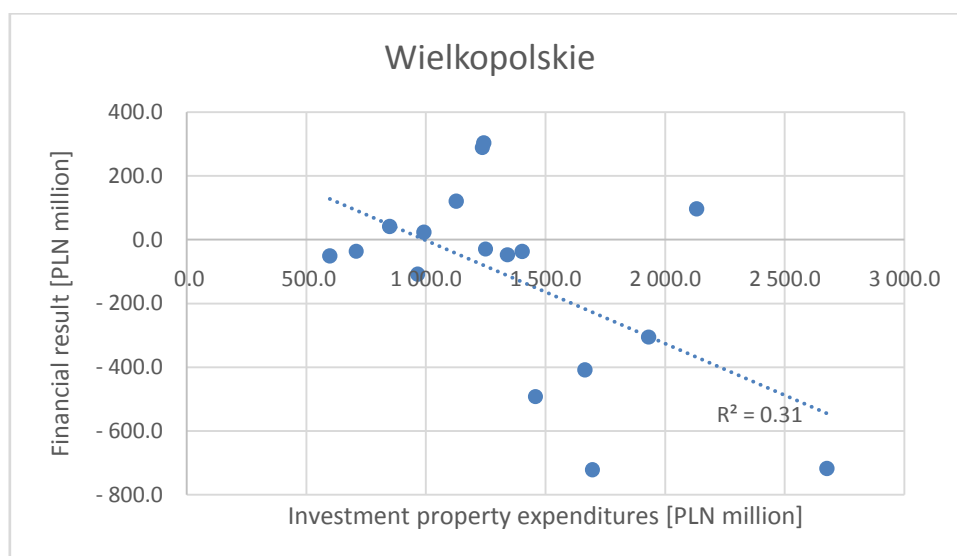


Figure 24. Linear correlation between investment property expenditure and financial result in wielkopolskievoivodeship in 2003-2019
Source: own study.

The coefficient of determination R^2 was 0.31, which means that the variability of investment property expenditures explains 31.0% of variability of the financial result in wielkopolskievoivodeship in 2003-2019.

Zachodniopomorskievoivodeship: $r = -0.50^*$, 95% CI [-0.03,-0.79], $p = 0.041$ – direction of correlation turned out to be negative, strength of correlation turned out to be average – as investment property expenditures increase, the property result significantly decreases. Graphically, the result of the analysis is shown in Figure 15.

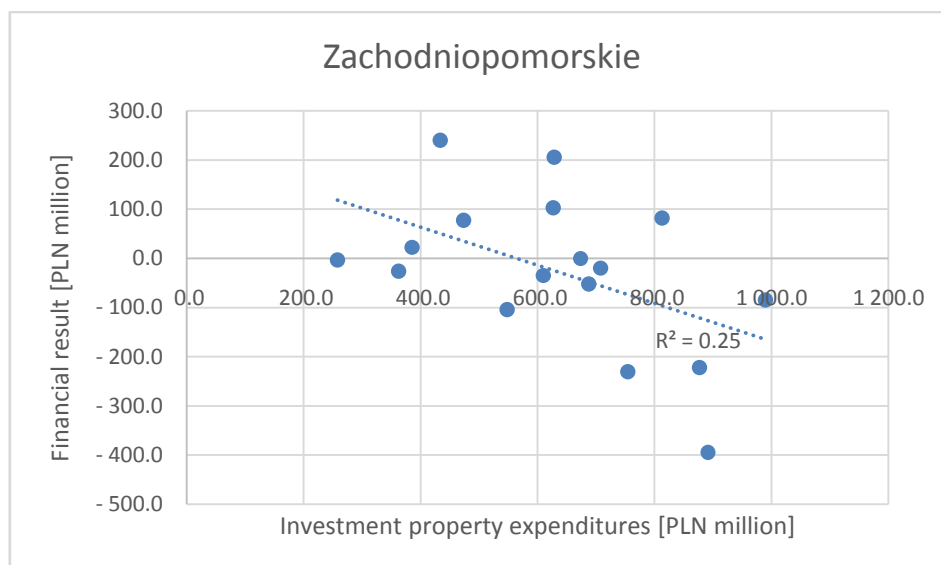


Figure 15. Linear correlation between investment property expenditure and financial result in zachodniopomorskievoivodeship in 2003-2019

Source: own study.

The coefficient of determination R^2 was 0.25, which means that the variability of investment property expenditures explains 25.0% of variability of the financial result in zachodniopomorskievoivodeship in 2003-2019.

Figure 16 presents the results of the analysis for municipalities located in śląskievoivodeship. For these local government units the correlation turned out to be statistically insignificant, which was not a basis for describing the results of the study.

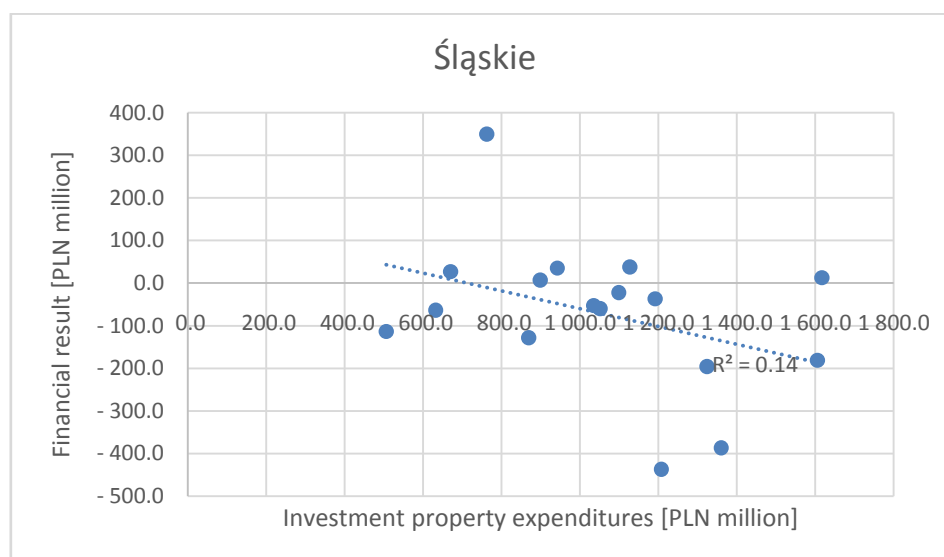


Figure 16. Result of the survey for municipalities of śląskievoivodeship – statistically insignificant correlation

Source: own study.

VI. CONCLUSIONS

The conducted research fully confirmed the hypothesis. In all municipalities subject to the study located in different voivodeships, along with the investments carried out and expenses incurred for that purpose, the budget result was negative. The coefficient of determination in individual municipalities turned out to be differentiated, i.e. from 0.25 for municipalities located in the zachodniopomorskievoivodeship to 0.54 in the case of municipalities in the opolskievoivodeship. Such large variations show the variability in the financial results of municipalities due to the implemented investments.

REFERENCES

- [1]. Alińska, A., Dworakowska M., *Finansejednosteksamorządterytorialnego* [w:] *Współczesnefinansepubliczne [Finances of local government units [in:] Contemporary Public Finance]*, A. Alińska, B. Woźniak, (scientific editor), Difin, Warsaw 2015, p. 260.
- [2]. Dylewski M., Filipiak B., Gorzałczyńska-Koczkodaj M., Ziolo M., *Finansepubliczne. Aspektyteoretyczne i praktyczne [Public finance. Theoretical and practical aspects]*, C.H. BECK, Warsaw 2014., p 64.
- [3]. Juja T., *Finansepubliczne [Public finance]*, WydawnictwoUniwersytetuEkonomicznego w Poznaniu, Poznań 2011, p. 91.
- [4]. Kosek-Wojnar M., Surówka K., *Financesamorządterytorialnego [Local government finances]*, WydawnictwoAkademiiEkonomicznej w Krakowie, Kraków 2002., p.9
- [5]. Lis S., *Współczesnamakroekonomia [Contemporary macroeconomics]*, WydawnictwoUniwersytetuEkonomicznego w Krakowie, Kraków 2011, p. 83.
- [6]. Nikolov, M., *The Future of Local Government Finance: Case Studies of Romania, Bulgaria and Macedonia, Skopje: Centre for Economic Analysis*, pp. 45-49.
- [7]. Owsiak S., *Finansepubliczne. Współczesneujęcie [Public finance. Contemporary approach]*WydawnictwoNaukowe PWN, Warsaw 2017, p. 303.
- [8]. Page, C.E., Goldsmith, M., *Central-Local Government Relations*, London: Sage, pp. 29-31.
- [9]. Act of 2 April 1997 Constitution of the Republic of Poland, Journal of Laws of 1997, No. 78, item 483.
- [10]. Act of 27 August 2009 on public finance, Journal of Laws of 2001, item 305, as amended.
- [11]. Majchrzycka-Guzowska A., *Finanse i prawofinansowe [Finance and financial law]*, Wolters Kluwer, Warsaw 2019.
- [12]. Niewiadomski Z., (ed.), *Samorządterytorialny. Ustrój i gospodarka [Local government. Constitution and economy]*, OficynaWydawniczaBranta, Bydgosz-Warsaw 2001, p. 18.
- [13]. D. Wyszowska, A. Wyszowski, *Samorządterytorialnyjakoinwestorpubliczny w Polsceinatleinnychkrajów OECD [Local government as public investor in Poland compared to other OECD countries]*, Wiadomościostatystyczne [Statistical News], Year LXI 12 (667) 2019, pp. 58—69.

Piotr Sołtyk. "Influence of Investment Expenditures on the Result of Municipal Budgets in Poland." *International Journal of Business and Management Invention (IJBMI)*, vol. 11(07), 2022, pp. 21-32. Journal DOI- 10.35629/8028