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PECULIARITIES OF MUNICIPALITIES' INVESTMENT ACTIVITY: A CASE STUDY OF EASTERN POLAND

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Abstract. Polish municipalities have the competence to initiate and guide own socio-economic development. Local public investment is a particularly important factor that supports the development of every municipality. However, local public investment depends on several conditions, including the current socio-economic status of a municipality, which in turn is influenced by the municipality's investment activity. The investment activity pursued by municipalities, as suggested by many authors, is of special importance in the development of municipalities situated in both socially and economically less developed areas, such as Eastern Poland. The purpose of this study has been to identify the determinants of investment activity carried out by municipalities situated in the provinces of Eastern Poland, in the context of local socio-economic development and the efficiency of local governments, and to assess the strength and direction of relationships between these determinants and the investment activity of municipalities. A multiple linear regression method was chosen to identify determinants of investment activity, as it enables the user to assess the presence of a relationship between a response (dependent) variable and explanatory (independent) variables as well as the strength and direction of such relationships. The time period for most of the analysed variables spanned the years from 2004 to 2020, and the territorial scope was composed of municipalities located in the Polish provinces: Lubelskie, Podkarpackie, Podlaskie, Świętokrzyskie and Warmińsko-Mazurskie. The study confirmed that the investment activity of municipalities depends on factors involved in local socio-economic development. Among these factors, the ones that play a significant role in the municipalities situated in Eastern Poland's provinces are demographic issues, especially internal migrations, economic activity, unemployment and other budget expenses which are competitive to investment outlays, for example expenditure on education and upbringing, or on social welfare. The factors mentioned above implicate the areas worthy special attention of local authorities for the sake of attaining improved socio-economic development of a given area.

Keywords: local socio-economic development; Eastern Poland; investment activity; municipal investments

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1. Introduction

The macroregion called Eastern Poland is the most poorly developed area in Poland and in the European Union in terms of its economic and social standing. This is mostly dictated by the lowest GDP per capita in this area, which is a consequence of low levels of most determinants of economic growth. This situation has persisted since Poland's access to the EU, and the subsequently slightly diminishing gap between Eastern Poland and the EU's average development was due to a less rapid economic growth in the EU developed countries rather than an improved situation in this part of Poland. Because of its specific character, Eastern Poland is particularly important in the country's regional policy (Resolution no 121 of the Council of Ministers ... 2013; Lewandowska et al., 2015, pp. 785-786). However, considering the emerging data on the actual economic and financial impact of the CoVid-19 pandemic (Landmesser, 2021; Waliszewski & Warchlewska, 2021; Mikołajczak, 2021; Korzeb & Niedziółka, 2020; Kuc-Czarnecka, 2020), it can be suspected that this region's status is unlikely to improve.

Among the major economic and social causes of the above situation, the ones most often implicated are poor labour productivity and untapped labour resources, which are linked to a large share of the agricultural sector and a low share of industry in the local economy structure. This in turn results from the fact that provinces in Eastern Poland have poorer resources, such as infrastructure, technological and innovation potential, or work quality (Bal-Domańska et al., 2020). These drawbacks are exacerbated by the shrinking labour resources due to migration and the ageing of the local population (Resolution no 121 of the Council of Ministers ... 2013).

In the aforementioned areas of local socio-economic development, the ones where improvement seems most important in Eastern Poland are innovation potential, quality of labour resources and infrastructure. One of the ways in which these areas can be affected is via investment activity, which should rest on the collaboration of various players, such as public authorities, private entities as well as R&D centres or the society (Rodrigues & Melo 2012, pp. 1484-1485; Cai & Etzkowitz 2020, pp. 189-226). As for public authorities, of key importance are local government units, including municipalities, which are closest to local communities. Local authorities can take a variety of measures to initiate, strengthen or constrain the other elements of the so-called treble or quadruple helix framework (Derulkiewicz et al., 2018; Dziemianowicz et al., 2018; Godlewska & Pilewicz, 2020; Marks-Bielska, et al. 2020).

Other than partnership and collaboration among various bodies engaged in local development, it is essential that municipal authorities, too, should initiate and execute prodevelopmental investments, which lie in the scope of municipalities' own tasks and are funded from municipal budgets. The purpose of such investments is to make qualitative and quantitative changes in the technical and social infrastructure.

On the one hand, the investment activity of municipalities should invigorate local socio-economic development; on the other hand, it can be stimulated or hindered by the achieved level of development of a municipality and the efficiency of a local government. In view of the above, the purpose of this study has been to identify determinants of investment activity in the context of local socio-economic development, and to evaluate the strength and direction of relationships of these determinants with a municipality's investment activity. The research covered municipalities from five provinces in Eastern Poland: Lubelskie, Podlaskie, Podkarpackie, Świętokrzyskie and Warmińsko-Mazurskie. The research time framework spanned the years 2004-2020. Twentynine variables characterising local socio-economic development and the efficiency of local governments were taken into analysis. The response variable was the share of investment expenses in a municipality's total expenditure.

A multiple linear regression method was chosen to identify determinants of investment activity of a local government, as it enables the user, once the method's strict assumptions are satisfied, to assess the occurrence of a relationship between a response variable and any of explanatory variables as well as the direction and strength of these relationships.

The article consists of several parts: a review of the literature, which pertains to dependences, identified by other scholars, between local socio-economic development and efficiency of a local government versus investment activity; the next part describes the chosen research method, selection of variables to be analysed and conditions ensuring the correctness of inferences made on the basis of data generated by the performed linear regression analysis; the next section presents results of our study, and this part is crowned with a discussion, where an effort is made to compare the current research outcome with earlier results reported by other authors. The final part of the article contains a summary, which is a synthetic presentation of the conclusions drawn from the research and a suggestion for further research directions.

2. Theoretical background

The contemporary research literature contains many articles dedicated the issue of a relationship between the investment activity of public authorities (including local governments) and the socio-economic growth. These analyses are most often supported by various econometric models, which explain the above dependence. Among the scholars exploring this field, some have demonstrated the presence of a positive relationship, while others have proven it to be negative (e.g. Boarnet, 1998). The current public debate – both in science and in politics – implicates that investments are an important element in the economic policy on local, national and international levels. It is particularly important for less developed areas, for example provinces in Eastern Poland.

The investment activity carried out by local governments consists in the execution of tasks delegated to local authorities; in Poland these are mainly municipal authorities, which are responsible for ensuring spatial order and safety to local communities, maintaining municipal roads, providing waterworks and sewerage systems, removing waste, supplying electricity and gas, providing public transport, ensuring access to education, health care, etc. (Act on Municipal Government, 1990).

Local investment activity carried out by local governments may contribute to an improved production capacity of a given area in two ways: by increasing production resources and by enhancing the productivity of existing resources. Both can eventually lead to a raised GDP generated in the area governed by a given local government – but this will only happen when new jobs are created in the implemented projects or when multiplier effects are activated in other areas of economy.

In addition to capital and labour, analyses of productivity of companies (function of production) sometimes include public capital (assets) engaged in the mentioned areas. It is assumed that the latter contributes to the improvement of productivity of private capital. Public capital can also act as a substitute of private capital and a source of higher employment (Aschauer, 1989, pp. 171-172; Munnell, 1992, pp. 191-192; Kijek & Matras-Bolibok, 2020). There is a wealth of empirical data to prove that public local investments stimulate private investments, a connection that has an additional positive influence on the socio-economic development in a given area. It can result in the simultaneous increase in production, private investments and employment. Furthermore, public investments are claimed to have a positive impact on regional competitiveness, diminish the income gap, help protect the environment, and contribute to welfare (Bristow & Nellthorp, 2000, pp. 53-57). Local investments, particularly infrastructural ones, can stimulate beneficial organisational and managerial changes, and favour the concentration of economic resources as well as better accessibility of production means markets (Gu & Macdonald, 2009; Turnovsky, 2015, p. 220).

In socially significant areas, the local government's investment activity can also counteract cyclical unemployment and serve as an instrument to support development in areas where the economic activity of local population is low. It may also translate into an improved status of households in terms of health care and

education, and can raise incomes and demand for private assets (Aschauer, 1989; Holmgren & Merkel, 2017, p. 13; Palei, 2015, pp. 168-175; Agénor & Moreno-Dodson 2006; Demetriades & Mamuneas, 2000).

However, local governments' investment activity often requires high financial outlays. Municipalities, particularly ones with a low level of socio-economic development, do not have enough capital to satisfy investment needs, which creates a certain risk. As demonstrated in the study by Stanowicka et al. (2020, p. 82), the rational use of funding sources for investments in municipalities resulted in a more rapid conclusion of the implementation of these investments. Management of funds is rational in these territorial units which – apart from having been delegated own tasks – possess funds for executing such investments. When a local government takes on liabilities (loans or credits) from external entities, an investment funded with this money can be completed and made available to the public sooner; however, the local government in question must retain the capability to repay these liabilities in the future because any case of irrational borrowing of funds can lead to a loss of financial liquidity and excessive debt.

The above review of references justifies the claim that a local government's investment activity is a significant determinant of local socio-economic development, the assertion that has been verified by other researchers (Banaszewska 2018; Jimenez et al., 2020). The multi-faceted nature of local socio-economic development and multi-directional type of investment projects implemented by local governments mean that investment activity can be classified as an element of the set of traditional local development determinants composed of economic, social, financial, infrastructural, political, institutional and other conditions (Wiatrak, 2018, p. 115; Sims et al., 2004, p. 4; Wong, 2002, pp. 1835–1837). On the other hand, as indicated by some authors, the investment activity of a local government is determined by the level of development already achieved and the factors which influence thereof (Kozera et al., 2021, p. 25). Consequently, factors that influence the development of municipalities were adopted in the empirical part of this study as potential variables explaining the scope of investment activity conducted by municipalities.

It is also worth noting that the efficiency of a municipality is a factor involved in the municipality's socio-economic development (Marks-Bielska et al., 2017, p. 13; Farelnek, 2020; Wierzbicka, 2020). According to these scholars, such efficiency corresponds to the ability of a local government to adapt itself to changes, to create relationships with participants of economic processes, to shape the socio-economic development on the basis of the municipality's available resources, and to create new local resources. All these elements composing a definition of the efficiency of a local government unit, especially the ability to create new resources, are connected with investment activity. Considering the above, the empirical part of our study, beside conditions influencing local socio-economic development, also focused on factors which shape a municipality's efficiency. The following are mentioned: issues associated with maintaining an adequate level of expenses and the acquisition of EU funds, social activity in the form of setting up foundations, associations and social organisations, and actions taken under the umbrella of local democracy (e.g. referenda). Other important manifestations of a municipality's efficiency are: the level of education of council members, the share of a municipality's total area covered by spatial management plans, or availability of places for children in creches and nursery schools (Marks-Bielska et al., 2017, p. 26). Finally, it needs to be emphasised that the investment activity carried out by municipalities also depends on previously mentioned factors which influence local socio-economic development (see Wichowska 2021; 2019a; 2019b). A measure of a municipality's investment activity might be the share of capital expenditure in the total expenditure of a municipality. This measure was applied in the research's empirical part. It should be borne in mind that a municipality's investment expenses are quite flexible depending on the economic status of a given local government unit (Breunig & Busemeyer, 2012, pp. 935-936). Actually, investment expenses are cut down most often whenever a crisis strikes and current expenses grow. It can also be expected that a municipality's investment activity will be lower in municipalities where the local socio-economic development and the municipality's efficiency are lower.

3. Research objective and methodology

The objective of this study has been to identify the determinants of investment activity in the context of local socio-economic development and efficiency of local government, and to assess the strength and direction of relationships between these determinants and municipalities' investment activity. The authors also propose and discuss a corresponding research hypothesis, namely that there is a connection between investment activity and the level of socio-economic development as well as the efficiency of municipal authorities in provinces situated in Eastern Poland.

The territorial scope of the research comprised municipalities located in the provinces which compose Eastern Poland. The following provinces were included: Lubelskie, Podlaskie, Podkarpackie, Świętokrzyskie and Warmińsko-Mazurskie. The choice of the analysed time period was dictated by the availability of data in the Local Data Bank of Statistics Poland (former Main Statistical Office GUS) (2011), and for most variables spanned the years 2004 to 2020. This long time period was justified by the lengthy implementation of some investment projects, the funding of which was reflected in multi-year financial plans of municipalities.

The multiple linear regression method was employed to reach the research aim. This method lets the user determine a statistical linear relationship between a response variable and more than one explanatory variable. More specifically, the method aims to explain the variation (movement) of a response variable by the variation of explanatory variables (Brooks, 2008, p. 27). Estimated linear regression coefficients (parameters) determine by how many units on average the dependent variable value will change when the value of an independent variable changes by one unit. The basic limitation of this method is that the results do not inform about cause-and-effect relationships, but only provide information about relationships (dependences) occurring between variables. Moreover, results may vary if a different set of explanatory variables is selected. To avoid this problem, a fixed set of potential explanatory variables was chosen when collating data for all municipalities analysed in individual provinces within the same time range.

The response variable (Y) was the share of capital expenditure in the total budgetary expenditure of municipalities. Potential explanatory variables pertaining to local socio-economic development and the efficiency of municipalities were the variables adopted in the study by Marks-Bielska et al. (2017, pp. 38-39; 2021, pp. 41-42; Wojarska et al., 2018, p. 143). This choice was dictated by the complex character of socio-economic phenomena occurring during developmental processes, which necessitated the use of various metrics - symptoms of this development. The chosen parameters should also reflect all significant characteristics, which would enable quantitative evaluations of the analysed objects (Szymła 2005, p. 49).

The following variables were included among potential determinants of investment activity: X_1 – revenue to a municipality's budget from the income tax paid by physical persons, converted per capita; X_2 – share of own revenue in total revenue in a municipality's budget; X_3 – a municipality's budget own revenues per capita; X_4 – percentage of sewerage system users; X_5 – percentage of waterworks users; X_6 – number of natural persons conducting own business activity per 100 working age persons; X_7 – number of national economy entities per 1 000 residents; X_8 – value of the ration of newly registered businesses to businesses deleted from the REGON register per 10 000 residents; X_9 – share of registered unemployed in the working age population; X_{10} – share of working persons in the working age population; X_{11} – number of post-working age persons per 100 working age persons; X_{12} – internal migration rate in a municipality; X_{13} – external migration rate in a municipality; X_{14} – number of foundations, social associations and organisations per 10 000 residents; X_{15} – percentage of the area covered by spatial management plans in a municipality's geodesic area; X_{16} – expenditure on servicing debt per

capita; X_{17} – a municipality's budget result per capita; X_{18} – share of acquired EU grants in total revenues to a municipality's budget; X_{19} – turnout in local government elections; X_{20} – expenditure on public administration in a municipality per capita; X_{21} – percentage of municipal councillors with higher education; X_{22} – expenditure from a municipality's budget on physical culture per capita; X_{23} – expenditure from a municipality's budget on education and children's upbringing per capita; X_{24} – number of places in nursery schools per 1 000 children aged 3 to 6 years; X_{25} – percentage of children aged 0 to 3 years in creches; X_{26} – expenditure from a municipality's budget on health care per capita; X_{27} – expenditure from a municipality's budget on social care and welfare per capita; X_{28} – revenues of a municipality from fees charged on seasonal and permanent markets per capita; X_{29} – expenditure from a municipality's budget on public safety and fire protection per capita.

Conditions for correctly drawing inferences from results of a linear regression analysis were met in respect of the following assumptions: the linearity of the model relative to the parameters (the Ramsey RESET test), homoscedasticity of random variables (the White's test), normality of the distribution of the random variable (the Doornik-Hansen test), collinearity of the parameters (the VIF). The F test for the total significance of parameters, t-Student test for significance of every parameter and determination coefficients R^2 served to assess the quality of the estimation of the model (Volkova & Pankina, 2014, pp. 552-555; Buja et al., 2019, pp. 523-544; Doornik & Hansen, 2008, pp. 927-939; Jou et al., 2014, pp. 1515-1541). Significance was set at $p=0.05$ in all determinations of satisfying the methodological assumptions. The linear regression analysis was carried out with the help of a software programme Gretl v. 2021b.

4. Results and discussion

The results of this study achieved with the multiple linear regression method, as well as the fulfilment of the conditions for correctly drawing inferences from the results thereof regarding every analysed province in Eastern Poland, are presented in table 1.

The factors attributed to local socio-economic development and the efficiency of municipalities in the lubelskie province that proved to be negatively correlated with investment activity, expressed by the share of capital expenditure in the municipal expenditure in total (Y), were: share of registered unemployed persons in the working age population (X_9); number of post-working age people per 100 working age persons (X_{11}); expenditure from the municipal budget on social care and welfare per capita (X_{27}). The factor that was positively correlated with Y was the expenditure on public administration in a municipality per capita (X_{20}). Among the explanatory variables, the one most strongly correlated with the response variable was the share of registered unemployed persons in the whole working age population (X_9), while the weakest correlation was determined for the expenditure from the municipal budget on social care and welfare per capita (X_{27}). The degree to which the variation of Y was explained by the variation of X_9 , X_{11} , X_{20} and X_{27} was 35.39%.

Table 1. Results of a linear regression analysis of the share of capital expenditure in total expenditure of a municipality (Y – the response variable) and properties characterising the development and efficiency of municipalities (X_n – explanatory variables) in provinces of Eastern Poland

Province	Independent variables	Coefficient of regression	P-value in Student's Test	VIF	F-Test	Doornik-Hansen's Test	White's Test	Reset Ramsey' Test	R ²
Lubelskie	X ₉	-0.5520	0.0145	1.351	F(4, 52) = 7.12 with p-value = 0.00012	Chi-square = 4.19 with p-value = 0.12	LM = 7.19 with p-value = P(chi-square (14) > 7.19) = 0.93	F(2, 50) = 1.68 with p-value = P(F(2, 50) > 1.68) = 0.20	35.39%
	X ₁₁	-0.2954	0.0035	1.092					
	X ₂₀	0.0169	0.0418	1.202					
	X ₂₇	-0.0114	0.0335	1.464					
Podkarpackie	X ₅	0.051	0.0007	1.080	F(3, 77) = 6.44 with p-value = 0.000601	Chi-square = 4.58 with p-value = 0.10	LM = 6.27 with p-value = P(Chi-square (9) > 6.27) = 0.71	F(2, 75) = 0.59 with p-value = P(F(2, 75) > 0.59) = 0.55	20.05%
	X ₈	-5.3101	0.0139	1.215					
	X ₁₂	0.0242	0.0020	1.164					
Podlaskie	X ₁₂	0.0294	5.65e-06	1.041	F(3, 63) = 16.29 with p-value = 6.04e-08	Chi-square = 1.77 with p-value = 0.41	LM = 8.44 z wartością p = P(Chi-square (9) > 8.44) = 0.49	F(2, 61) = 0.35 with p-value = P(F(2, 61) > 0.35) = 0.71	43.68%
	X ₂₃	-0.0112	0.0008	1.069					
	X ₂₄	0.0027	0.0456	1.063					
Świętokrzyskie	X ₈	-3.7202	0.0055	1.039	F(3, 31) = 10.72 with p-value = 0.000054	Chi-square = 0.31 with p-value = 0.85	LM = 8.59 with p-value = P(Chi-square (9) > 8.59) = 0.48	F(2, 29) = 1.55 with p-value = P(F(2, 29) > 1.55) = 0.23	50.92%
	X ₁₂	0.0585	5.89e-05	1.026					
	X ₂₃	-0.0120	0.0062	1.062					
Warmińsko-mazurskie	X ₄	-0.0634	0.0015	1.135	F(3, 42) = 9.74 with p-value = 0.000053	Chi-square = 1.72 with p-value = 0.42	LM = 7.60 with p-value = P(Chi-square (9) > 7.60) = 0.57	F(2, 40) = 0.44 with p-value = P(F(2, 40) > 0.44) = 0.65	41.03%
	X ₉	-0,2727	0,0229	1,119					
	X ₁₈	0,7957	0,0213	1,022					

Source: Own calculation based on Local Data Bank, Statistics Poland

In the municipalities of the podkarpackie province, statistically significant correlations with the response variable were determined for the following variables: percentage of waterworks users (X₅) – a positive correlation; value of the ratio of newly registered business to businesses deleted from the REGON register per 10 000 population (X₈) – a negative correlation; internal migration balance in a municipality (X₁₂) – a positive correlation. Of these, variable X₈ was most strongly correlated with the response variable Y, whereas variable X₁₂ had the weakest correlation with it. Variation of the above variables explained the variation of Y in 20.05%, which can be seen as a low level. It means that 80% of the variation of Y can be explained by the variation of factors which were not taken into account in the study but which are linked to other aspects of the activities carried out by local governments or else which have a qualitative character.

In the municipalities of the podlaskie province, the response variable Y was statistically significantly correlated with the following variables: internal migration balance in a municipality (X₁₂) – a positive correlation; expenditure from the municipal budget on education and children's upbringing per capita (X₂₃) – a negative correlation; number of places in nursery schools per 1000 children aged 3 to 6 years (X₂₄) – a positive correlation. The strongest correlation with the response variable Y was determined for variable X₁₂, whereas the weakest one – for X₂₄. Variation of the response variable in the municipalities of this province was explained in 43.68%.

Among the explanatory variables applied to explain the ratio of capital expenditure in total expenditure of the municipalities in the świętokrzyskie province, the following were found to play a role: value of the ratio of newly registered business entities to the business entities deleted from the REGON register per 10 000 population (X_8) – a negative correlation; balance of internal migrations in a municipality (X_{12}) – a positive correlation; expenditure from the municipal budget on education and children's upbringing (X_{23}) – a negative correlation. The strongest correlation with the response variable Y was determined for variable X_8 , and the weakest one – for variable X_{23} . The determination coefficient R^2 was 50.92%, which meant that over half of the variation of the mentioned explanatory variables explained the variation of the response variable Y. Noteworthy, this is the highest degree of explaining the variation of the municipalities' investment activity indicator by variables associated with local socio-economic development and the efficiency of local governments compared to the results from the municipalities in the other four provinces of Eastern Poland.

In the municipalities from the warmińsko-mazurskie province, the response variable Y was explained by three explanatory variables: percentage of sewerage system users (X_4) – a negative correlation; share of registered unemployed persons in the working age population (X_9) – a negative correlation; share of acquired EU funds in total revenues of the municipal budget (X_{18}) – a positive correlation. The strongest correlation with the response variable was determined for variable X_{18} , and the weakest – for X_4 . The variation of Y was explained by the variation of X_4 , X_9 , and X_{18} up to 41.03%.

The performed regression analysis showed that of the twenty-nine potential explanatory variables describing local socio-economic development and the efficiency of local government in the municipalities submitted to our analysis, only 11 variables were identified as explaining the investment activity of municipalities in Eastern Poland, expressed by the share of capital expenditure in total expenditure of the municipalities. Among these 11 variables, the one that appeared most often was variable X_{12} – balance of internal migrations in a municipality, which was determined as a valid one in municipalities of three provinces: podkarpackie, podlaskie and świętokrzyskie. The following appeared twice as explanatory variables in different provinces: X_8 – value of the ratio of newly registered business entities to entities deleted from the REGON register per 10 000 population; X_9 – share of registered unemployed persons in the working age population, and X_{23} – expenditure from the municipal budget on education and children's upbringing per capita. The other variables appeared singly in municipalities of individual provinces. As many as 18 variables did not feature even once as explanatory variables.

As it results from the research of many authors (e.g. Baumol 1990, Audretsch & Thurik, 2001, Acs et al. 2008, Williams & Vorley, 2015, Williams et al. 2017), the formation and development of enterprises plays a significant role in the process of socio-economic development of individual economies at various territorial levels. Therefore, they can also stimulate the investment activity of units in which they operate.

Considering the characteristics of the provinces of Eastern Poland, presented in the introduction, and the results of our study, it can be concluded that the most frequently observed determinant of the investment activity of municipalities in that part of Poland are demographic problems, especially internal migrations. The higher the balance of migration, meaning more people arriving in a municipality than leaving it, the higher the share of investment expenses in the municipality's total expenses. This relationship could be explained by the direct connection between internal migrations and own revenues of municipalities, which are the basis for any investments carried out by municipalities (Wichowska, 2021b, p. 4; Kozera et al., 2021, pp. 7-8). The number of post-working age persons per 100 working age persons was identified as one of the demographic problems displaying a statistically significant relationship with investment activity in municipalities of the lubelskie province. The aging of societies is becoming the limit of economic growth. As a consequence, the shrinking labour resources are: slowing GDP growth and GDP per capita, as well as an increase in public expenditure. As indicated Bidisha et al. (2020) in contemporary economy importance of demographic composition on labour

supply, asset accumulation, savings, hence on the overall growth processes increases. Very similar relationships and their explanation can be identified in terms of starting and conducting economic activity in municipalities of the other provinces of Eastern Poland, same as the issues connected with the unfavourable situation in the labour market (unemployment).

The expenses which seem to compete with investment expenses in municipalities located in Eastern Poland, and the level of which proved to be one of the determinant of municipalities' investment activity in some of the analysed provinces, were the money allocated to education and to social welfare, both displaying negative correlations. This attests to the previously mentioned elasticity of investment expenses to the current situation in a given territorial unit. This is confirmed by the results of the research by Lizińska and co-authors (2020), which indicated that the share of educational expenditure in municipalities of, for example, warmińsko-mazurskie province in their total expenditure in 2008-2018 remained within the range of 27–35%. When budgetary resources are scanty, local governments will tend to forgo investment projects and focus on current activities. As Stoker (2011) points out, local governments can generally be divided into two groups: those that try to fulfill all their functions and carry out tasks in a sustainable manner, and those that strive to implement only the chosen ones.

In conclusion, it should be emphasised that the research results presented in this paper might suggest some limited influence of the level of local socio-economic development achieved by now and the efficiency of municipalities on their investment activity. First and foremost, this is indicated by the fact that only 11 out of 29 variables tested in the study were determined to be significant determinants of investment activity. Secondly, it is also supported by the previously implicated low level of explanation of the response variable by the factors identified in the scope of local socio-economic development and the efficiency of local governments, which may suggest a lack of strong feedback between them, contrary to the situation in more developed regions. Verification of these assumptions can be seen as a subsequent research challenge.

Conclusions

Local government units in Poland have the competency to initiate and guide their socio-economic development. In less developed regions, such as municipalities located in the provinces of Eastern Poland, public investments implemented by local governments are a particularly important factor supporting the development of these territorial units, next to other measures taken to encourage the social and economic activity among local communities. On the one hand, municipalities are the nearest to and have adequate knowledge of the needs and problems of residents of these units; on the other hand, municipalities are legally obligated to perform the aforementioned activities. The cited literature indicates that local investments carried out in a planned and focused manner in areas particularly requiring public intervention, are a chance to bring about a number of positive outcomes, both economic and social ones. However, it is worth emphasising that the investment activity by local governments is embedded in specific reality in a given territorial unit and is determined by the current level of development as well as the efficiency of that local government.

The study reported in this paper suggests that the level of local socio-economic development achieved thus far and the efficiency of local governments are statistically significantly correlated with the investment activity of municipalities situated in the provinces of Eastern Poland. Thus, the research hypothesis was verified positively. Nevertheless, it needs to be pointed out that the research results can implicate the limited impact of determinants attributed to local socio-economic development and the efficiency of municipal authorities on the investment activity performed by municipalities. This can be inferred from a small number of determinants which explained the variation of the response variable (in total, 11 of the 29 variables chosen for the analysis). Secondly, these variables explained the variation of Y only to a small degree. These findings may indicate that the investment activity of municipalities in the provinces of Eastern Poland is more strongly influenced by other factors or that there is a lack of feedback between the analysed phenomena.

It is also worth noticing that municipalities situated in each of the provinces of Eastern Poland differed in the degree to which the variation in the share of capital expenditure in total expenditure of a municipality was explained by the variation of the variables attributed to local socio-economic development and the efficiency of local government. This variation was explained to the highest extent in the municipalities in the świętokrzyskie province (over 50%), and to the smallest degree in the municipalities of the podkarpackie province (over 20%). It can be expected that positive effects of investment activity, such as a higher GDP growth, higher levels of private investments, higher employment, as well as the resulting social profits, which the cited researchers have been pointing to for many years, will appear sooner and will be greater in municipalities situated in the provinces where the determination coefficient reached a higher value.

This study enabled us to identify the factors that influence investment activity. In this area, the following conditions play an important role: demographic variables, especially internal migrations, low economic activity, unemployment, as well as expenses from local budgets which are competitive towards investment expenses, that is expenses on education and children's upbringing, and on welfare. These factors naturally point to areas which deserve special attention of local authorities if the local socio-economic development is to be improved. Such areas should be associated with population policy, economic policy and financial policy. Investment activity, in turn, ought to be closely bound with local needs and integrated with existing investment projects and development. Furthermore, municipalities should adopt a long-term perspective in planning their activities. This is how they can activate positive effects of local public investments.

The results of our quantitative analyses as well as the limitations of the linear regression method suggest that it may be worth expanding similar studies by including qualitative factors. An appropriate method for this purpose could be via surveys, which might directly verify the research results presented above and could pose other questions on determinants of investment activity. Another interesting direction in future research can be a comparative analysis of municipalities from other Polish provinces, where differences and similarities could be displayed in terms of the analysed connections between investment activity and local socio-economic development or the efficiency of local governments, especially in municipalities which are distinguished by a high level of socio-economic development.

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