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*Alicja Sekuła**, *Beata Basińska***

MORE FREEDOM – MORE INVESTMENTS. THE RELATIONSHIP BETWEEN THE EXTENT OF FISCAL AUTONOMY WITH RESPECT TO OWN REVENUES AND INVESTMENT EXPENDITURES OF POLISH COMMUNES AND CITIES WITH COUNTY RIGHTS

The purpose of this study was to investigate the relationship between own revenues characterized by different levels of fiscal autonomy and investment expenditures of selected local government entities in Poland. Accordingly, the following research hypothesis was formulated: there is a relationship between the type of own revenue identified with respect to fiscal autonomy and the size of investment expenditures. Revenues characterized by low or no fiscal autonomy are more likely to be earmarked for current expenditures.

The study encompasses the 2003–2011 period. Two groups of local government entities were analyzed: cities with county rights and communes (with the exception of city communes that are cities with county rights, constituting the first group). The calculations carried out demonstrated that in both analyzed groups the revenues characterized by extensive fiscal autonomy (EFA), such as revenues from the property tax, had the greatest impact on investment expenditure: in communes, an increase in revenue in this group by PLN 1,000,000 resulted in an increase in investment expenditure by PLN 2,180,000, while in cities with county rights it increased by PLN 1,320,000.

The general conclusion is that local government entities should be granted the type of own revenues that they are allowed to structure to the greatest extent, since this is the type of revenues that most fully translates into investment activity, thus ensuring the strongest stimulus for development.

Keywords: own revenues, fiscal autonomy, investment expenditures, cities with county rights, communes, Polish local government, passive fiscal autonomy, limited fiscal autonomy, extensive fiscal autonomy

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1. INTRODUCTION

Local governments were created for the purpose of satisfying the needs of local communities, e.g. by providing social services. Limited financial resources force them to seek sources of revenue that would most fully translate into expenditures that fulfil the needs of the residents. This fact has

* Faculty of Management and Economics, Gdańsk University of Technology

contributed to the formulation of the aim of this article, which is to investigate whether the strength of the relationship with investment expenditures varies between the different types of own revenues and, if so, which type of own revenue shows the strongest relationship with such expenditures. The revenues were categorized with respect to the local authorities' degree of independence in structuring the sources of budget receipts. This criterion is referred to as fiscal autonomy.

The issues explored in this article are significant for several reasons. First of all, the economic slowdown observed since 2009 has resulted in a reduction in overall revenues of local government entities or a decreased rate of their growth. The size of the revenues is all the more important now because after 2020, when the current EU programming period ends, regional policy funds (requiring a local government entity's own contribution) will be less sizeable than now.

While the subject of revenue diversification and its impact on the stability and amount of revenues does feature in specialist literature, its effect on expenditure is far less frequently discussed. It has been demonstrated in articles examining similar topics that state-level government entities expecting government support are more inclined to spend their own resources. The support mechanism, referred to as soft budget constraint, makes it possible to maintain the level of infrastructure investment even if the current expenses financed with own revenues are increasing (Crivelli 2011).

However, we have found no publications that analyze the impact of revenues as divided into categories with respect to the extent of autonomy and freedom to shape the component structure of sources of revenues.

The second reason for conducting the analyses was the marked trend in the structure of own revenues manifesting itself in the decreasing share of property tax in own revenues over the years (Krane, Ebdon, Bartle 2001; Clair 2012). In Poland the share of property tax in own revenues was 35% in 1995 compared to only 20% in 2008. Therefore it is necessary to address the question about what other revenues can be used to supply local government budgets and about the desired characteristics of these revenues.

The issue brought up in this article – looking for the relationship between the type of revenue and investment expenditures – is encompassed within the broader subject of revenue diversification. The global literature on the subject focuses on investigating the effect of revenue system diversification on the size of revenues. The results obtained confirm the thesis that a more diversified system of revenues of urban areas contributes to an increase in

the revenue they earn (Chernick, Langley, Reschovsky 2011). However, there are no studies presenting the conclusions based on the analyses of the local government system in Poland.

2. COMMUNES AND CITIES WITH COUNTY RIGHTS IN THE POLISH LOCAL GOVERNMENT STRUCTURE

Polish local government has been functioning on three levels since 1999: commune (gmina), county (powiat) and region (voivodeship). The voivodeship self-government has a regional character (Act... on voivodeship self-government, Art. 1), and the inhabitants, by virtue of law, make up a regional self-governing community. Counties and communes have a local character. A commune is the fundamental local government entity, while a county has the status of a local entity performing tasks exceeding the competences of communes (Act ... on county self-government, Art. 4). With respect to the nature of the localities that make up a commune, they are divided into three types: urban, rural and urban-rural. The first type consists of a single city, i.e. the administrative boundaries of the commune and the city coincide. The second type consists of several villages; there is no urban centre within the commune and its seat is usually the largest village within its area. An urban-rural commune has a mixed character, encompassing a town as well as villages and countryside. The town is usually the seat of the commune.

Some urban communes, i.e. of the first type, have a specific status: one administrative centre performs both commune and county tasks. Formally, they are referred to as cities with county rights. They were created in the following three circumstances, provided for in the act (Act ... on county self-government, Art. 91):

- the city's population exceeded 100,000 as at the end of 1998;
- the city lost voivodeship seat status in 1999;
- the city had county status at the time of the first administrative division of the country into counties.

The nomenclature of local government bodies – the legislative body and the executive body – and the method of electing the authorities reflect the county character of the entities, but since they perform the tasks of both a county and a commune, the overall revenue consists of revenues derived from performing both commune tasks and county tasks. Beside cities with county rights, the county-level tasks are also performed by counties made up of several communes situated within their boundaries, which are often

referred to as "land counties" to set them apart from cities with county rights and to make a reference to the historic nomenclature.

Despite these differences, in the light of Polish law, cities with county rights do not form a separate level of local government or a fourth type of commune. However, because of their distinctive functional, demographic, urban, administrative and economic features, they are often considered a separate category in statistics.

The subject of this study is communes, excluding those urban entities that perform county-level tasks apart from commune-level tasks, which are therefore analyzed as a separate group – cities with county rights.

3. SIGNIFICANCE AND DIVERSIFICATION OF LOCAL GOVERNMENTS' OWN REVENUES

The fiscal federalism theory, proposed by R. Musgrave (Musgrave 1959), developed and followed up by many researchers (Tiebout 1961, Oates 1999), including Polish ones (Piotrowska-Marczak 2009), assigns sources of revenue to decentralized territorial government and self-government entities at regional and local levels. This concept can be applied to unitary states and federations (Wągrodzka 2011) if public tasks are accomplished in a decentralized manner.

At present, the fiscal federalism theory is considered to encompass the distribution of revenues and tasks, including fiscal relationships, between the individual levels of government. It stipulates that each local government level should have its own dedicated sources of budget revenues. These considerations relate to the vertical distribution of revenues, whereby the revenues are assigned to each government level, starting from the highest, i.e. central, and ending with the lowest, i.e. local level. The detailed manner of distribution depends on the division of functions between the individual levels of public authorities. All local government levels should have their own revenues, understood as receipts directly supplying their budgets, assigned to them by law, which the government entities may independently structure and control with respect to the manner of collection.

In Poland, the general classification of local government entities' revenues is set out in the Constitution (The Constitution…, art. 167, p. 2), which divides them into own revenues, general subsidies and specific grants from the State Budget. This division is made with consideration to the independence of local governments in regard of structuring the revenues and the spending of funds derived from a particular source. Local governments

are responsible for raising the maximum possible revenue to pay for the services and programmes requested by the citizens (Carroll, Johnson 2010).

The revenues of a local government depend on the jurisdiction of a particular country, but also on the economic, technological and demographic changes (Bartle, Kriz, Morozov 2011). The fundamental category is own revenue. This concept "(...) is understood to mean the revenues whose sources are situated in the territory of a particular local government entity and which have been granted to the unit in their entirety and indefinitely" (Guziejewska 2005). The extent of financial independence of a territorial entity is relative to the share of own revenues in the budget. A high level of own revenues is considered to be an expression of activity and self-sufficiency of territorial entities.

By law (Act... on the revenues of local government entities, art. 3, p. 2), own revenues include the entities' share in the corporate and personal income taxes, which constitute part of State Budget revenues. This inclusion is only of a formal nature, since these revenues do not possess the features of own revenues, as defined in theory (Kornberger-Sokołowska 2004); nevertheless, owing to their statutory assignment to the group of own revenues, they are also considered in the analyses below.

Own revenues, with respect to the above-mentioned features, are frequently analyzed and have been described in a variety of publications (Attila 2008; Chernick, Langley, Reschovsky 2011; Dahlberg, Johansson 1998). Both their overall amounts and the individual sources of revenues are investigated. The catalogue of types of receipts considered to be own revenues depends on the political system and structure of a particular state, including the political position of the local government in the country, as well as historical or geographical circumstances. Overall, these receipts are made up of shares in corporate and personal income tax, general sales taxes, specific excise taxes, fees and charges, sale taxes, income taxes, entertainment and tourism taxes and property tax (Alm, Buschman, Sjoquist 2011; O'Conner 2003; Krane, Ebdon, Bartle 2004).

Of these, the property tax has been by far the most frequently discussed in different studies. It is considered to be the most attractive source of local self-government's own revenues (Trasberg 2004).

Reliance on property tax as the only or the main source of local self-government's own revenues is not only determined by current circumstances; it was also historically the major source of their own revenues (Alm, Buschman, Sjoquist 2011). Despite the obvious advantages of this source of revenue, such as its relatively high stability, in certain

economic circumstances this dependence may lead to financial difficulties of local budgets. As Chernick, Langley and Reschovsky (2011) point out, the degree to which public services satisfy the existing needs depends on the amount of revenues. In the United States, revenues of cities, as well as other local governments, are derived from taxes and other locally acquired sources, such as fees, as well as from intergovernmental sources. However, the recession and the housing crisis have strongly affected the financial standing of cities, chiefly because of their impact on revenues.

4. CLASSIFICATION AND DESCRIPTION OF THE FISCAL AUTONOMY OF COMMUNES AND CITIES WITH COUNTY RIGHTS WITH RESPECT TO THEIR OWN REVENUES

The property market crisis, the fall in property values and the soaring number of foreclosures are important arguments in favour of revenue diversification, especially as, according to research findings, a more diversified structure of revenues guarantees higher revenues in the long run (Chernick, Langley, Reschovsky 2011). Furthermore, the diversification of both tax and non-tax revenues reduces revenue volatility (Carroll 2009,). Unfortunately, researchers appear to have paid relatively little attention to the diversification of local government revenues into sources other than property tax (Chernick, Langley, Reschovsky 2011).

The features of the property tax, especially its independence from central government in terms of local government entities' determination of the rates, exemptions and methods of collection, also apply to other sources supplying the budgets of communes and cities with county rights. The criterion by which sources of revenues are divided according to the local governments' freedom in structuring these sources is referred to as fiscal autonomy. In its most general form, this is understood to mean that local government bodies are equipped with instruments that allow them to structure their budget revenues independently, and it refers to two basic issues: the control of the sources of revenues and the right to introduce and structure the revenues (Ruśkowski 2004).

With respect to the extent and scope of the influence on the structure of taxes, we can identify:

- extensive autonomy,
- limited (narrow, negative) autonomy,
- passive autonomy.

Extensive autonomy applies mainly, but not exclusively, to the taxes and charges referred to in the Act on local taxes and charges (1991). They are characterized by the possibility to set, within certain limits, the tax (charge) rates or shape certain elements of the tax structure. Limited autonomy, restricted to the remission, deferment or spreading out of the taxes and charges constituting a revenue of communes and cities with county rights but collected by tax authorities, applies e.g. to the civil transactions tax, inheritance tax, endowment tax, and tax paid on the tax card basis. The right to reduce the tax rates, apply tax credits, and spread out or remit taxes is sometimes referred to as negative fiscal autonomy. Passive autonomy means the absence of impact on the construction, size or collection of taxes and applies e.g. to the shares in taxes constituting the state revenue (Sekuła 2011).

A somewhat different classification of local governments' own revenues with respect to their tax autonomy was proposed by Walasik (2006). He identified four canonical models of fiscal autonomy:

1. fiscal conjunction,
2. fiscal exclusive disjunction,
3. fiscal alternative,
4. fiscal inclusion.

The first type, fiscal conjunction, means that local government entities have full competences to impose and raise taxes and to collect revenues. This type does not occur in any unitary state (including Poland), where it is only central government that is authorized to establish sources of revenues, even those of local governments. In the second type, local government entities have the opportunity to exploit the sources of revenue established by law. There are two cases in fiscal exclusive disjunction: in the first one, the extent of autonomy is similar to that of conjunction with the exception of the absence of independent choice of the source of revenue, while in the second one local government bodies have no possibility of constructing the basic technical components of taxes and charges. Fiscal alternative means that a system of different forms of supplements to taxes is used, whereas fiscal inclusion involves the application of percentage shares in the receipts derived from the exploitation of a particular source of revenue. In this case, the local government plays the role of an entity which earns a revenue as a result of the fiscal policy followed by the central government (Walasik 2006).

When comparing the two systems of classification described above, it is apparent that extensive fiscal autonomy (EFA) corresponds to the first type

of fiscal exclusive disjunction, limited fiscal autonomy (LFA) corresponds to the second type, whereas passive autonomy is the equivalent of fiscal inclusion. The system of supplements, i.e. fiscal alternative, does not exist in Poland.

From the viewpoint of the management of a local government entity, the best source of revenues is one that may be freely shaped according to local circumstances, i.e. a source characterized by full fiscal autonomy.

5. INVESTMENT EXPENDITURE

The main objective of local self-government entities' administration is their development. This would be impossible without investments (Filipiak 2008). Regardless of the adopted definition of development or development management, one of the elements that impact on the development level rating is the condition of the infrastructure. Infrastructure may be classified as public capital goods. These consist of motorways and roads, road transport and airport facilities, educational institution buildings, electricity, gas and water supply facilities, distribution systems and waste treatment plants, as well as correction unit, police, fire brigade, and judiciary buildings (Ayogu 1999). The condition of the infrastructure depends largely on the activity of the local government and, above all, on the investment policy followed. Agénor (2009) reports, quoting the World Bank, that in the early 1990s the obsolete infrastructure of roads, railways, power generation and transmission and water supply systems was responsible for losses corresponding to a quarter of the amount invested by these countries in infrastructure over one year. Furthermore, several authors have observed a declining trend in public investment over the past three decades and pointed to its possible adverse effects on the economy (Kappeler et al., 2013).

Many questions concerning the infrastructure policy arise because of the complicated relationships between the individual government levels. The responsibility for ensuring the infrastructure of an adequate standard is divided between all government levels, whereas the benefits of infrastructure investments in a particular territorial unit extend to other levels of government. Thus, it seems logical that economists involved in the analysis of the issues of fiscal federalism should also be interested in infrastructure policy. Nevertheless, as pointed out by Hulten and Schwab (1997), the literature on infrastructure from the viewpoint of fiscal federalism is rather limited.

One of the methods leading to a qualitative and quantitative improvement of infrastructure is the investment process. Most investments, especially in public utilities, are conducted by public sector, chiefly local self-government entities. Capital expenditures made by local self-government entities, more than 90% of which are investment expenditures, are important for delivering public services as well as for economic growth (Lewis, Oosterman 2011). The financial magnitude of investment projects is reflected in the budget in the form of capital expenditures. They often account for a larger proportion of the local government's budget than is the case for the state budget. In some countries that are largely decentralized, local governments are in charge of more infrastructure than the central government (Lewis, Oosterman 2011).

Despite the undeniable importance of investment expenditure for the socio-economic development of a territory, it was found that it was the relationship between the revenues and expenditures of the central government, rather than of local governments, that was extensively discussed in specialist literature. There are at least two reasons for this situation: a significant increase in the importance of the public sector in the most developed countries and the increasing deficits in the budgets of both central and local governments. However, the studies conducted so far were concerned nearly exclusively with the central level.

This focus may be explained by the fact that in many countries local authorities are a relatively insignificant factor in the decision-making process. Nonetheless in the Scandinavian countries, local governments play an important role in the public sector. In Sweden, for example, they are responsible for a large proportion of public consumption growth since the 1960s, and they accounted for ca. 25% of overall consumption in the 1980s. They also have well-established statutory rights and have enjoyed the freedom of creating new taxes for a long time. In spite of the great importance of local governments in Sweden, relatively few studies concerning the relationship between revenues and expenditures have been published there (Dahlberg, Johansson 1998). This situation, also characteristic of Poland, gave rise to the studies presented in this article.

6. METHODOLOGY

The aim of the investigation was to verify which type of own revenues, according to the classification presented in the theoretical part, is most closely linked to investment expenditures. It was assumed that the amounts

of own revenues of communes and cities with county rights would explain the size of their investment expenditures. In view of the above, the following hypothesis is proposed in this study: there is a relationship between the type of own revenues identified with respect to fiscal autonomy and the size of investment expenditures. The multiple regression method was used in the studies presented in this article. The linear model was chosen, taking the following form (McClave, Benson, Sincich 2008):

$$Y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + e\,, \tag{1}$$

where:

Y = investment expenditures,

X_1 = revenues characterized by passive fiscal autonomy of commune authorities (PFA),

X_2 = revenues characterized by limited fiscal autonomy of commune authorities (LFA),

X_3 = revenues characterized by extensive fiscal autonomy of commune authorities (EFA),

B_1, B_2, B_3 = coefficients expressing the impact of revenues on investment expenditures,

B_0 = constant,

e = error term.

Figure 1 shows the research model.

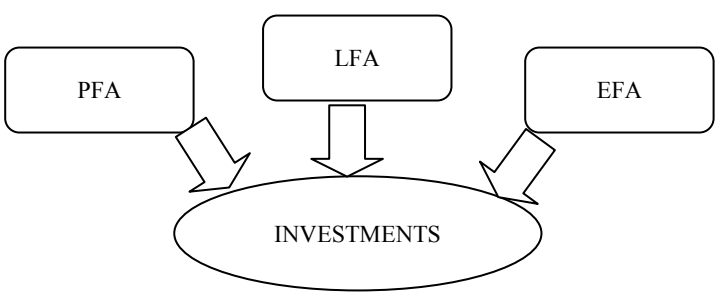

Figure 1. Model of investigation of the relationship between own revenues characterized by different levels of fiscal autonomy and investment expenditures

Source: own work

The time frame analyzed is nine years, i.e. 2003–2011. This particular period was chosen in view of data availability and the changes to the status of the capital city of Warsaw, which became a city with county rights on 27 October 2002, so the amounts reported since November 2002 have been assigned to this particular group. Earlier, until the end of October 2002, the amounts arising from the reports submitted by the communes of Warsaw, the commune of Wesoła and the Communal Association of the Capital City of Warsaw were assigned to the group of communes.

In the investigation discussed, the independent variable is the revenues of communes and cities with county rights. The revenues from sources having a significance in the budgets of communes were assigned to three groups: passive fiscal autonomy (PFA), limited fiscal autonomy (LFA), or extensive fiscal autonomy (EFA) (Table 1).

Table 1

Breakdown of communes' sources of own income with respect to fiscal autonomy

PFA **passive fiscal autonomy**	**LFA** **limited fiscal autonomy**	**EFA** **extensive fiscal autonomy**
– share in corporate income tax, – share in personal income tax.	– tax paid by sole traders on a tax card basis, – inheritance and endowment tax, – civil transaction tax, – stamp duty, – service charge.	– agricultural tax, – forest tax, – property tax, – vehicle tax, – market fees, – income from assets.

Source: own work

For the purpose of the study, the descriptive statistics and correlation coefficients between the variables were calculated. In accordance with the assumption about the normal distribution of the data, a parameter of distribution referred to as skewness should be in the range between –1 and 1, indicating weak asymmetry. A range between –2 and 2, suggesting moderate asymmetry, is also acceptable (Tabachnick, Fidell 2013). Cook's distance was used to identify atypical observations (Tabachnik, Fidel 2013). The problem of multicollinearity of variables was also tested. A tolerance indicator was selected for that purpose. Its value below 0.1 indicates the problem of multicollinearity (Stanisz 2007). To limit the effect of collinearity in the regression model, it is possible to apply the ridge regression method of estimation (Hoerl, Kennard 1970). The adjusted coefficient of determination was used as a measure of the goodness of fit of the model (Tabachnick, Fidell 2013).

Aggregate data, i.e. data totalled for each group in each year, were analyzed for the purpose of this paper. The descriptive statistics for the individual types of revenues are presented in Table 2. Of the three types of own revenues, those characterized by LFA of communes and cities with county rights have the lowest value. In communes the largest receipts are obtained from revenues characterized by EFA, and in cities with county rights from those characterized by PFA. In accordance with the assumption of normal distribution of the data, the skewness values were at a good level (between –0.52 and –0.12 for communes and between –1.01 and 0.76 for cities with county rights), while the kurtosis values were at an acceptable level (between –1.42 and –1.16 for communes and between –0.58 and 0.18 for cities with county rights).

Table 2

Sources of own revenues of communes and cities with county rights (millions of PLN) – descriptive statistics

Entity	Type of fiscal autonomy	Mean	Standard deviation	Min.	Max.
Communes	passive (PFA)	8,813.2	2,739.8	4,234.9	12,096.8
	limited (LFA)	1,284.3	244.4	914.8	1,599.2
	extensive (EFA)	11,717.8	1,857.8	8,995.2	14,350.2
Cities with county rights	passive (PFA)	12,435.0	3,626.0	5,378.3	15,855.4
	limited (LFA)	1,547.2	385.6	1,076.1	2,274.2
	extensive (EFA)	8,387.0	1,361.0	6,074.2	10,203.3

Source: own work based on data from the Ministry of Finance, www.mf.gov.pl

In the investigation presented, the dependent variable is investment expenditure. The descriptive statistics of these data are presented in Table 3. As in the case of own revenues, the skewness values of variable distribution were at a good level (0.46 and –0.41 for communes and for cities with county rights, respectively), while the kurtosis values were at an acceptable level (–1.16 and –1.70 for communes and for cities with county rights, respectively).

Own revenues of communes and cities with county rights derived from sources of different types were moderately or highly correlated. This fact induced the authors to consider the issue of multicollinearity between the variables, especially the interdependence between the revenues characterized by passive and extensive autonomy (Tabachnick, Fidell 2013). Investment expenditures of communes and cities with county rights were moderately

Table 3

Investment expenditures of communes and cities with county rights (millions of PLN) – descriptive statistics

Entity	Mean	Standard deviation	Min.	Max.
Communes	12,086.7	4,777.4	6,173.5	19,690.2
Cities with county rights	8,845.8	3,580.4	3,580.0	12,698.1

Source: own work based on data from the Ministry of Finance, www.mf.gov.pl

correlated with revenues characterized by LFA, and highly correlated with PFA and EFA. Full data are presented in Table 4.

The tolerance indicators calculated for the revenues of communes were, respectively: 0.012 (for PFA), 0.088 (for LFA) and 0.022 (for EFA).Thus, the indicator values were below 0.1, which indicates the problem of collinearity of variables. Meanwhile the tolerance indicators for cities with county rights were, respectively: 0.079 (for PFA), which indicates collinearity, 0.383 (for LFA) and 0.113 (for EFA). The last two values were low but acceptable.

Table 4

Types of own revenues and investment revenues of communes and cities with county rights – correlation coefficients

Communes \ Cities with county rights		Types of own revenues			Investment expenditures
		PFA	LFA	EFA	
Types of own revenues	PFA	–	$0.74^{2)}$	$0.93^{4)}$	$0.94^{4)}$
	LFA	$0.91^{4)}$	–	$0.58^{1)}$	$0.61^{1)}$
	EFA	$0.98^{4)}$	$0.83^{3)}$	–	$0.96^{4)}$
Investment expenditures		$0.86^{3)}$	$0.63^{1)}$	$0.93^{4)}$	–

Notes: $^{1)}$ $p < 0.10$, $^{2)}$ $p < 0.05$, $^{3)}$ $p < 0.01$, $^{4)}$ $p < 0.001$

Source: own work

The theoretical model was estimated by means of linear regression according to the forward stepwise procedure. The ridge regression method of estimation was selected to reduce the effect of multicollinearity (Hoerl, Kennard 1970). The assumed lambda coefficient was $\lambda = 0.1$. The statistical significance level assumed was $p < 0.10$, in view of the small size of the

sample. The regression analysis was performed separately for communes and for cities with county rights.

The model of dependence of communes' investment expenditures on their own revenues achieved a statistically significant solution in the first step ($F(1,7) = 26.83,\ p < 0.001$). The adjusted coefficient of determination (adj. R^2) was 0.764, indicating a good fit of the model to the data. Investment expenditures were explained only by revenues characterized by EFA. An increase in the revenues of communes having extensive fiscal autonomy by PLN 1,000,000 resulted in an increase of investment expenditures by PLN 2,180,000.

The actual capital expenditures and those calculated using the model are represented by Figure 2. No leverage points were found (Cook's distance M = 0.071, range 0.000–0.443).

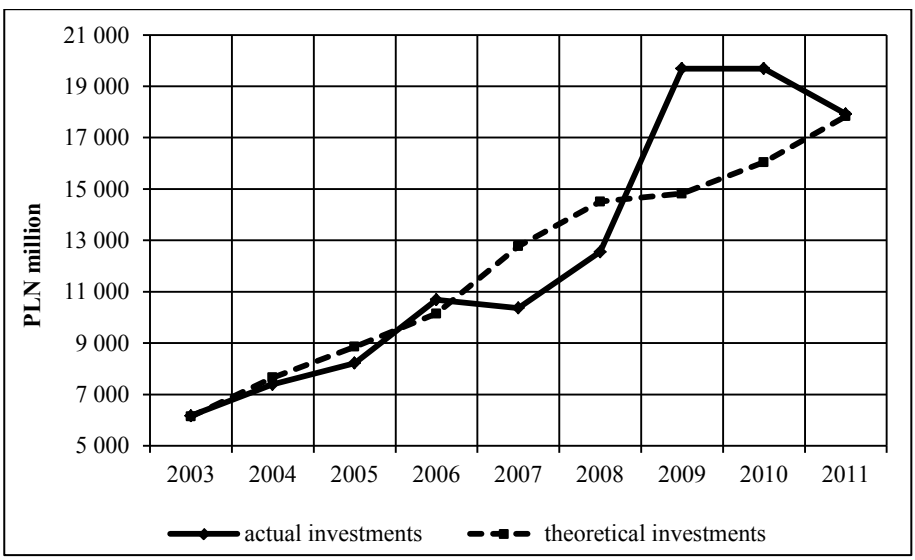

Figure 2. Communes: the fit of the theoretical model of capital expenditures to actual data

Source: own work

The model of dependence of investment expenditures of cities with county rights on their own revenues achieved a statistically significant solution in the second step ($F(2,6) = 24.41,\ p < 0.001$). The adjusted coefficient of determination (adj. R^2) was 0.854, indicating a good fit of the

model to the data. Two types of own revenues entered the model: those characterized by EFA (β=0.50, t(6)=2.08, p=0.083) and PFA (β=0.44, t(6)=1.80, p=0.121). However, the revenues characterized by PFA failed to attain the assumed level of statistical significance. The tolerance coefficient between these variables was 0.31 and was within the acceptable range. An increase by PLN 1,000,000 in the revenues of cities with county rights characterized by EFA resulted in an increase in investment expenditures by PLN 1,320,000.

The actual capital expenditures and those calculated using the model are represented by Figure 3. No leverage points were found (Cook's distance M=0.071, range 0.006–0.308). When compared with Figure 2, it is apparent that in the case of cities with county rights the increase in investment expenditures is more stable and proportional, and the fit of the model is better than for communes.

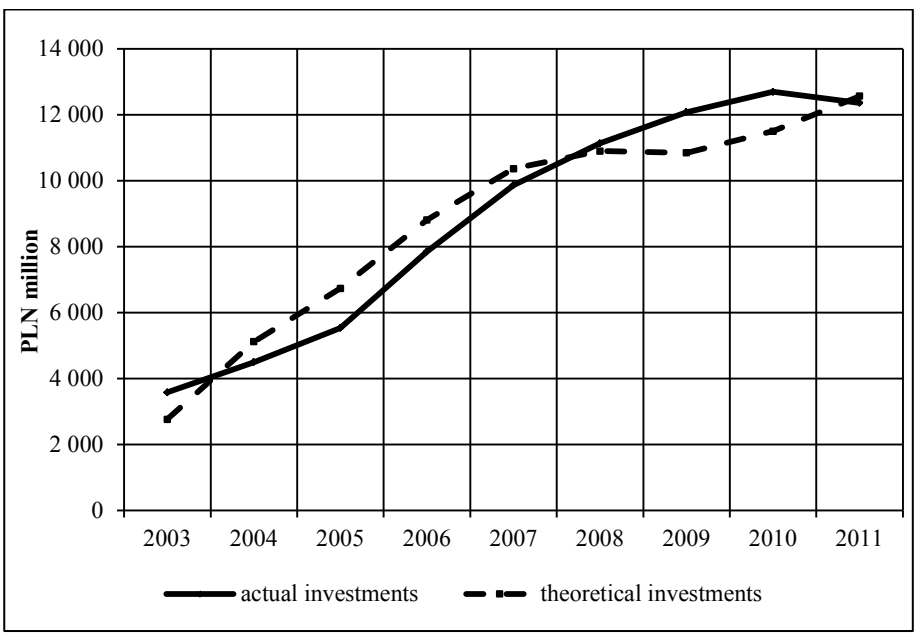

Figure 3. Cities with county rights: the fit of the theoretical model of capital expenditures to actual data

Source: own work

7. DISCUSSION OF THE FINDINGS

The analyses whose procedure and findings are presented above have demonstrated that, in the case of communes, the increase in investment expenditures was explained by the increase in own revenues characterized by EFA, with PLN 1,000,000 of revenue increase resulting in an investment increase by PLN 2,180,000. A similar situation was observed for cities with county rights: the increase in investment expenditures was explained by the increase in own revenues characterized by EFA, with PLN 1,000,000 of revenue increase resulting in an investment increase by PLN 1,320,000. In the case of cities with county rights, revenues with PFA were also entered into the model, but they did not achieve the required statistical significance level. Revenues characterized by LFA had no impact in either case.

When attempting to identify the reasons for this situation, it should be emphasized that all types of revenues are decentralized when it comes to spending: there is no obligation to allocate them for specific tasks, and therefore this feature cannot be used for differentiating the investment behaviours of local government entities. A property suitable for this purpose is the revenue sphere, and particularly the extent of fiscal autonomy, as discussed in the theoretical part. To provide a comprehensive explanation of the phenomenon observed, it is necessary to point out the greater flexibility and adjustability of the rules of collection, the rates or exemptions to the actual circumstances of a particular unit, or possibly a greater sense of responsibility for the manner of spending 'own' earnings or the efforts to minimize the costs of collection. These features have most likely contributed to the strong relationship between revenues characterized by EFA and the investment activity of communes and cities with county rights.

A noteworthy fact is the quite strong correlation between revenues with EFA and those with PFA. The latter consists of shares in two income taxes – personal and corporate income taxes. The wealthier the residents and enterprises in a particular territory, the larger the receipts on account of these taxes. As the affluence of the residents and entrepreneurs increases, the revenue from property lease also increases, as the local government entities can set higher rates. More land is developed in such territories, which results in increased revenues from the property tax, largely consisting of the tax on buildings and civil structures. Thus, it contributes to the correlation of the individual revenue sources.

In communes and cities with county rights, no impact was observed in the case of revenues characterized by LFA. The amounts of these revenues are

significantly lower than those of the two other types in both groups investigated. Critical opinions are expressed in the literature and in practice about the method of collection, i.e. by tax offices (rather than the commune's tax authorities); the receipts are then transferred in their entirety to the local government accounts. It appears that both the above-mentioned reasons have contributed to the lack of impact of these revenues on the investment activity of the territorial entities investigated.

SUMMARY

This paper has attempted to fill a gap in the literature with regard to investigating the relationship between local self-government entities' own revenues and investment expenditures. It complements earlier studies into the relationships between revenues and expenditures. Kappeler et al. (2013) estimated the effect of the decentralization of revenues and specific grants allocated to sub-national infrastructure investments in twenty European countries. In their investigation of the effect of revenue decentralization on sub-national level investments, the authors focused on two aspects: the share of revenues obtained from taxes generated sub-nationally and the application of transfers earmarked for specific purposes (in this case, for infrastructure investments). However, they did not conduct analyses with tax revenues divided into categories with respect to the extent of fiscal autonomy.

Meanwhile, Kappeler and Välilä (2008) looked into the effect of four different decentralization levels on four types of investments made by the public sector (central and sub-national governments). They arrived at the conclusion that decentralization causes an increase in the overall investment in infrastructure, schools, hospitals, defence, environmental protection, safety and order, while having no significant effect on social housing, recreation or social protection. Matheson (2005) demonstrated that the redistribution of revenues from wealthy to poor regions may discourage local governments from investing in public infrastructure that increases productivity.

The findings raise doubts about the feasibility of proposals for boosting the revenues of local government entities in Poland by further increasing their shares in personal and corporate income taxes, classified in this article as PFA – own revenues characterized by passive fiscal autonomy. That is because their relationship with investment expenditures is of no statistical significance. Far better effects in terms of development would be achieved if

local government entities were assigned revenues with a similar legal structure as property tax, market fees or agricultural tax. The availability of sources of revenues in areas under the authority of local governments creates the conditions for their increased efforts towards boosting the efficiency of these sources. This translates into higher budget revenues and makes it possible to diversify the flow of receipts according to the changing situation inside and outside the entity.

However, while Polish communes have been granted such sources of revenues, neither county nor regional governments can derive revenues characterized by EFA. It seems that this situation should be rectified without delay. One possible solution (fiscal alternative) would be to establish supplements to personal and corporate income taxes, whose size and other structural properties would be determined independently by the communes, counties and regions themselves. The above postulate has been formulated on the basis of the analyses presented in this article. It also constitutes a practical recommendation based on the research, which could be implemented in connection with the current local government budget reforms in Poland.

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