

---

## Investment Activity of Large Cities - Regional Centres in Poland

---

Submitted 25/01/21, 1st revision 13/02/21, 2nd revision 03/03/21, accepted 20/03/21

Agnieszka Kozera<sup>1</sup>

**Abstract:**

**Purpose:** The main purpose of this article is to assess the level and diversity of investment activity of large cities – regional centres – in Poland in the 2007-2018 period.

**Design/Methodology/Approach:** The empirical research was based on Statistics Poland and the Ministry of Finance data and processed using the essential methods of descriptive statistics and taxonomy. In the first stage of research, the level of investment activity of all voivodship cities was assessed against other local government entities based on an analysis of the values of investment expenditures implemented. The second stage involved an assessment of the level and diversity of investment activity in voivodship cities. Due to the multidimensional nature of the phenomenon – investment activity of local government entities, which can be described with a number of simple features – a synthetic assessment of its level in voivodship cities was conducted with the use of the TOPSIS method.

**Findings:** The highest level of investment activity was found in Białystok, Gdańsk, Rzeszów, Warsaw and Olsztyn. Therefore, as many as two cities from Eastern Poland, namely Białystok and Rzeszów, ranked among the leading voivodship cities with very high or high investment activity. Thus, the empirical research made it possible to partially confirm the research hypothesis posed, assuming that ‘As a result of the lower level of development and existing deficiencies in social and technical infrastructure, the highest level of investment activity may be associated with large cities located in Eastern Poland in relation to other regional centres.

**Practical Implications:** The largest cities should be highly active in investment – regional centres seeking to retain and strengthen their metropolitan position not only on the regional but also European level because their sustainable social and economic growth is impossible without local investment. The research results may be useful for the purposes of creating the investment policy of large cities.

**Originality/value:** The results of the analysis and theoretical considerations contained in this article complement existing research in the field of investment activity of local government entities.

**Keywords:** Investment activity, investment expenses, local government entities, regional centres, Poland.

**JEL classification:** H72, H71, O18.

**Paper Type:** Research study.

---

<sup>1</sup>Ph.D., of Economics, Department of Finance and Accounting, Faculty of Economics, Poznań University of Life Sciences, Poznań, ORCID ID: 0000-0002-6370-0026, e-mail: [akozer@up.poznan.pl](mailto:akozer@up.poznan.pl)

## 1. Introduction

Development means positive quantitative and qualitative changes that consist of leveraging available regional resources to improve the region's welfare and support equality (Capello and Nijkamp, 2009). To make this happen, the entity responsible for its creation has to incur investment expenditures. They take different measures designed to contribute to advancements in the local or regional environment, which may also result in the restructuring of regional economies (Fedajev *et al.*, 2019). In Poland, this entity is local government – above all, the basic entities of this sector, i.e. gminas and cities with powiat status. Thus, public investment activity starts at the local level. Implementation of investment projects by local government units – thereby strengthening their investment activity – is vital for every country, positively impacting its development (Lewis and Oosterman, 2011). Under the Polish Commune Government Act (Art. 7 of the Commune Government Act of 8 March 1990; Journal of Laws of 1990, No. 16, item 95), this activity includes the most important and most cost-consuming investments regarding technical and social infrastructure, spatial order and environmental protection. Hence, public investments, including local government investments, most frequently concern infrastructure outlays with long useful life. They can also be treated as capital expenditures for financing projects concerning hard (physical) infrastructure and soft infrastructure (related to creating and developing human capital, innovation, as well as research and development) (Hulbert and Vammalle, 2014; Allain-Dupre *et al.*, 2012). By conducting investment activity, any local government entity aims to gain a competitive advantage over other local government entities in terms of residential attractiveness (by improving the living conditions, and the standard and quality of life of its population), as well as investment attractiveness (by attracting new economic entities and creating favourable conditions for the development of entrepreneurship).

In line with the principle of subsidiarity defined in Art. 4 of the European Charter of Local Self-Government (ECLSG) (1985), in Poland, like in other European countries, an essential portion of tasks of local and regional scope is implemented by the local government. Poland operates a three-tier local government model (involving gminas, powiats and voivodships). The broadest range of local tasks is carried out by gminas and cities with powiat status (performing the functions of gminas and powiats). There are about 2,500 gminas, including 66 cities with powiats status (as of 1 January 2020). Cities with powiat status, including the largest voivodship cities, stand out among local government entities because of intense investment activity. Due to the dual nature of the implemented tasks – those of both gminas and powiats. The largest cities with powiat status additionally implement a range of tasks which determine the extent of satisfaction of needs and the living standard not only of their residents but also of people residing in their surroundings, namely in their metropolitan areas. Cities which are regional centres are hubs of the regional economy or supra-regional centres if considered from an economic and spatial perspective. They are places from where the management and command of

the global economy are conducted since they are a place for headquarters of multinational transport companies and companies rendering highly specialised services on a global scale (Friedmann, 1986; Taylor, 2007). At the same time, they are the scene for technological innovation and, as noted by Jałowiecki (1999), new cultural models and lifestyles. Their cultural resources render them desirable destinations which attract tourists from almost all over the world (including the so-called business tourists). Szczech-Pietkiewicz (2019) observed that they show high competition potential, adaptation possibilities, and development dynamics.

A sustainable social and economic growth of regional centres is impossible without implementing local investments, especially in infrastructure. There is a visible link between infrastructure improvement and the acceleration of economic growth, and consequently, development (Crescenzi and Rodríguez-Pose, 2012; Dijkstra *et al.*, 2011). According to Gołębiowski (2015), it is vital to incur investment expenditures precisely by the largest cities – regional centres – seeking to retain and strengthen their metropolitan position not only on the regional or national but also on the European scale. Thus, the issue of investment activity undertaken by the largest cities with powiat status in Poland is increasingly often discussed in research papers (Dolewka, 2014; Gołębiowski, 2015; Przybyła, 2016; Przybyła *et al.*, 2020). It is worth noting that the relationship between a large centre being a hub (driving force) of development and its budget has two sides to it. On the one hand, the level of social and economic development of a metropolis affects the budget revenue of such entities from the sources of own revenues and, as a consequence, it affects their financial autonomy (Kozera, 2018). On the other hand, the budget management implemented by cities (including their expenditure policy), which is reflected by the scale and quality of public tasks they implement, affects social and economic development, and the diffusion of this development in the surroundings.

Eastern Poland regions are among the least developed areas due to their peripheral location, both in the country and in all European Union. Therefore, it is vital for regional centres – voivodship cities – to conduct intense investment activity because investment outlays are an essential factor of economic growth (Dubik, 2005; Lewis and Oosterman, 2011; Dijkstra *et al.*, 2011; Crescenzi and Rodríguez-Pose, 2012). Thus, the question arises, do regional centres located in Eastern Poland take advantage of the opportunity to advance their development through the implementation of investment projects, including those co-financed by the European Union? Due to the lower level of development in recent years, the regional centres located in Eastern Poland have taken advantage of financial resources derived from the Operational Programme – Development of Eastern Poland (Program Operacyjny Rozwój Polski Wschodniej, PO RPW). Therefore, the article presents a research hypothesis which assumes that ‘As a result of the lower level of development and existing deficiencies in social and technical infrastructure, the highest level of investment activity may be associated with large cities located in Eastern Poland in relation to other regional centres. Therefore, the main purpose of this article is to assess the level and diversity of investment activity of regional centres – voivodship

cities – in Poland in the 2007-2018 period.

The research pertained to 16 cities with powiat status which are voivodship capitals, i.e. Białystok, Bydgoszcz, Gdańsk, Gorzów Wielkopolski, Katowice, Kielce, Kraków, Lublin, Łódź, Olsztyn, Opole, Poznań, Rzeszów, Szczecin, Warsaw and Wrocław<sup>1</sup>. Most of the subjects (12 cities) are classified by the Union of Polish Metropolises<sup>2</sup> as the so-called metropolitan units. A third of the overall Polish GDP is generated by metropolises alone. The metropolitan areas around them contribute to generating as much as 55% of GDP and house more than 40% of Poland's residents (Report on Polish Metropolises, 2019).

## **2. Investment Activity of Local Government Entities – Theoretical Connotations**

In the theory of economics, the most-quoted and at the same time, the most general definition of investment was put forward by Hirschleifer (1965). He understands investment as relinquishing present consumption to obtain profits in the future. However, this definition does not fully apply to investments realised by local government entities due to their specific nature and scope of conducted tasks. Local government investments are not aimed at gaining economic profits but primarily at satisfying the needs of local government communities. Additionally, many articles in the literature indicate a strong correlation between the level of local government investment and economic growth in an area (Yigitcanlar *et al.*, 2008; Leigh and Blakely, 2012).

As noted by, among others, Nazarczuk (2013), investments were a particularly important element of classical theories and models of growth drawing on Keynesian economics. A mechanism of investment multiplier (related to state expenditures) which translated to a change in global demand and fluctuations in levels of income (production) was feasible for the original version proposed by Keynes (1936). Barro (1988) and Aschauer (2000), among others, also pointed to a positive impact of investments realised from public funds. Public capital is a specific type of capital that reacts with private capital to partly supplement it and contributes to an increase in private capital productivity. Infrastructure built using public financial outlays is public property (Public goods for economic development, 2008; Sankar, 2008; Kaul and Mendoza, 2003). Access to infrastructure elements determines the quality of the citizens' social and economic life. Moreover, it serves a vital function for local development, and the state of any existing infrastructure can influence such development as well.

The local government sector, represented by different authorities' levels, plays a vital role in shaping diffusion stimuli. The diffusion of social and economic processes is a foundation for numerous regional development theories (Myrdal, 1957). Local government sector entities, including cities, should encourage not only the development of infrastructure but also education, cultural institutions, etc. They

assist in the creation of potential necessary for development. According to the growth poles theory, the fastest growth occurs at one point, or at a few points – called growth poles. Such poles include cities – regional centres – and the remaining large and medium-size cities that emanate to the regions surrounding them and further regions. There are positive and negative effects of this process. According to Standar (2019), the poorly developed and less dynamic part of the region is activated by a growth pole's impulses. Due to (sector) polarisation, weaker areas or regions can lose the competition with a regional centre and, as a result of the backwash effect on the resources, end up at a loss due to the outflow of skilled workforce and capital resources (the adverse outcomes are most evident in the first phase of a pole growth process). Nonetheless, as noted by Domański (2006), for instance, positive effects prevail in the long term.

Local government sector entities in Poland constitute a significant part of economic processes. As part of their tasks, they undertake investment activities aimed at improving the living conditions and living standard of population by developing and improving technical and social infrastructure and activities meant to attract capital creating new jobs. Investments primarily realised by local government sector entities, including cities with powiat status, are characterised by a broad scope of positive effects significant not only for the local community but also for the whole local economy (including entrepreneurs operating in a given area). Usually, two categories of effects that accompany these investments can be noted. The demand effect at the stage of infrastructure construction and the supply effect that occurs over an extended period can be associated with the benefits stemming from boosting the competitiveness of a particular local government entity (Gren, 2003). Thus, the purpose of realising an investment by a local government entity is to foster future social and economic development of local government communities and increase competitiveness (Smętkowski, 2011; Filipiak and Dylewski, 2015; Standar, 2018). Local development policy is most often supply-oriented and aimed at, among other things, improving conditions for investment by developing infrastructure (McCann, 2001).

Local government investments usually contribute to improving social welfare, but to a different extent, depending on their type, the relevance of choice, scale and complementarity with private investment (Aschauer, 1989). That is why it is so important, as pointed out by Gołębiowski (2015), for the largest cities (regional centres) which want not only to retain but also strengthen their metropolitan position on a regional and national scale, as well as on a European scale, to incur investment expenditures. As emphasised by Sierak (2016), municipal infrastructure affects to a significant extent the development and functioning of the national settlement network, particularly in terms of quantitative and qualitative development of cities, and its underdevelopment poses a considerable barrier for local and regional development.

In Poland, from a historical perspective, this is one of the causes of far-reaching

disproportions in functionality and spatial structure of cities. It also perpetuates social and economic, as well as cultural differences between urban and rural areas. The extent of investment needs in terms of infrastructure has a quantitative dimension, understood as a condition of underinvestment in relation to demand among residents and entrepreneurs and a qualitative dimension that manifests the poor quality of the existing infrastructure (Sierak, 2016). Characteristics of investment activity of Polish local government entities include a high capital intensity of investments, high unit costs, a significant share of fixed costs in the overall expenditure structure, the issue of attaining efficiency and return on incurred expenditures, as well as high investment and financial risk (Sierak, 2014; Filipiak and Dylewski, 2015). What is more, as highlighted by Dylewski (2018b), local government investments, particularly in infrastructure projects, usually involve a long period of incurring significant investment expenditures. Upon completing a given project, maintaining a given investment is also necessary by incurring increased current expenditures related to its operation. Thus, local authorities should consider the direct costs of their implementation and future operating expenses when planning their investments.

Therefore, an analysis of 'costs' and 'benefits' of the planned investment is essential, as misinvestments often lead to self-government units' financial problems. The benefits of having an increasingly modern infrastructure should outweigh the associated costs. Investment activity undertaken by local government entities significantly affects these entities' current budget and should also be considered, as noted by Filipiak (2017), from a financial risk perspective. Public utility is a significant feature of investments realised by local government entities. Nonetheless, according to Sierak (2014), if the recipients of infrastructure services are to obtain certain benefits from its use, its development must be permanently ahead of developing other fields of activity in the area. These benefits increase as the spatial concentration of economic and social activities increases. Infrastructure underdevelopment, in turn, constitutes a significant barrier for development.

Funds for the implementation of investment projects by local government entities can only be obtained from a number of independent sources, i.e. from the entity's own funds, from funds received from the European Union, as well as from private funds transferred to local governments to co-finance tasks supported by the EU. As emphasised by Satola (2015), the financing of local investments is determined by multiple factors, both in the area of influence of a given local government entity and in the area which is not under its direct control. Internal determinants certainly include the financial situation of a particular local government unit and its resultant ability to cover increased budget revenues expenditures. Local government investments require financing (or co-financing) from taxes. Consequently, larger entities such as large and more wealthy cities can thus obtain more funds from small entities with small rural entities, making it difficult for the less affluent regions to catch up with the wealthy ones (Tondol, 2001). When a local government entity cannot cover all investment expenditures from own funds, it is necessary that the

entity use external sources (primarily non-bank loans and bank facilities) (Standar and Kozera, 2020).

Investment activity and investment propensity depend on several determinants, among which a local government entity's investment (financial) potential can be listed. In the broadest sense, it is defined as a local government entity's ability to gather funds to implement investment tasks (Dylewski, 2010). Investment potential (otherwise known as development potential) is understood as funds that at a certain point can be allocated by a local government entity for the financing of new investment projects, with the assumption that it will perform all its current tasks and continue at a safe level of debt (Mickiewicz *et al.*, 2006). Gubernat-Ulatowska (2016), on the other hand, indicates that investment potential is a concept derived from current surplus because it means available funds of a local government entity after financing all current expenditures and paying instalments of bank facilities and non-bank loans and redeeming securities included in disbursements. Therefore, it is part of the revenues of local government entities available after transferring funds for obligatory tasks.

Three main categories distinguished in analyses pertaining to the investment potential of local government entities include their own potential, investment potential, and development potential (Lubińska *et al.*, 2007; Skorwider, 2013). Own potential reflects the level of funds generated from current activities in a particular year, after deducting paid liabilities. On the other hand, investment and development potential take into account the possibility of obtaining not only own but also external non-refundable funds (i.e. grants from a variety of sources) and/or refundable funds (i.e. by incurring financial liabilities) (Skorwider and Garbowski, 2012). It can be deduced from the above definitions that the value of investment potential of a local government entity depends on the level of own revenues obtained by it, the effectiveness of receiving funds from alternative sources, the share of current fixed expenditures in revenues, and from commitment in long-term investments (Gubernat-Ulatowski, 2016). On the other hand, according to Jastrzębska (2005), own investment potential takes into account financial resources gathered in budgets of local government entities without incurring new debt. Moreover, Sireak (2014) notes that if the financial management of a local government entity is based on its own stable revenues, local authorities can prepare reliable economic forecasts and shape alternative scenarios of investment financing.

The possibilities of using public-private partnership in the implementation of local self-government investments are also noteworthy. The introduction of the currently applicable Act on Public-Private Partnerships of 19 December 2008 (Journal of Laws of 2019, item 1445) in 2009 contributed to the development of cooperation between public and private entities. Public-private partnership (PPP) is a tool that supports the development of infrastructure while reducing public expenditure. The development of PPP results, among other things, from significant needs in terms of services, facilities of public infrastructure, budget restrictions and the growing debt.

---

In such a case, PPP may constitute a profitable alternative to traditional financing of public investment from the budget. As Zawora (2020) indicates, apart from the partial relieving of the public sector, efficient management of investment and available resources, which contributes to shortening the time of investment development (Moszoro, 2010), may also be included among the benefits offered by PPP as a formula for investment implementation. In Poland, PPP has been already practised for over ten years. From the beginning of 2009 to 30 September 2020, a total of 586 PPP proceedings were initiated to select a private partner and conclude a contract (PPP Market Report 2020). From all the contracts concluded (147), the vast majority (144) have entered the implementation stage. The Polish PPP market is still developing. As Zawora (2020) notes, a small number of implemented projects indicates the primary weakness of the Polish PPP market, which consists in the low effectiveness of public entities' actions (the number of announcements about selecting a private partner does not translate into the number of concluded and performed contracts). In the 2009-2020 period, the implemented contracts accounted for a quarter of the original number of announcements. Zawora (2020) lists institutional and legal obstacles, attitudes, insufficient knowledge, and skills among barriers inhibiting PPP development. It is necessary to increase the knowledge of PPP projects to popularise public-private cooperation as a modern method of implementing public tasks to overcome these barriers.

Filipiak (2017) points out that investment activity is determined by investment ability and propensity demonstrated by organs of a local government entity. Investment propensity results not only from investment ability (or investment potential), but it is also determined by social pressure exerted on local government entity organs; it also results from acceptance of investment activities by the local community. Investment attractiveness of a region also significantly affects the scale of investment activity of local government entities. Location and surroundings, availability of resources and land for investment, as well as the region's development level, are of crucial importance here. Demographic potential and quality and costs of human capital also play a significant role. The so-called 'investment climate' also affects the scale of investments realised by local government entities. It comprises a set of factors, i.a. economic conditions (including current and future economic situation of the country), legislative regulations, freedom of establishment and political stability (Gubernat-Ulatowski, 2016).

A literature review on the subject matter suggests that the state of finances of local government entities is an essential factor determining the level of investment activity of local government entities, and consequently their readiness to incur expenditures for implementing investment projects. And this is because it can ensure favourable conditions for obtaining alternative financing sources or, in many cases, pose an obstacle (Gubernat-Ulatowski, 2016; Kozera, 2016).



### **3. Source Materials and Research Methods**

The empirical research was based on data obtained from Statistics Poland (Local Data Bank, Macroeconomic Data Bank) and the Polish Ministry of Finance (Indicators for assessing the financial position of local government entities...). The research period covered the years 2007-2018. This period marked a time of significantly increased local investments resulting from, among other reasons, inflows of EU funds for their implementation. The results are expressed in Polish currency (key data were converted to euro as per the weighted average exchange rate of the National Bank of Poland which varied in the range of 3.78 EUR/PLN in 2007 to 4.26 EUR/PLN in 2018).

The empirical research concerning regional centres' investment activity – voivodship cities – in Poland was conducted in two stages. In the first stage, the level of investment activity of all voivodship cities was assessed against other local government entities based on an analysis of the values of investment expenditures implemented. The second stage involved an assessment of the level and diversity of investment activity in voivodship cities. Due to varying sizes of the population in particular local government units, the essential indicator taken into account in the investment activity assessment was the level of investment expenditures per one resident and per km<sup>2</sup>. Moreover, an analysis of the share of investment expenditures in overall spending and the level of funds obtained by local government entities for financing and co-financing EU projects was conducted. Investment expenditures in relation to overall spending reflect the scale of development-oriented engagement of city authorities within the framework of their financial potential. Due to considerable fluctuations in investment expenditures, the mean and aggregate values pertaining to investment expenditures were taken into account to assess the level of investment activity in local government entities.

Due to the multidimensional nature of the phenomenon – investment activity of local government entities, which can be described with a number of simple features – a synthetic assessment of its level in voivodship cities was conducted with the use of the TOPSIS method (The Technique for Order of Preference by Similarity to Ideal Solution) (Hwang and Yoon, 1981). In the process of generating a synthetic feature, six steps of the procedure can be listed, including (Wysocki, 2010) the selection of simple features for research (step 1), determining the nature of simple features in relation to the main assessed criterion (i.e. the level of investment activity) (step 2), normalisation of simple feature values (step 3), calculating the distance of each object (i.e. city) from the positive ideal and the negative ideal of development (step 4), calculating the value of a synthetic measure of development (step 5) (Table 1). The determined values of the synthetic measure were used for the linear ordering of the research objects – voivodship cities – and, on this basis – for isolating typological classes of the level of investment activity of large cities – regional centres – in Poland.

**Table 1.** Steps of the synthetic measure construction with the use of the TOPSIS method

Steps	Description of steps	Calculation formulas
I Selection of simple features for research	Substantive selection of simple features for research and their verification in terms of statistics	×
II Normalisation of values for simple features	Using the procedure of zero unitarisation	for stimulants $z_{ik} = \frac{x_{ik} - \min_i \{x_{ik}\}}{\max_i \{x_{ik}\} - \min_i \{x_{ik}\}} \quad (1)$ for destimulants $z_{ik} = \frac{\max_i \{x_{ik}\} - x_{ik}}{\max_i \{x_{ik}\} - \min_i \{x_{ik}\}} \quad (2)$
III Determining the coordinates of model objects for the positive ideal and the negative ideal of development	The coordinates of the positive ideal ( $A^+$ ) and the negative ideal of development ( $A^-$ ) are determined as maximum and minimum values respectively, in a set of normalised values of simple features	$A^+ = \left( \max_i (z_{i1}), \max_i (z_{i2}), \dots, \max_i (z_{iK}) \right) = (z_1^+, z_2^+, \dots, z_K^+) \quad (3)$ $A^- = \left( \min_i (z_{i1}), \min_i (z_{i2}), \dots, \min_i (z_{iK}) \right) = (z_1^-, z_2^-, \dots, z_K^-) \quad (4)$
IV Calculating the distance of each object from the positive and negative ideal of development	Calculating the distance of each assessed $i$ -th multiple-feature object from the positive and negative ideal of development with the use of Euclidean distance	$d_i^+ = \sqrt{\sum_{k=1}^K (z_{ik} - z_k^+)^2}, \quad d_i^- = \sqrt{\sum_{k=1}^K (z_{ik} - z_k^-)^2} \quad (5)$
V Calculating the value of the synthetic measure	With the use of Euclidean distances from the positive ( $d_i^+$ ) and negative ideal of development ( $d_i^-$ )	$S_i = \frac{d_i^-}{d_i^- + d_i^+} \quad (6)$

Source: Author's own study based on Wysocki (2010).

## 4. Results of Research

### 4.1 Investment Expenditures of Local Government Entities in Poland in the 2007-2018 Period

All entities of the local government sector in Poland realise investment expenditures. Still, this activity's scale varies, which mainly results from the nature of tasks and functions of particular local government entities. Table 2 presents the level of investment expenditures of local government entities in Poland in 2007-2018. In absolute terms, investment activities are mostly carried out by essential units of the local government sector, namely gminas. In 2018, investment expenditures of gminas amounted to nearly PLN 26 billion (EUR 6.1 billion), which is half of the total investment expenditures realised by all local government entities. From an analysis of all the period discussed, i.e. the years 2007-2018, the cumulative investment expenditures of gminas amounted to PLN 150 billion (at constant 2007 prices) (EUR 40 billion), which constituted more than 42% of the total spending realised by all local government entities.

**Table 2.** *Level of investment expenditure of local government entities in Poland in 2007-2018 (in PLN billion)*

Specification	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Cumulative investment expenditures	
													nominal	real <sup>b)</sup>
total gminas <sup>a)</sup> , including:	10.4	12.6	15.8	19.7	17.9	13.9	12.9	15.1	14.2	10.6	16.1	25.8	184.9	150.0
urban gminas	2.5	3.1	3.7	4.1	3.7	2.9	2.5	3.0	2.8	2.3	3.3	5.3	39.0	31.6
urban-rural gminas	3.3	4.1	5.1	6.3	5.9	4.7	4.2	4.9	4.7	3.6	5.4	8.5	60.6	49.1
rural gminas	4.6	5.4	7.0	9.3	8.3	6.3	6.2	7.2	6.7	4.8	7.4	12.1	85.4	69.2
cities with powiat status, including:	9.9	11.1	12.1	12.7	12.4	12.1	11.5	13.6	12.2	7.7	9.4	13.7	138.3	112.2
voivodship cities	6.2	7.2	7.8	8.1	8.0	8.1	7.2	8.4	7.9	5.2	6.2	8.5	88.7	72.0
powiats	2.1	2.6	4.1	5.2	4.5	2.8	2.8	3.4	3.4	3.0	4.0	5.9	43.8	35.5
voivodships	3.9	4.5	9.7	5.7	6.4	5.7	6.4	7.7	7.4	3.1	4.0	5.6	70.1	56.9
total local government units	26.3	30.8	41.6	43.3	41.2	34.4	33.5	39.9	37.2	24.4	33.5	51.0	437.1	354.6

**Note:** a) Excluding cities with powiat status, b) At constant prices in 2007.

**Source:** Own study based on data from Statistics Poland (Local Data Bank, Macroeconomic Data Bank).

Cities with powiat status are also an important group of entities implementing local investments. In 2018, they allocated PLN 13.7 billion (EUR 3.22 billion), i.e. approximately 27% of total investment expenditures of the entire local government sector. It should be noted that voivodship cities stand out among cities with powiat status with high investment activity. Only in 2018, they allocated PLN 8.5 billion (EUR 2 billion) for investments, whereas in the years 2007-2018 it was nearly PLN 89 billion (EUR 23.5 billion) (at constant 2007 prices), i.e., over 64% of total investment expenditures incurred by all cities with powiat status (Table 2).

In turn, in relative terms, the highest investment expenditures are incurred by cities with powiat status, in particular by voivodship cities. In 2018, investment expenditures of cities with powiat status amounted to PLN 1,085 per capita (EUR 255 per capita), while in the case of large cities – voivodship centres – to nearly PLN 1,145 per capita (EUR 269 per capita), with the average for urban gminas amounting to less than PLN 890 per capita (EUR 209 per capita). Thus, cumulative real investment expenditures in the 2007-2018 period amounted to PLN 9,774 per capita (EUR 2,294 per capita) for large cities and were the highest among all entities of the local government sector (Table 3). As indicated, among others, by Dolewka (2014), practice proves that large cities with powiat status incur higher financial expenditures on infrastructure development, which stems from a different scale of needs resulting primarily from the population size.

**Table 3.** Level of investment expenditures per capita of local government units in Poland in 2007-2018 (in PLN)

Specification	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Cumulative investment expenditures	
													nominal	real <sup>b)</sup>
total gminas <sup>a)</sup> , including:	408.1	493.4	618.8	760.1	691.0	533.8	497.7	585.9	550.4	412.3	621.8	999.6	7,172.9	5,818.8
urban gminas	402.0	499.0	602.6	664.8	601.7	471.1	405.9	490.5	465.8	377.8	553.9	889.6	6,424.7	5,211.8
urban-rural gminas	388.8	480.0	597.8	718.1	666.0	528.0	476.7	559.3	528.1	400.4	598.4	945.7	6,887.3	5,587.1
rural gminas	426.7	500.8	644.8	848.0	761.9	573.9	564.9	659.6	614.4	440.7	677.7	1,103.4	7,816.7	6,341.1
cities with powiat status, including:	775.6	877.3	953.3	1,005.8	981.1	962.5	905.2	1,078.7	967.6	611.9	746.8	1,085.4	10,951.1	8,883.7
voivodship cities	838.0	973.0	1,053.9	1,098.4	1,082.1	1,100.2	983.0	1,146.0	1,081.5	701.8	840.5	1,149.8	12,048.2	9,773.7
powiats	55.0	68.3	106.2	134.5	116.0	72.0	73.5	89.6	88.0	77.1	104.6	154.5	1,139.3	924.2
voivodships	103.2	118.7	253.8	148.3	166.9	147.0	165.1	200.3	192.9	80.2	103.4	146.2	1,825.9	1,481.2

**Note:** a) Excluding cities with powiat status, b) At constant prices in 2007.

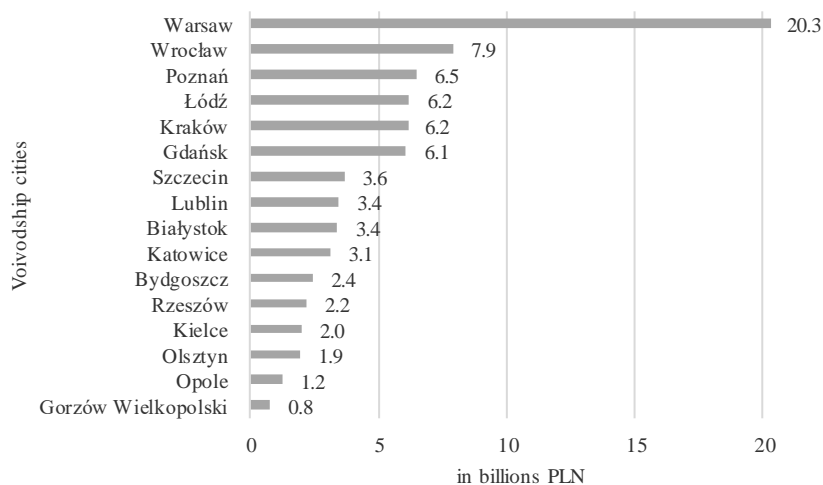
**Source:** Own study based on data from Statistics Poland (Local Data Bank, Macroeconomic Data Bank).

#### 4.2 Level and Diversity of Investment Activity Among Large Cities – Regional Centres – in Poland in the 2007-2018 Period

In absolute terms, the highest investment expenditures were incurred by Warsaw, the capital city of Poland. In 2007-2018, Warsaw allocated over PLN 20 billion (EUR 5.3 billion) for investment expenditures. In other words, it incurred more than a quarter of total investment expenditures of voivodship cities and nearly 17% of investment expenditures of all cities with powiat status. Warsaw's highest investment expenditures included those falling under transport (extension of underground lines<sup>4</sup>) and environmental protection (development of bicycle route network). Also, Wrocław (PLN 7.9 billion, EUR 2.1 billion), Poznań (PLN 6.5 billion, EUR 1.7 billion), followed by Łódź (PLN 6.2 billion, EUR 1.6 billion), Kraków (PLN 6.2 billion, EUR 1.6 billion), and Gdańsk (PLN 6.1 billion, EUR 1.6 billion) demonstrated high investment activity in absolute terms. On the other hand, the lowest capital expenditures were incurred by Gorzów Wielkopolski (PLN 0.8 billion,

EUR 0.2 billion) and Opole (PLN 1.2 billion, EUR 0.3 billion) (Figure 1).

**Figure 1.** *Level of investment expenditures of large cities – regional centres in Poland in 2007-2018 (in PLN billion, actual expenditures expressed in constant prices from 2007)*



**Source:** *Own study based on data from Statistics Poland (Local Data Bank, Macroeconomic Data Bank).*

Voivodship cities in Poland are diversified in terms of area, demographic and economic potential<sup>3</sup>. Demographic and economic potential are among the main determinants of local government units' own income potential, which in turn determines the capability and investment activity of these entities. Table 4 presents the average and cumulative investment expenditures of particular voivodship cities per capita and per km<sup>2</sup> in real terms in 2007-2018. In the analysed period, the highest investment expenditures per capita, both average and cumulative, were incurred by Gdańsk. In 2007-2018, the city's cumulative real investment expenditures in question amounted to over PLN 12,000 per capita (EUR 3,175 per capita). In the case of an average city with powiat status, they reached less than PLN 9,000 per capita (EUR 2,380 per capita). The high level of cumulative investment expenditures in the analysed period, amounting to over PLN 11,000 per capita (EUR 2,900 per capita), was also observed in Rzeszów and Wrocław. In contrast, Poznań and Warsaw incurred expenditures of nearly PLN 11,000.

In terms of the level of investment expenditures per capita, Białystok was only ranked sixth among voivodship cities; however, taking into account the level of investment expenditures per km<sup>2</sup>, Białystok is distinguished by very high investment activity. Cumulative real investment expenditures in 2007-2018 surpassed PLN 33

million per km<sup>2</sup> there (EUR 8.7 million per km<sup>2</sup>), with the average for all cities with powiat status, amounting to more than a half less, i.e., PLN 15.7 million per km<sup>2</sup> (EUR 4.2 million per km<sup>2</sup>) (Table 4). On the one hand, Białystok is one of the regional centres with the highest population density (ranking second just after Warsaw); nevertheless, its area is relatively small compared to other studied cities (the twelfth position). Moreover, compared to other large cities, it is distinguished by a relatively low level of GDP per capita in relation to the Polish average, which amounted to 103%, and in the case of the metropolitan area only 82% of the Polish average (Report on Polish metropolises, 2019).

**Table 4.** Selected indicators illustrating the level of investment activity of large cities – regional centres – in Poland in 2007-2018 <sup>a)</sup>

Specification	Investment expenditure in PLN per capita		Investment expenditure in PLN million per km <sup>2</sup>		Share of investment expenditure in total expenditure (%) (average)	Funds obtained for financing and co-financing EU projects in PLN per capita	
	average values	cumulative values	average values	cumulative values		average values	cumulative values
All cities with powiat status	825.3	8,883.7	1.4	15.7	19.3	17.1	514.7
Total voivodship cities, including:	926.0	9,773.7	2.0	23.1	19.2	235.1	3,074.5
<i>Białystok</i>	920.5	10,796.3	2.7	33.2	22.2	410.8	4,665.6
<i>Bydgoszcz</i>	535.7	6,340.0	1.1	13.8	14.7	106.7	1,523.6
<i>Gdańsk</i>	982.1	12,398.2	1.7	23.2	23.1	242.8	5,314.2
<i>Gorzów Wielkopolski</i>	500.8	5,650.2	0.7	8.9	13.9	78.4	1,426.3
<i>Katowice</i>	824.8	9,562.3	1.5	18.8	21.5	61.5	1,500.0
<i>Kielce</i>	835.6	9,376.3	1.5	18.1	18.6	367.4	3,761.9
<i>Kraków</i>	651.8	7,512.1	1.5	18.9	14.1	125.7	1,511.2
<i>Lublin</i>	760.0	9,444.2	1.8	23.4	18.7	320.7	4,187.9
<i>Łódź</i>	649.9	8,090.0	1.6	21.1	17.3	184.0	2,725.7
<i>Olsztyn</i>	777.8	10,430.2	1.5	21.9	18.3	440.0	5,143.4
<i>Opole</i>	722.1	9,141.8	0.9	11.8	17.7	179.7	2,836.3
<i>Poznań</i>	958.7	10,850.3	2.0	24.6	22.5	140.1	2,688.6
<i>Rzeszów</i>	971.3	11,327.2	1.6	19.7	23.9	362.2	4,959.2
<i>Szczecin</i>	671.3	8,463.5	0.9	12.1	20.1	121.6	1,885.3
<i>Warsaw</i>	1,015.9	10,928.7	3.4	39.3	17.0	293.9	3,544.4
<i>Wrocław</i>	993.8	11,449.0	2.2	26.9	19.4	219.0	2,844.6

**Note:** a) At constant prices in 2007.

**Source:** Own study based on data from Statistics Poland (Local Data Bank, Macroeconomic Data Bank).

On the other hand, investment expenditures per capita lower than in an average city with powiat status were recorded in Gorzów Wielkopolski, Bydgoszcz, Kraków, Łódź and Szczecin. At the same time, in Gorzów Wielkopolski, Szczecin and Bydgoszcz, the lowest levels per km<sup>2</sup> were observed, amounting to 8.9, 12.1 and 13.8 million PLN per km<sup>2</sup> respectively (with the average for all cities with powiat status amounting to PLN 15.7 million per km<sup>2</sup> – EUR 4.2 million per km<sup>2</sup>). A

relatively low level of investment expenditures in Kraków, compared to other regional centres, may raise concerns, taking into account the investment challenges faced by this metropolis. The research presented in the 2012 ‘Investment challenges faced by major cities...’ shows that the level of the total investment challenges of Kraków is the highest, immediately after Warsaw. From the point of view of the distribution of investment needs between particular metropolises, the most significant challenges – in terms of global expenditures – are faced by the cities where, according to demographic forecasts, the population is expected to be the highest in 2035, i.e., Warsaw, followed by Kraków and Wrocław.

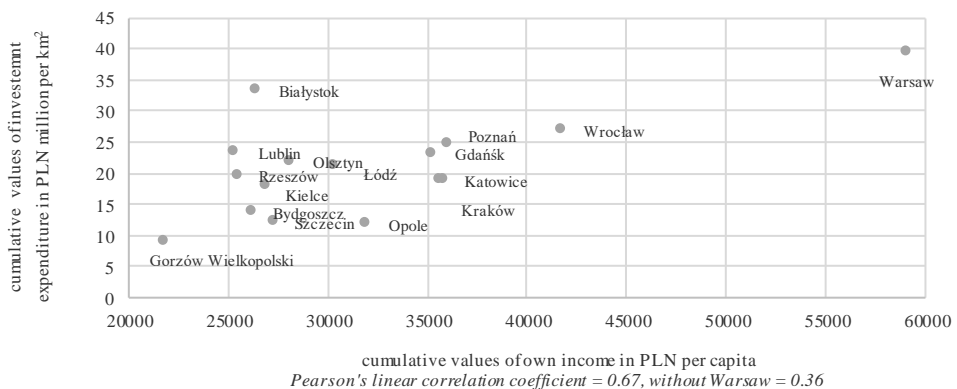
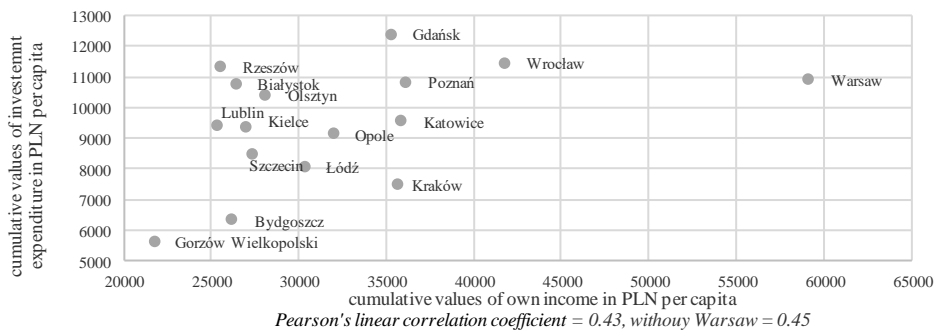
The funds obtained from the EU have become an essential factor in the country's development, as Poland became its biggest beneficiary in 2007-2013 and 2014-2020. According to the research carried out by Gorzelak (2019), about two-thirds of public investment in Poland was financed by the Structural and Cohesion Funds. The implemented cohesion policy has contributed to broadening the scope of influence of large urban centres on their regional environment and to the dynamic development of the least developed areas according to the presented data, regional centres – voivodship cities – obtained several times more funds from the EU in relation to an average city with powiat status (Table 4). The most funds for financing and co-financing EU projects per capita were obtained mainly by less economically developed regional centres of Eastern Poland, such as Olsztyn, Rzeszów, Białystok and Lublin.

An important factor determining local government entities' investment activity is their income potential, which is confirmed by the results of studies conducted, among others, by Standar (2018a). In order to pursue development goals, local government units must be in good financial standing because an adverse financial situation has a negative impact on the population (Carmeli, 2007) and, generally, on economic development (Watson *et al.*, 2007). In the opinion of Surówka (2013), as well as Lubińska *et al.* (2007), the level and share of own income in total income, i.e. the so-called ‘local government units' own income potential’, is of particular importance for the ability to meet the needs of inhabitants, as well as for stable local development. The analysis of the income standing of local government sector entities based on own income makes it possible to determine the long-term ability of these entities to finance the tasks they execute, and their insufficient level may constitute a barrier to, *inter alia*, acquisition of external funds (repayable or non-repayable), which determine the scope of local investments.

According to the research conducted, among others, by Kozera (2018), large cities – regional centres – compared to other local government units stand out as having a high-income potential of their own; however, it is relatively strongly differentiated among these entities. Regional centres with the highest level of accumulated own income in PLN per capita in 2007-2018, such as Warsaw, Wrocław, Poznań and Gdańsk, also had the high level of accumulated investment expenditures per capita, as well as per km<sup>2</sup>. On the other hand, the lowest level of own income potential and

investment activity was recorded in Gorzów Wielkopolski, Bydgoszcz and Szczecin. A correlation relationship was observed between the level of own income per capita and the level of investment expenditures per capita and km<sup>2</sup>. In contrast, a weak correlation relation was recorded between the level of own income per capita and the share of investment expenditures in total expenditures. However, the strongest correlation was observed between the level of own income potential of voivodship cities and investment expenditures incurred by them per km<sup>2</sup> (in this case, the Pearson correlation coefficient amounted to nearly 0.7, which indicates a relatively strong correlation relationship). However, when analysing the existing relationships excluding the capital (Warsaw), this relationship is significantly lower (the correlation coefficient was 0.36 at that time). In contrast, the correlation between the level of own income potential and the volume of investment expenditures incurred per capita was slightly stronger (Figure 2).

**Figure 2.** Correlation charts for the level of accumulated own income and investment expenditures per capita of large cities – regional centres – in Poland in 2007-2018 (real income and expenditures at constant prices in 2007)



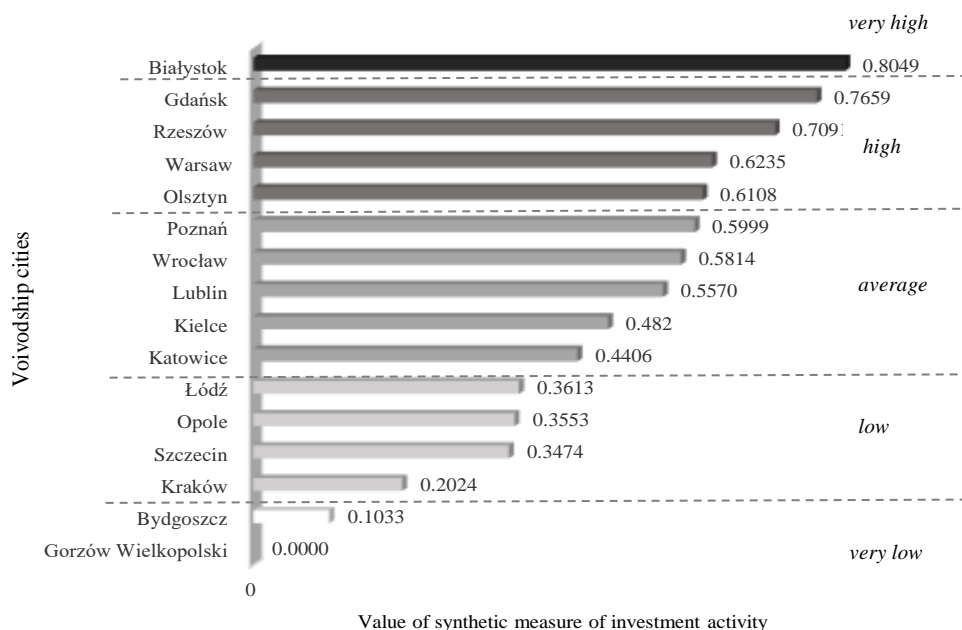
**Source:** Own study based on data from Statistics Poland (Local Data Bank, Macroeconomic Data Bank).



In order to assess the level and diversity of investment activity of voivodship cities, due to the multidimensionality of the phenomenon under study, the values of the synthetic measure were constructed with the use of the TOPSIS method. Four simple features were taken into account in the construction of the synthetic measure of the level of investment activity of regional centres, i.e. the level of real cumulative investment expenditures in PLN per capita, level of real cumulative investment expenditures in millions of PLN per km<sup>2</sup>, the share of investment expenditures in total spending (average for 2007-2018), and level of real cumulative cash obtained to finance and co-finance EU projects in PLN per capita for the years 2007-2018. All simple features taken into account in constructing the synthetic feature constituted stimulants of the metropolis's investment activity level.

The obtained values of the synthetic measure of investment activity of cities, i.e. regional centres, ranged from 0.000 to 0.8049. According to the arbitrary division, it is possible to distinguish five typological classes of regional centres in Poland with different investment activity levels in 2007-2018 (Figure 3).

**Figure 3.** *The value of the synthetic measure of investment activity of large cities – regional centres – in Poland in 2007-2018*



**Source:** *Author's own calculations based on data from Table 4.*

The empirical research showed that Białystok demonstrated the highest level in the analysed period, for which the value of the synthetic measure was the highest and

amounted to 0.8049. Białystok is classified by the Union of Polish Metropolises as one of the Polish metropolises with the lowest level of development (in 2019, the level of GDP per capita in Białystok was only 103% of the country average, while for the metropolitan area it was only 82%) (Report on Polish metropolises, 2019). In 2007-2018, Białystok showed very favourable values of all four investment activity indicators taken into account. Also, Gdańsk, Rzeszów, Warsaw and Olsztyn stood out with their high level of investment activity. Gdańsk demonstrated the highest level of cumulative investment expenditures per capita (PLN per capita) and the highest level of funds obtained to finance and co-finance EU projects.

On the other hand, Rzeszów stood out due to the highest average share of investment expenditures in total expenditures; Warsaw had the highest level of investment expenditures per km<sup>2</sup> of its total area, and Olsztyn showed a high level of total investment expenditures per capita, as well as a high level of cash obtained for financing and co-financing of EU projects (Table 4). Therefore, as many as two cities from Eastern Poland, namely Białystok and Rzeszów, ranked among the leading voivodship cities with very high or high investment activity (Figure 3). These cities, like Gdańsk, received a high level of cash to finance and co-finance EU projects. These metropolises' high investment activity results, inter alia, from the Operational Programme – Development of Eastern Poland (EPD OP) implemented in Poland in 2007-2013 and from 2014. In order for the largest cities of Eastern Poland to be able to properly perform the role of metropolitan centres, around which the economic life of regions is concentrated, they need a number of infrastructural investments.

Therefore, the main objective of Priority Axis III 'Voivodship growth centres' of the EPD OP is to support the development of cities' metropolitan functions. The tasks realised as part of this priority provided the cities of Eastern Poland with an opportunity to increase infrastructure development, particularly communication infrastructure, and increase their potential in terms of conference and exhibition areas. Such facilities not only serve as showpieces of cities, but they also constitute an essential element accelerating their development (they attract the attention of businesses, stimulate the growth of hotels and restaurants, etc.) (The development of cities in Eastern Poland, 2012).

It is noteworthy that when Poland entered the EU in 2004, five voivodeships of Eastern Poland belonged to the group of the least affluent regions across the country and within the contemporary Union. The quality of life of the regions' inhabitants was significantly different from the average standard of living in the rest of the Community. This difference was illustrated by the ratio of gross domestic product per capita expressed by the PPS, which in the said voivodeships in 2004 amounted to just over a third of the EU average. The lower level of economic development resulted primarily from the absence of modern infrastructure that would enable the launch of development processes. The investment needs to be applied mainly to transport, telecommunications, energy, and places where public services are

provided. Therefore, the dedicated programmes for Eastern Poland aimed to eliminate barriers and take advantage of the potential (opportunities) for the macro-region's social and economic development. They were implemented along with the others, i.e., national and regional operational programmes. As a result of many investment projects, significant development was observed in Eastern Poland. GDP per capita increased from 38% in 2007 to nearly 50% in 2018 compared to the EU average (Eurostat Database, access: 03.01.2021). Nevertheless, compensating for the deficits is a long-term process that requires long-term strategic objectives and consistency in achieving them.

In 2007-2018, Poznań, Wrocław, Lublin, Kielce and Katowice demonstrated an average investment activity level. Most of them, i.e., Poznań and Wrocław, are among Polish metropolises with the highest economic potential, quantifiable level of generated per capita GDP (Report on Polish metropolises, 2019), whose ranking position resulted from a high level of realised cumulative per capita investment expenditures, which amounted to ca. PLN 11,000 per capita (EUR 2,900 per capita) in the analysed years, where the mean for all cities amounted to less than PLN 9,000 per capita (EUR 2,400 per capita). Like other regional centres in Eastern Poland, Lublin showed a high level of funds for financing and co-financing EU projects (Figure 3, Table 4).

Voivodship cities with the lowest investment activity level included Bydgoszcz and Gorzów Wielkopolski, with the lowest level of all sub-indices reflecting the investment activity level. Bydgoszcz and Gorzów Wielkopolski are among voivodship cities with the lowest level of own revenue potential. In 2007-2018, cumulative real own revenues raised by these cities amounted to PLN 21,700 and 26,200 per capita (EUR 5,700 and 6,900 per capita) (at constant 2007 prices), with a mean for all regional centres amounting nearly PLN 30,000 per capita (nearly EUR 8,000 per capita) (Figure 2). As it has already been noted, a low level of own revenue potential can constitute one of the obstacles for realising investments by local government entities. On the other hand, Łódź, Opole, Szczecin and Kraków showed a low level of investment activity. Szczecin and Kraków had a relatively low cumulative investment rate compared to other metropolises, both per capita and per km<sup>2</sup> (Table 4).

In a situation of limited own funds, and consequently limited investment ability of numerous local government entities (including the largest cities with powiat status) it is impossible to realise investments without refundable funding sources. The use of repayable instruments may either positively or negatively affect the economy (Yensu, 2015). Debt is a natural way to carry out tasks and an alternative option for financing investments in the absence of own funds (Dafflon and Beer-Toth, 2006; Li and Chen, 2013). On the other hand, however, insufficient control over local government debt levels may contribute to deteriorating their financial condition. A decline in the municipal financial situation may result in reducing their capacity to carry out their tasks, including the delivery of public services (Donald *et al.*, 2014;

Vammale and Hulbert, 2013).

Consequently, a considerable increase in debt of the largest cities can be noted in the analysed period. In 2007, the overall debt of voivodship cities amounted to PLN 7 billion (EUR 1.9 billion). In 2018, it was two and a half times higher, increasing to more than PLN 17.5 billion (EUR 4.6 billion) (at constant 2007 prices) (Indicators for assessing the financial position of local government entities ...). As a result, in 2018, in relative terms, Kielce, Lublin, Łódź, Wrocław and Rzeszów were among voivodship cities with the highest debt, with per capita debt exceeding PLN 3,000 (EUR 700), and its share in all revenues amounted from 55 to more than 67% (Table 5). Debt plays an increasingly important role in the budgets of voivodship cities. Firstly, expenditures for satisfying numerous needs of local communities exceed income, while secondly, especially in terms of the financial perspective 2007-2013, the high growth rate of debt of these entities is an effect of launching investments co-financed from EU funds. As Bitner (2014) points out, the principle of co-financing, reimbursement and limiting the financial contribution of the funds for projects generating net revenues requires these entities to incur significant expenditures financed from their own resources or loans.

**Table 5.** Investment expenditures as compared to selected financial indicators of large cities – regional centres – in Poland in 2007-2018

Specification	Cumulative values of financial indicators for the years 2007-2018 <sup>a)</sup>					Total debt (as at the end of 2018, in PLN million)	Total per capita debt in 2018 (in PLN)	Share of total debt in total revenues in 2018 (%)
	Investment expenditures (in PLN million)	Budget surplus/deficit (in PLN million)	Operating surplus (in PLN million)	Property income (in PLN million)	of which property sales (in PLN million)			
All cities with powiat status	112,209.2	-15,586.1	47,243.9	56,652.5	631.4	27,313.0	1,892.2	47.5
Total voivodship cities, including:	71,982.2	-9,631.2	31,586.5	25,033.6	315.1	17,553.4	2,238.9	42.9
<i>Białystok</i>	3,190.3	-446.2	820.8	1,182.0	37.6	649.9	2,184.7	38.9
<i>Bydgoszcz</i>	2,266.6	-443.2	1,142.2	674.1	5.1	803.0	2,293.1	46.9
<i>Gdańsk</i>	5,714.5	-347.2	2,476.9	1,251.8	20.2	591.2	1,267.0	22.2
<i>Gorzów Wielkopolski</i>	703.7	1.4	322.0	192.2	101.6	127.0	1,021.7	20.6
<i>Katowice</i>	2,912.8	-247.1	2,057.8	991.5	5.6	525.0	1,782.7	33.0
<i>Kielce</i>	1,876.9	-561.8	483.5	536.5	7.0	692.3	3,518.0	66.6
<i>Kraków</i>	5,714.2	-790.9	2,933.7	2,010.9	1.3	2,068.3	2,682.3	48.0
<i>Lublin</i>	3,252.6	-1,026.9	634.2	592.6	0.4	1,175.4	3,460.3	64.6
<i>Łódź</i>	5,788.9	-1,559.6	1,896.7	1,675.8	4.1	2,220.4	3,240.2	67.1
<i>Olsztyn</i>	1,817.5	-121.2	529.8	335.0	0.2	235.2	1,359.0	24.0
<i>Opole</i>	1,134.0	-152.0	386.7	473.2	0.3	225.9	1,762.9	28.2
<i>Poznań</i>	5,964.5	-476.3	3,284.3	936.7	4.2	915.1	1,706.0	30.5
<i>Rzeszów</i>	2,069.1	-408.4	566.8	273.7	3.4	591.2	3,086.3	54.7
<i>Szczecin</i>	3,441.9	-675.7	1,956.3	861.4	39.7	967.2	2,403.2	52.1
<i>Warsaw</i>	18,878.9	-654.0	9,999.1	8,821.7	69.6	3,706.7	2,084.8	26.9
<i>Wrocław</i>	7,255.8	-1,722.3	2,096.0	4,224.4	14.8	2,059.5	3,214.7	57.0

**Note:** a) Real values at constant prices in 2007.

*Source: Own elaboration based on data from Statistics Poland (Local Data Bank, Macroeconomic Data Bank, access: 1 July 2020) and data from the Ministry of Finance (Indicators to assess the financial performance of local government units).*

In a situation of high indebtedness of many regional centres, there is a question about the future, i.e. about the possibility of new investments. Polish regional centres still face numerous investment challenges that aim to increase urban infrastructure saturation close to the average level characteristic of well-developed Western Europe cities. Nevertheless, the high level of general indebtedness and high costs of its servicing for many large cities in Poland may hinder new investments. The possibilities of involvement of local government entities in new investment projects, including those co-financed from EU funds in the current financial perspective 2014-2020 and the future one, will be determined by the ability to generate an operating surplus, as well as property income, which is related to the amended rules on the possibility to incur new liabilities by local government units, effective from 2014<sup>5</sup>.

Data presented in Table 5 show that the ability of all cities with powiat status and voivodship cities to generate an operating surplus is much lower in relation to the level of property income obtained. In 2007-2018, the operating surplus of all regional centres accounted for 44% of total investment expenditures incurred. In the case of Lublin, it was less than one-fifth, while in Białystok and Kielce, it was a quarter of the total investment expenditures paid. Therefore, the remaining part was financed from property income and debt instruments. In the case of Warszawa and Wrocław, particularly high property incomes were recorded, where they accounted for 47% and 58% of investment expenditures incurred respectively. However, it should be borne in mind that property incomes are usually a limited source of financing. They depend on the assets held by local government units and the possibility for their disposal. Property income can be exhausted in the future due to sales of property by local government entities. As a result, as noted by Dylewski (2014), among others, a relatively low capacity of local government entities to generate an operating surplus can pose an obstacle for the possibilities of financing, pre-financing, or participation in the funding of new investment projects. Moreover, it should be considered that an operating surplus is also a source for paying previously incurred liabilities. Therefore, increasing costs of debt-servicing and relatively low operating surpluses remain central problems in terms of investment activity for local governments, including those of the largest cities with powiat status. A particularly high level of debt in relation to total revenues, amounting to more than 50%, is observed in as many as six voivodship cities, with the highest values in Kielce and Łódź.

## **5. Summary and Concluding Comments**

Development on a local or regional scale is not possible without incurring investment expenditures. Their financial burden mainly rests on local government sector entities at the local level, in Poland mostly on gminas and cities with powiat status. The largest cities – regional centres – show a particularly high level of

investment activity. Last decade constituted a period of dynamic development of Polish cities, including regional centres. To a great extent, regional centres in Eastern Poland have taken advantage of the development opportunities offered by European integration processes. Due to a high level of investment activity of voivodship cities, the social and economic changes taking place were accompanied by noticeable changes in the standard of living, both in cities and metropolitan areas.

In 2007-2018, regional centres – voivodship cities – allocated more than PLN 72 billion (EUR 19 billion) (at constant 2007 prices) for investment projects, which constituted nearly 65% of total investment expenditures realised by all cities with powiat status, and 20% – by the local government sector in Poland. At the same time, voivodship cities had the highest level of per capita investment spending. A high level of investment activity of voivodship cities is a derivative of substantial own revenue potential, which is evident when compared to other local government sector entities, as they are characterised by a high demographic and economic potential determining its level. Nonetheless, these entities still show significant differences in the level of social and economic development. And it translates into the extent of investment needs and the possibilities of their financing. It is also significant when using EU funds for infrastructure development since an adequately high own financial potential determines their successful acquisition. The conducted empirical research pointed to a relatively high correlation between the level of own revenues and the investment expenditures realised by voivodship cities.

From a synthetic perspective, the highest level of investment activity in 2007-2018 was found in Białystok, Gdańsk, Rzeszów, Warsaw and Olsztyn. Therefore, as many as two cities from Eastern Poland, namely Białystok and Rzeszów, ranked among the leading voivodship cities with very high or high investment activity (except for Lublin, where the level of investment activity was determined as average). Thus, the empirical research partially confirmed the research hypothesis posed, assuming that ‘As a result of the lower level of development and existing deficiencies in social and technical infrastructure, the highest level of investment activity may be associated with large cities located in Eastern Poland in relation to other regional centres’. In the case of Eastern Poland cities (i.e. Białystok and Rzeszów), the situation was mainly influenced by the implementation of a number of investments co-financed from EU funds (i.a. under EPD OP programme). In turn, in the case of metropolitan centres such as Gdańsk and Warsaw, it resulted from the high level of their own income potential. At the same time, those cities demonstrated a relatively low level of the share of general indebtedness in total income. In terms of investment activity, Bydgoszcz and Gorzów Wielkopolski placed at the bottom of the ranking. These cities had a relatively low demographic and economic potential, and consequently a low level of own income potential, compared to other regional centres.

Polish metropolises still face numerous investment challenges, as in terms of the level of development they still differ from many Western European cities (as

indicated by Eurostat data). In terms of economic development (GDP per capita) and the ability to attract new inhabitants (except for Warsaw), Poland does not compare favourably with European countries. A comparison of Polish regional centres with European ones demonstrates several serious challenges that local government entities have to face, especially in terms of demography and economic development. European funds allocated in the EU budget for local government entities in the financial perspective for the years 2014-2020 have opened up further opportunities for creating local and regional development. Implementing new investments can be hindered for several reasons. Relatively limited sources of own revenues of local government entities and the lack of perspectives for a considerable increase of tax revenues mean that voivodship city budgets will probably have only moderate investment funds at their disposal in years to come. And this may mean that investment tasks will have to compete with ongoing expenditures for consumption.

Also, a relatively high level of debt of the largest Polish cities, in the context of legislative changes implemented in 2014 pertaining to the possibilities of incurring new liabilities by local government entities means that cities will probably have limited options of financing further investments from debt instruments and bank facilities. Limited possibilities of increasing the level of own revenue potential, a high level of debt and a relatively low operating surplus generated by these entities can, therefore, become an obstacle for implementing new investments. In a situation of limited own funds and a low ability to incur new liabilities by local government entities, including large cities – regional centres – it is of immense importance to thoroughly consider all planned investments in terms of incurred costs and possible benefits in the long term. It may turn out that the possibilities of continuing or increasing the investment activity of regional centres will mainly depend on the ability of these entities to mobilise and better use private capital or public-private partnerships in financing investments.

## **References:**

- Allain-Dupre, D., Hulbert, C., Vammalle, C. 2012. Public Investment at Central and Sub-national Levels: An Adjustment Variable for OECD Countries in the Present Context of Austerity? OECD Workshop on Effective Public Investment and Sub-National Level in Times of Fiscal Constraints: Meeting in Coordination and Capacity Challenges, OECD.
- Aschauer, D.A. 2000. Do States Optimise? Public Capital and Economic Growth. *The Annals of Regional Science*, 34(3), 36343-36360.  
<https://doi.org/10.1007/s001689900016>.
- Auschauer, D.A. 1989, Does public capital crowd out private capital? *Journal of Monetary Economics*, 24(2), 171-188, [https://doi.org/10.1016/0304-3932\(89\)90002-0](https://doi.org/10.1016/0304-3932(89)90002-0).
- Average exchange rates (Warsaw: National Bank of Poland), available at:  
[https://www.nbp.pl/home.aspx?f=/kursy/arch\\_a.html](https://www.nbp.pl/home.aspx?f=/kursy/arch_a.html).
- Barro, R.J. 1988. Government Spending in a Simple Model of Endogenous Growth. *The National Bureau of Economic Research, Working Paper*, 2588, 23-24,  
<https://doi.org/10.1086/261726>.

- Bitner, M. 2014. Spółki prawa handlowego – przeniesienie zadłużenia poza JST. In: Walczak, P. (ed.) *Zadłużenie jednostek samorządu terytorialnego, Wyzwania w obliczu nowej perspektywy finansowej UE*. Warsaw: Beck.
- Capello, R., Nijkamp P. 2009. Regional growth and development theories revisited. Retrieved from: <https://research.vu.nl/ws/files/2432673/rm%202009-22.pdf>.
- Carmeli, A. 2007. The effect of fiscal conditions of local government authorities on their economic development. *Economic Development Quarterly*, 21(1), 1-8, <https://doi.org/10.1177/0891242406295521>.
- Crescenzi, R., Rodríguez-Pose, A. 2012. Infrastructure and regional growth in the European Union. *Papers in Regional Science*, 91(3), 487-513, <https://doi.org/10.1111/j.1435-5957.2012.00439.x>.
- Dafflon, B., Beer-Toth, K. 2006. Managing local public debt in transition countries: An issue of self-control. *Financial Accountability & Management*, 25(3), 305-333, <https://doi.org/10.1111/j.1468-0408.2009.00479.x>.
- Dijkstra, L., Annoni, P., Kozowska, K. 2011. A New Regional Competitiveness Index: Theory, Methods and Findings. *European Union Regional Policy Working Papers*, 2 [https://ec.europa.eu/regional\\_policy/sources/docgener/work/2011\\_02\\_competitiveness.pdf](https://ec.europa.eu/regional_policy/sources/docgener/work/2011_02_competitiveness.pdf).
- Dolewka, Z. 2014. Bezpieczeństwo finansowe miast wojewódzkich. *Nierówności Społeczne a Wzrost Gospodarczy*, 40(4), 31-41.
- Domański, B. 2006. *Gospodarka przestrzenna – podstawy teoretyczne*. Warsaw: Wydawnictwo Naukowe PWN.
- Donald, B., Glasmeier, A., Gray, M., Lobao, L. 2014. Austerity in the city: economic crisis and urban service decline? *Cambridge Journal of Regions, Economy and Society*, 7, 3-15, <https://doi.org/10.1093/cjres/rst040>.
- Dubik, B.M. 2005. *Problemy informacyjne i decyzyjne w działalności inwestycyjnej*. Katowice: Wydawnictwo Akademii Ekonomicznej im. Karola Adamieckiego w Katowicach.
- Dylewski, M. 2010. Wpływ spowolnienia gospodarczego na zdolność inwestycyjną JST. In: Sokołowski, J., Sosnowski, M., Żabiński, A. (eds.) *Finanse publiczne*. Wrocław: Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu.
- Dylewski, M. 2014. Zadłużenie JST – problemy nowej perspektywy finansowej UE. *Studia Ekonomiczne, Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach*, 98(14), 125-134.
- European Charter of Local Self-Government. 1985. *European Treaty Series No. 122*. Council of Europe, Strasbourg.
- Eurostat, Databasa. Available online: <https://ec.europa.eu/eurostat/web/main/data/database>.
- Fedajev, A., Nikolic, D., Radulescu, M., Sinisi, C.I. 2019. Patterns of structural changes in CEE economies in new millennium. *Technological and Economic Development of Economy*, 25(6), 1336-1362, <https://doi.org/10.3846/tede.2019.11253>.
- Filipiak, B. 2017. Evaluation of Investment Expenditure of Voivodeship Self-Governments in the Light of the Risk of Implementation of Tasks. *Annales H, Oeconomia*, vol. LI, Sectio H, 95-105, <http://dx.doi.org/10.17951/h.2017.51.4.95>.
- Filipiak, B., Dylewski, M. 2015. The investment activities of local government units in 2008–2013. *Finanse, Rynki Finansowe, Ubezpieczenia*, 73, 867-877.
- Friedmann, J. 1986. The world city hypothesis. *Development and Change*, 17, 69-83.
- Gołębiowski, M. 2015. The impact of capital expenditures on the level of budget deficits in Polish metropolises. *Nauki o Finansach*, 3(24), 11-24.



- Gorzela, G. 2019. Polityka regionalna i spójności terytorialnej. Nasza Europa: 15 lat Polski w Unii Europejskiej. Wartości, instytucje, swobody, polityki sektorowe, problemy i kluczowe wyzwania. Warsaw: CASE.
- Gren, J. 2003. Reaching the Peripheral Regional Growth Centres. *European Journal of Spatial Development*, 3. Available at: .  
[https://archive.nordregio.se/Global/Publications/Publications%202017/Refereed\\_3\\_Gren\(2003\).pdf](https://archive.nordregio.se/Global/Publications/Publications%202017/Refereed_3_Gren(2003).pdf).
- Gubernat-Ulatowski, E. 2016. Potencjał finansowy i inwestycyjny a aktywność inwestycyjna samorządu terytorialnego. *Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach*, 294, 47-58.
- Hirschleifer, J. 1965. Investment Decision under Uncertainty – Theoretic Approaches. *The Quarterly Journal of Economics*, 74, 509-536, <https://doi.org/10.2307/1880650>.
- Hulbert, C., Vammalle, C. 2014. A Sub-national Perspective on Financing Investment for Growth – Measuring Fiscal Space for Public Investment: Influences, Evolution and Perspectives. *OECD Regional Development Working Papers*, 2. Paris, France: OECD Publishing.
- Hwang, C.L., Yoon, K. 1981. Multiple attribute decision-making: Methods and applications Berlin: Springer.
- Indicators for assessing the financial position of local government entities Wskaźniki do oceny sytuacji finansowej jednostek samorządu terytorialnego w latach 2007-2009. Warsaw: Ministry of Finance in Poland. Ministerstwo Finansów. Available at: <https://www.finanse.mf.gov.pl/budzet-panstwa/finanse-samorzadow/opracowania>.
- Indicators for assessing the financial position of local government entities in Wskaźniki do oceny sytuacji finansowej jednostek samorządu terytorialnego w latach 2010-2012. Warsaw: Ministry of Finance in Poland. Ministerstwo Finansów. Available at: <https://www.finanse.mf.gov.pl/budzet-panstwa/finanse-samorzadow/opracowania>.
- Indicators for assessing the financial position of local government entities in Wskaźniki do oceny sytuacji finansowej jednostek samorządu terytorialnego w latach 2013-2015. Warsaw: Ministry of Finance in Poland Ministerstwo Finansów. Available at: <https://www.finanse.mf.gov.pl/budzet-panstwa/finanse-samorzadow/opracowania>.
- Indicators for assessing the financial position of local government entities in Wskaźniki do oceny sytuacji finansowej jednostek samorządu terytorialnego w latach 2015-2017. Warsaw: Ministry of Finance in Poland Ministerstwo Finansów. Available at: <https://www.finanse.mf.gov.pl/budzet-panstwa/finanse-samorzadow/opracowania>.
- Jałowiecki, B. 1999. Metropolie. Białystok: Wydawnictwo Wyższej Szkoły Finansów i Zarządzania.
- Jastrzębska, M. 2005. Polityka budżetowa jednostek samorządu terytorialnego. Gdańsk: Wydawnictwo Uniwersytetu Gdańskiego.
- Kaul, I., Mendoza, R.U. 2003. Advancing the Concept of Public Goods. In: Kaul, I., Conceição, P., Le Goulven, K., Mendoza, R.U. (Eds.). *Providing Global Public Goods: Managing Globalisation*. New York: Oxford University Press, New York, <https://doi.org/10.1093/0195157400.003.0004>.
- Keynes, J.M. 1936. *The General Theory of Employment, Interest and Money*. London: Macmillan.
- Kozera, A. 2016. The debt of the metropolises in Poland in 2007-2013. *Studia Regionalne i Lokalne*, 3(65), 70-93, doi: 10.7366/1509499536504.
- Kozera, A. 2017. The growing debt of local government units as a threat to local development. *Nierówności Społeczne a Wzrost Gospodarczy*, 49, 203-215, doi: 10.15584/nsawg.2017.1.16.

- Kozera, A. 2018. Financial self-sufficiency of the metropolises in 2007–2015. *Studia Regionalne i Lokalne*, 1(71), 82-105, doi: 10.7366/1509499517105.
- Leigh, N.G., Blakely, E.J. 2012. *Planning local economic development: Theory and practice*. Los Angeles: SAGE.
- Lewis, B.D., Oosterman, A. 2011. Sub-National Government Capital Spending in Indonesia: Level, Structure, and Financing. *Public Administration and Development*, 31, 149-158.
- Li, Z., Chen, Y. 2013. Estimating the social return to transport infrastructure: A price-difference approach applied to a quasi-experiment. *Journal of Comparative Economics*, 41, 669-683, <https://doi.org/10.1016/j.jce.2012.09.004>.
- Local Data Bank. Warsaw: Statistics Poland, [www.bdl.stat.gov.pl/BDL/start](http://www.bdl.stat.gov.pl/BDL/start).
- Lubińska, T., Franek, S., Będziaszek, M. 2007. Potencjał dochodowy samorządu w Polsce na tle zmian ustawy o dochodach jednostek samorządu terytorialnego. Warsaw: Difin.
- Mackiewicz, M., Malinowska-Misiąg, E., Misiąg, W., Tomalak, M. 2006. *Ramy finansowe strategii rozwoju województw na lata 2007–2013*. Warszawa: Instytut Badań nad Gospodarką Rynkową.
- Macroeconomic Data Bank. Warsaw: Statistics Poland, available at: <https://bdm.stat.gov.pl/>.
- Myrdal, G. 1957. *Economic Theory and Underdeveloped Regions*. London: Duckworth.
- McCann, P. 2001. *Urban and Regional Economics*. Now York: Oxford University Press.
- Nazarczuk, J. 2013. Potencjał rozwojowy a aktywność inwestycyjna województw i podregionów Polski. Olsztyn: Wydawnictwo Uniwersytetu Warmińsko-Mazurskiego w Olsztynie.
- Przybyła, K. 2016. Investment activity of polish provincial capitals. *Studia i Prace WNEiZ Uniwersytetu Szczecińskiego*, 46(2), 105-116, doi:10.18276/sip.2016.46/2-09.
- Przybyła, K., Kachniarz, M., Ramsey, D. 2020. The investment activity of cities in the context of their administrative status: A case study from Poland. *Cities*, 97, 1-9, <https://doi.org/10.1016/j.cities.2019.102505>.
- Public goods for economic development 2008. Vienna: United Nations Industrial Development Organization. Available at: [https://www.unido.org/sites/default/files/2009-02/Public%20goods%20for%20economic%20development\\_sale\\_0.pdf](https://www.unido.org/sites/default/files/2009-02/Public%20goods%20for%20economic%20development_sale_0.pdf).
- Raport o polskich metropoliach. Report on polish metropolises. 2019. Warsaw: PwC. Available at: [www.pwc.pl/pl/publikacje/2015/raport-o-polskich-metropoliach-2015.html](http://www.pwc.pl/pl/publikacje/2015/raport-o-polskich-metropoliach-2015.html).
- Rozwój miast w Polsce Wschodniej (Development of cities in Eastern Poland). 2012. Warsaw: Polish Agency for Enterprise Development. Available at: <https://www.parp.gov.pl/component/publications/publication/rozwoj-miast-w-polsce-wschodniej>. Polska Agencja Rozwoju Przedsiębiorczości.
- Sankar, U. 2008. *Global Public Goods*. Madras School of Economics, Working Paper, 28, Available at: <http://www.mse.ac.in/wp-content/uploads/2016/09/Working-Paper-28.pdf>.
- Satoła, Ł. 2015. Financial determinants of the implementation of municipal investments. *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, XVII (1), 211-216.
- Sierak, J. 2014. Self-government investments and their funding in a year and multi-year perspective. *Myśl Ekonomiczna i Polityczna*, 4(47), 93-125.
- Sierak, J. 2016. Regional Diversification of Investment Needs of Municipalities in Poland and Possibilities of their Financing by Means of EU Funds in the Perspective of the

- Year 2020. In: Kukuła, A. (ed.) *Selected Problems of Development of Polish Regions in the Perspective of 2020*. Lublin: Wydawnictwo KUL.
- Skorwider, J. 2013. Wpływ zmian w otoczeniu rynkowym na możliwości kształtowania potencjału inwestycyjnego gmin, In: Poniatowicz, M. (ed.) *Finanse samorządu terytorialnego w niestabilnym otoczeniu*. Białystok: Wydawnictwo Uniwersytetu w Białymstoku.
- Skorwider, J., Garbowski, M. 2012. Changes in the investment potential of rural and urban-rural communes in Poland. *Studia Obszarów Wiejskich*, 29, 231-246. Available at: [http://www.rcin.org.pl/igipz/Content/19352/WA51\\_38459\\_r2012-t29\\_SOW.pdf#page=232](http://www.rcin.org.pl/igipz/Content/19352/WA51_38459_r2012-t29_SOW.pdf#page=232).
- Smętkowski, M. 2011. Interactions between EU Cohesion Policy and competitiveness of large Polish cities. *Studia Regionalne i Lokalne, Specjal edition 2011*, 31-56, available at: <http://www.euroreg.uw.edu.pl/pl/publikacje,polityka-spojnosci-a-konkurencyjnosc-duzych-polskich-miast>.
- Standar, A. 2018a. Assessing the scale of and financial reasons behind differences in the local government units' investment expenditures in the context of reducing disparities in socioeconomic development, In: Horská E., Kapsdorferová, M. (eds.) *Towards Productive, Sustainable and Resilient Global Agriculture and Food Systems Conference Proceedings, Hallová International Scientific Days 2018*. Wolters Kluwer ČR, 1462-1475, doi: <https://doi.org/10.15414/isd2018.s6.07>.
- Standar, A. 2018b. Implementation of investment expenditures versus financial condition of local governments an example of rural communes in the wielkopolska province. *Polityki Europejskie, Finanse i Marketing*, 19(68), 258-261, doi: 10.22630/PEFIM.2018.19.68.21.
- Standar, A. 2019. Location on city centres and the financial results of rural local governments. *Studia Regionalne i Lokalne*, 2(76), 110-131, doi: 10.7366/1509499527606.
- Standar, A., Kozera, A. 2020. Identifying the financial risk factors of excessive indebtedness of rural communes in Poland. *Sustainability*, 12(3), <https://doi.org/10.3390/su12030794>.
- Surówka, K. 2013. *Samodzielność finansowa samorządu terytorialnego w Polsce*. Warsaw: Polskie Wydawnictwo Ekonomiczne.
- Szczech-Pietkiewicz, E. 2019. *Konkurencyjność miasta w kontekście współczesnych koncepcji teoretycznych i zjawisk gospodarczych*. Warsaw: Szkoła Główna Handlowa inw Warsaw.
- Taylor, P.J. 2007. *World City Network: A Global Urban Analysis*. London, New York: Routledge.
- Tondol, G. 2001. *Convergence after Divergence? Regional Growth in Europe*. Wien: Springer.
- Union of Polish Metropolises. Available at: <https://www.metropolie.pl/pl/>.
- Ustawa z dnia 8 marca 1990 r. o samorządzie gminnym, Dz.U. 1990 nr 16 poz. 95. Available at: <https://isap.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU19900160095>.
- Watson, D.J., Handley, D.M., Hassett, W.L. 2005. Financial distress and municipal bankruptcy: The case of Prichard, Alabama. *Journal of Public Budgeting, Accounting and Financial Management*, 17(2), 129-150, <https://doi.org/10.1108/JPBAFM-17-02-2005-B001>.
- Wysocki, F. 2010. *Metody taksonomiczne w rozpoznawaniu typów ekonomicznych rolnictwa i obszarów wiejskich*. Poznań: Wydawnictwo Uniwersytetu Przyrodniczego w Poznaniu.

- Wyzwania inwestycyjne głównych miast Polski – perspektywa 2035 (Investment challenges of main Polish cities – the 2035 perspective). 2012. Warsaw:zawa: PWC. Available at: [www.pwc.pl/miasta](http://www.pwc.pl/miasta).
- Yensu, J., Oppong-Pepurah, E., Dwomo-Fokuo, E., Boadu, F., Kusi, A. 2015. Financing the expansion of family businesses in Ghana: Which way to go, debt or equity. *J. Invest. Manag.*, 4, 301-310, doi: 10.11648/j.jim.20150406.13.
- Yigitcanlar, T., O'Connor, K., Westerman, C. 2008. The making of knowledge cities: Melbourne's knowledge-based urban development experience. *Cities*, 25(2), 63-72, doi: 10.1016/j.cities.2008.01.001.

## Notes:

*1 For the Kuyavian-Pomeranian and Lubuskie Voivodship, cities that were taken into account are Bydgoszcz and Gorzów Wielkopolski respectively, which are voivodship cities.*

*2 The Union of Polish Metropolises is a foundation aiming at connecting metropolises in Poland to a network of EU metropolises.*

*3 In 2014-2020, over PLN 6.7 billion was allocated to develop the underground line (stage II and III) (source: <https://mapadotacji.gov.pl/projekty/>).*

*4 Undoubtedly, Warsaw, the capital of Poland, has the highest demographic and economic potential. In 2018, it was inhabited by nearly 1.8 million people. The smallest metropolises in terms of population are Gorzów Wielkopolski (0.12 million), Opole (0.13 million), Olsztyn (0.17 million), Rzeszów (0.2 million) and Kielce (0.2 million). There are five regional centres with a population higher than 0.5 million, apart from Warsaw, these are Wrocław, Łódź, Kraków and Poznań (Local Data Bank, access: 1 July 2020). The highest level of economic potential, quantified in terms of GDP per capita in relation to the Polish average, is Warsaw (293%), as well as Poznań (199%) and Wrocław (165%) (Report on Polish metropolises, 2019).*

*5 Since 2014, the acceptable level of local government debt is based on a new, individual debt ratio (IDR), which measures the ratio of debt servicing costs to the average operating surplus (increased by income from the sale of assets) in the last three years. Therefore, the individual debt ratio reflects the ability of local governments to pay their liabilities. At present, local government units' bodies cannot adopt a budget, the implementation of which will cause the ratio of total debt servicing costs to total planned government revenues to exceed the arithmetic average of the ratio of current revenues to total revenues plus revenues from the sale of assets and minus current expenses in the financial year (and in each subsequent year) calculated for the last three years (Dylewski, 2014).*

