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# Investment Activity of Local Administrative Units and the Level of Entrepreneurship Development in the Rzeszów Functional Area

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**Abstract:** The article presents preliminary results of research on the effectiveness of cohesion policy in relation to functional areas that benefit from integrated territorial investments. Assuming that all local government units in their strategies assume economic development based on the development of entrepreneurship, an attempt was made to assess the impact of investments on their development. At this stage of the research, the investments of local governments in terms of value were taken into account without considering their types and structure as well as sources of financing. Initially, the purpose was to examine whether the scale of these investments translates into the economic sphere: into the development of entrepreneurship. To assess the differences in the level of entrepreneurship in 2012 and 2016, the analysis of quantitative changes in business entities, the dynamics of their number and the synthetic indicators were used. The basis for the calculation of synthetic indicators were the methods of taxonomic analysis, that is, a simple aggregate measure, the Hellwig taxonomic development pattern method and the positional method using the Weber median. The Theil standardised index was used to examine the level and structure of spatial inequalities of gmina investment expenditures and enterprises' investments. The research indicated the specificity of the Rzeszów Functional Area (ROF) both in comparison with the voivodeship and similar functional areas in eastern Poland. However, these are still insufficient means to increase the cohesion of the entire area and fully activate its endogenous potential.

Synthetic analysis of the level of entrepreneurship indicates that in 2012–2016, a significant improvement in the indicators characterising economic entities operating in ROF occurred, compared to the voivodeship and the country. On the basis of a comprehensive assessment of the dependence of investment expenses of gminas (LAU 2) and enterprises, the difference in the distribution of types of investment behaviour between Podkarpackie Voivodeship and the Rzeszów Functional Area is clearly visible. The phenomenon of synergy of activities of self-government and entities occurs in 31% of gminas in ROF and only in 12% of gminas in the entire voivodeship. Thus, the types of investment behaviour of gminas and enterprises as well as the spatial distribution of economic activity indicate that the socio-economic potential of the city of Rzeszów and the benefits of the agglomeration resulting from it are more important than the implemented investments by individual gminas.

**Keywords:** unctional areas, synthetic measures, integrated territorial investments, typology of investment behaviour

**JEL Codes:** 018, R11, G11

## Acknowledgements

*The article dedicated to prof. Krzysztof Opolski on the occasion of the 70th birthday anniversary.*

## 1 Introduction

Socio-economic development takes place in a diversified space. This diversification affects the competitiveness of territorial units, their attractiveness as a place to live, to conduct business or vice versa – it may decide about the lack of such attractiveness. With respect to less-developed territorial units, the market mechanism leads to the deepening of development disparities, the accumulation of problems both in the economic and social spheres. In such a situation, there is a need for institutional support for development, the need for interventionism, which found a theoretical support in institutional economics. An important role in this area is to be played by local government units (j.s.t.). They constitute an active link of intervention at the local and regional levels. Local authorities have a number of instruments allowing to influence economic structures by implementing their own local policy (Sztando, 2000, Szlachta, 1992). Such policies are reflected in development strategies developed by j.s.t., among other things. It can be said that there is a feedback between the strategy and the development policy, because, on the one hand, the strategy facilitates the creation of a proper regional and local policy and, on the other hand, the policy instruments facilitate the implementation of strategic goals (Ślusarz, 2006). This mutual complementation enables effective self-government activities that should be determined in relation to goals and results (Opolski, Modzelewski, 2009). The overriding goal of all strategies is socio-economic development, which is the economic base of a given unit, translating directly into its budget, which is a practical expression of social, economic and environmental goals, which have been transformed into specific, numerically expressed tasks (Harańczyk, 2010). It is the main instrument for financing current tasks as well as financing development tasks (Opalka, 2013), including investment activities. The self-government responsible for the development of territorial units, however, has limited possibilities of direct impact on the economic sphere. Investments are an important tool at the disposal of local governments, enabling indirect stimulation of the economic sphere. They constitute a kind of leverage for the social and economic development of territorial units (Szara, 2014). Through investment, one can shape the attractiveness of the location of economic activity, the broadly understood quality of life, and thus the attractiveness of a given territory to live. In the case of economically less-developed areas, peripheral units with limited budgets, a set of feedbacks inhibiting economic

development is created (Klamut, 2008). In this situation, the institutional support of local governments related to the access to the European Union financial instruments, related to the implementation of cohesion policy, plays an important role. The priorities of this policy include supporting regional and local developments, leading to the reduction of interregional and intra-regional disparities (Czudec, 2017). Measures related to the implementation of cohesion policy can significantly support development processes. For this reason, cohesion policy occupies a special place in the European system. It is considered by many to be a binder that maintains the structure of the whole, internally diversified Union. The foundation of the intervention within its framework is the level of development and the state of territorial differentiation of the European Union, with the disappearance of differences (convergence) as the measure of its effectiveness, and, inversely, their growth, that is divergence, as the measure of inefficiency. This differentiation can be related to different levels – national level and regional level (Kozak, 2008). Hence, it can be said that this policy is a practical expression of intervention implemented at various levels (inter- and intraregional). In search of solutions for the most effective intervention, which combines the implementation of cohesion policy objectives with solving regional and local problems, with the simultaneous effective spending of limited resources, it undergoes constant evolution. In such categories, the research area in question should be considered – Rzeszów Functional Area (ROF) in comparison with functional areas of Eastern Poland, that is, the Lublin Functional Area (LOF) and the Białystok Functional Area (BOF). The concept of functional area, related to the change in the philosophy of approach to development – the transition from the sectoral to the integrated, territorial approach – was introduced by the National Spatial Development Concept 2030 (KPZK 2030) (National ..., 2011). The creation of functional areas was to facilitate the development of territorial units by increasing their competitiveness based on their specific, endogenous potential. Integrated Territorial Investment (ITI) was intended to be the tools supporting such processes (implementation of territorial strategies, their objectives related to actions for sustainable development) in the 2014–2020 programming period. With the help of this instrument, the j.s.t. partnership of cities and areas related to them functionally, it is possible to implement joint projects financed with funds from the European Regional Development Fund and the European Social Fund (Harańczyk, 2017).

Urban areas have an important role in the fulfilment of different strategies for sustainable development (Paradowska and Platje, 2015). Urban functional areas are a good tool for space structuring urbanised areas. This tool can be successfully used in building concepts of various urban policies (Dziekański and Pawlik, 2018). The European Commission put a growing emphasis on the territorial and integrated approach to policy support addressed in the frame of regional policy. According to the Common Provisions Regulation, the integrated territorial strategies are necessary to achieve smart, sustainable and inclusive Europe anticipated (Sołtys and Gołędzinowska, 2017). ITI is a part of the Sustainable Urban Development (SUD) agenda in 2014–2020, in the line with European Regional Development Fund (ERDF) Article 7 requirements and the use of ITI out with the Article 7 requirements (Miller and van der Zwet, 2018), called ‘Six City Strategy’ (Vironen, 2018) through the use of an Integrated Territorial Investments (ITI, in order to address the specific needs of the ERDF, and in line with the Union strategy for smart, sustainable and inclusive growth. To improve the ecosystem service provided by open spaces in dispersed urban areas is a key challenge for sustainable spatial development in Europe (Wandl, Rooij and Rocco, 2017).

The article presents preliminary results of research on the effectiveness of cohesion policy in relation to functional areas that benefit from ITIs. Assuming that all j.s.t. in their strategies assume economic development based on the development of entrepreneurship, an attempt was made to assess the impact of investments on their development. Investments are perceived as one of the basic tools of self-government in shaping the conditions for the development of the economic sphere (directly through activities related to their implementation and indirectly by creating attractive conditions for the location of economic activity, attracting capital, development of human and social capital). All fits into the broadly understood indirect competition, which is a big challenge for j.s.t. operating in a dynamically changing environment and its growing competitive pressure. At this stage of the research, the investments of local governments in terms of value were taken into account without considering their types and structure as well as sources of financing. Initially, the purpose was to check whether the scale of these investments translates into the economic sphere – into the development of entrepreneurship.

To assess the differences in the level of entrepreneurship in 2012 and 2016, the analysis of quantitative changes

in business entities, the dynamics of their number and the synthetic indicators were used. The basis for the calculation of synthetic indicators were the methods of taxonomic analysis, that is, a simple aggregate measure, the Hellwig taxonomic development pattern method (Pluta, 1986) and the positional method using the Weber median (Młodak, 2006).

When selecting the variables, both substantive and formal criteria were taken into account. As a result of the analysis of potential partial variables, the following diagnostic features were finally adopted for evaluation:

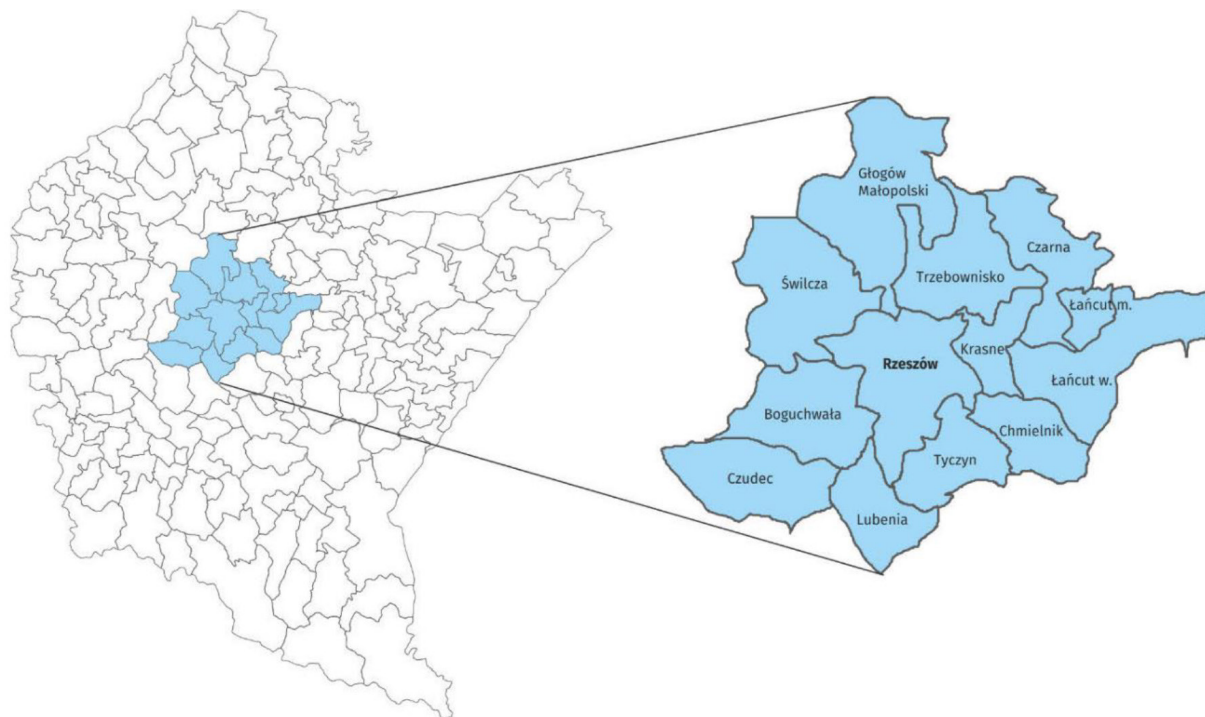
- return on capital,
- return on assets,
- dynamics of net revenues from sales of products, goods and materials,
- share of net revenues from the sale of products, goods and materials for export,
- investment expenditure of gminas,
- balance of the number of newly registered and deregistered enterprises per 100 thousand population.

The work assumes the hypothesis that the investments made by j.s.t. serve to increase the attractiveness of business location and contribute to the development of entrepreneurship and investments in business entities.

## 2 Characteristics of the research area and its investment potential

ROF is a new element of spatial and socio-economic planning resulting from the assumptions of the KPZK 2030. The basis for determining this area was the document ‘Criteria for delimitation of urban functional areas of voivodeship centres’. According to the provisions of the KPZK 2030, the urban functional area is a compact spatial arrangement consisting of functionally related areas, characterised by common conditions and predicted, uniform development goals (KPZK 2030, 180). The final shape of ROF was approved by the Board of Podkarpackie Voivodeship on 8 September 2015, Resolution No. 90/2067/15 on determining the implementation area of the ITIs instrument in the voivodeship city of Rzeszów and the area related to it functionally, as part of the Regional Operational Programme for Podkarpackie Voivodeship 2014–2020. This resolution was the sanctioning of the agreement on defining the principles of cooperation of gminas in the implementation of tasks

Map 1. Location and administrative division of ROF



Source: Own study.

provided for the ITI association. According to the will of the signatories of the agreement, these tasks are carried out by the Association of the Rzeszów Functional Area established by the gminas that constitute ROF.

ROF consists of 13 gminas from 3 powiats of Podkarpackie: Łańcut, Strzyżów and Rzeszów (Map 1). This includes two urban gminas (Rzeszów and Łańcut), three urban-rural gminas (Boguchwała, Głogów Małopolski and Tyczyn) and eight rural gminas (Chmielnik, Czarna, Czudec, Krasne, Lubenia, Łańcut rural gmina, Świlcza and Trzebownisko).

When assessing the potential of ROF, it should be emphasised that it occupies an area of 1,048 km<sup>2</sup> (which is about 6% of the area of the region), concentrating 17.0% of the total population living in Podkarpackie Voivodeship and 24% of enterprises in the region. These are units that differ substantially in size (from 19 km<sup>2</sup> in Łańcut urban gmina to 145 km<sup>2</sup> in Głogów Małopolski gmina), demographic potential (from 6422 inhabitants in Lubenia gmina to 187,422 people in Rzeszów) and economic base expressed by the number of enterprises and gmina income – total and own income (Tab. 1).

Therefore, it is a set of units differentiated not only in terms of function and administrative affiliation but also in terms of their socio-economic potential, which is

indirectly reflected in the share of own revenues in total income. A high level of own income, in connection with maintaining their stability, should be included among the main determinants of financial independence of local self-government (Opalka, 2013). The share of this income in the total income of gminas constituting ROF ranged from 24.8% in Czudec gmina to more than 55% in Łańcut urban gmina (Tab. 1). This diversity of ROF gminas is a major challenge for the implementation of the joint strategy. Their common feature is the location in close proximity to the city of Rzeszów, which is a growth pole not only for this functional area but also for the entire region.

The proximity of Rzeszów, and for eight gminas immediate neighbourhood (Boguchwała, Lubenia, Tyczyn, Chmielnik, Krasne, Trzebownisko, Głogów Małopolski and Świlcza), can be considered in terms of their developmental strengths, and in fact, it turns out to be a problem in building such important partner relations, significant in this form of cooperation in building social capital (relational capital) in the situation of strong efforts of the city of Rzeszów to expand its borders. ITI is a new, important and, at the same time, difficult form of cooperation between local governments, co-financed from European funds.



Tab. 1. Selected indicators characterising ROF in 2016

Specification	Area		Population			Enterprises		Gmina total income		Gmina own income	
	in km <sup>2</sup>	ROF = 100%	Number	2012 = 100	Net migration per 1000 population	Number	2012 = 100	in million zł	2012 = 100	in million zł	in % of total income
<b>PODKARPACKIE</b>	17,846		2127,656	99.9	-0.8	148,369	107.9	6,608.6	127.9	2,338.4	35.4
<b>ROF</b>	1048	100%	363,680	102.7	5.1	35269	115.8	1 702.8	127.7	802.3	47.1
<b>Łańcut urban gmina</b>	19	1.8%	17,749	97.8	-4.1	1853	104.0	69.3	144.7	38.3	55.3
<b>Czarna</b>	78	7.4%	11,638	103.8	2.3	800	111.1	46.8	143.6	17.2	36.8
<b>Łańcut rural gmina</b>	107	10.2%	21,634	102.2	2.0	1287	109.6	76.8	133.6	24.0	31.3
<b>Boguchwała</b>	89	8.5%	20,186	105.1	6.7	949	116.3	70.3	152.2	28.3	40.3
<b>Chmielnik</b>	53	5.1%	6,815	101.6	3.4	386	117.7	24.7	137.2	7.8	31.6
<b>Głogów Małopolski</b>	145	13.8%	19,628	103.1	3.4	978	114.1	73.1	146.2	35.5	48.6
<b>Krasne</b>	39	3.7%	10,989	104.2	8.9	985	110.2	38.7	145.5	18.3	47.3
<b>Lubenia</b>	55	5.2%	6,422	98.5	-1.7	279	103.3	21.1	116.6	6.3	29.9
<b>Świlcza</b>	112	10.7%	16,471	102.1	5.8	991	108.0	58.9	135.4	22.6	38.4
<b>Trzebownik</b>	90	8.6%	21,177	104.2	4.9	1592	119.3	79.0	149.3	36.2	45.8
<b>Tyczyn</b>	59	5.6%	11,748	104.1	11.3	543	119.6	41.8	149.3	13.5	32.3
<b>Czudec</b>	85	8.1%	11,801	100.2	0.9	673	111.4	44.0	133.3	10.9	24.8
<b>Rzeszów</b>	117	11.2%	187,422	103.0	6.4	23,953	118.0	1,058.3	120.4	543.4	51.3

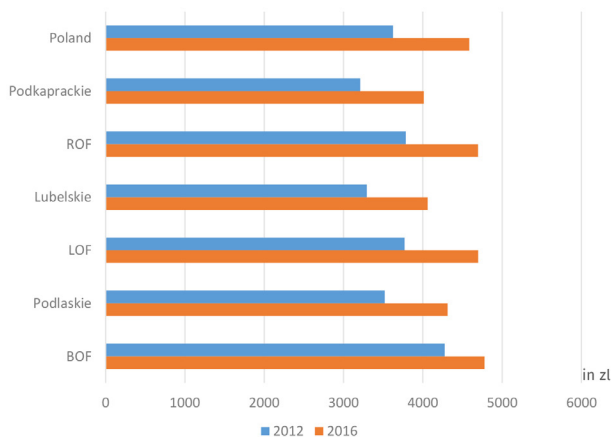
Source: Own study based on the data from the Statistical Office in Rzeszów.

There are also many positive examples of using this tool for SUD in the European Union, for example, case of Patras areas (Greece) (Antonopoulos, 2018) or how the Czech Republic is implementing SUD through the use of ITIs in Brno metropolitan area (Feřtrová, 2018) as well as in Poland, which are compared to two regions from strategies perspective of the SUD, for example, Lublin and Katowice that have adopted different modes (Ferry and Borkowska-Waszak, 2018). In Poland, ITIs are mainly implemented in voivodeship cities and areas associated with them functionally. In the 2014–2020 programming period, 17 provincial ITIs are implemented (Kisielewicz, 2016).

Cooperation of local governments and joint investments are not only an opportunity for good use of European funds but also an opportunity for the development of gminas that are in a worse economic situation (low income per capita) or have low investment potential resulting from low total incomes. In the analysed group, in as many as five gminas, the total income does not exceed 50 million zł. In 2016, income in gminas of ROF

totalled 1.7 billion zł and increased by 27.7% in comparison to 2012. It should be emphasised that more than 62% of ROF income was the income of the city of Rzeszów. In the analysed period, the dynamics of total income was relatively high and exceeded the dynamics for all gminas of the region (Tab. 1). Two gminas, which were extreme cases, were characterised by a lower dynamics, that is, the lowest (Lubenia gmina 21.1 million zł – 116.6%) and the highest total income (Rzeszów 1058.3 million zł – 120.4%). When assessing this income through the prism of their size per capita, it can be concluded that their average value for ROF in the whole period covered by the study was higher than the corresponding size for the region and the country. A similar relation was also observed for LOF and BOF (Fig. 1). In 2016, the value of this in ROF indicator was 4,697 zł with 4,012 zł for the voivodeship and 4,568 zł for the country and 4,698 zł in LOF with 4061 zł for the voivodeship, 4,778 zł in BOF and 4,312 for the voivodeship. Recognising this advantage of ROF over the total of gminas in the region, one should not forget about the internal diversity and

Fig. 1. Income of gminas and cities of ROF per capita compared to the region and the country



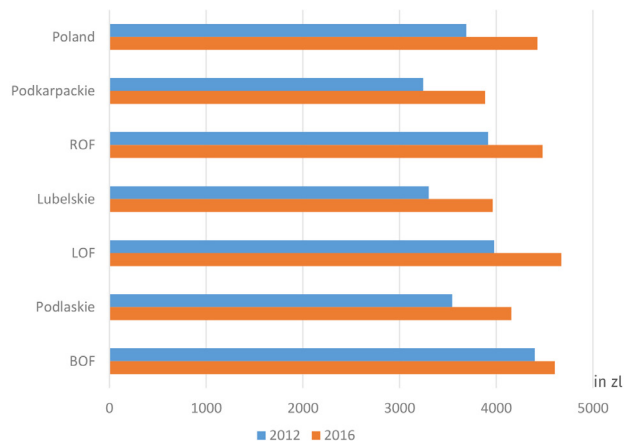
Source: Own study based on the data from the Statistical Office in Rzeszów.

importance of the leader in shaping the statistics and the potential of ROF. The highest level of this indicator occurred in Rzeszów, 5,658 zł, and the lowest in Lubenia gminas, 3,276 zł.

This best illustrates the diversity of potential development opportunities for the gminas forming ROF and is closely related to gmina expenditure. Expenditure of gminas and cities in ROF in 2016 amounted to 1.6 billion zł and increased by 17.7% compared to 2012. This increase in ROF was lower than that in the voivodeship, which was analogous to the growth recorded in Poland and amounted to 19.6%. They constituted 19.3% of the total expenditure of Podkarpackie Voivodeship (8.3 billion zł). A similar situation can be observed in the case of income, the average value of expenditure per capita (in ROF, LOF and BOF) was higher in comparison to both the voivodeship and the country during the entire period under study (Fig. 2). The value of this indicator in ROF in 2016 was 4,480 zł and was higher than the average for Podkarpackie Voivodeship region, 3,885 zł, and the country, 4,427 zł. The strong leader here is also Rzeszów, where the expenditure per capita amounted to 5,339 zł, and Świlcza gmina with the highest position in terms of this indicator, 3,111 zł. The difference that occurred here is that income was increasing throughout the entire period, whilst expenditure up to 2015, and in 2016, there was a decrease compared to the previous year.

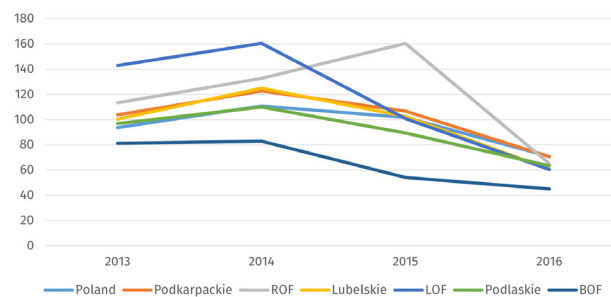
As already emphasised, investments are an important item of expenditure and are an important tool for stimulating the development of j.s.t. The dynamics of

Fig 2. Expenditure of gminas and cities of ROF per capita compared to the voivodeship and the country



Source: Own study based on the data from the Statistical Office in Rzeszów.

Fig. 3. Dynamics of investments of gminas and cities with powiat status (2012 = 100)

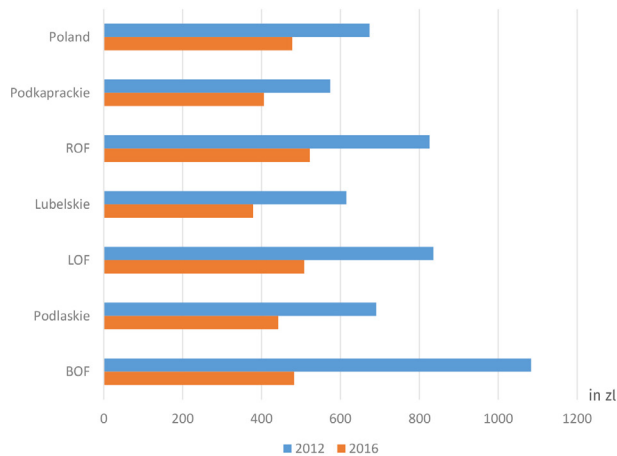


Source: Own study based on the data from the Statistical Office in Rzeszów.

investment expenditure in ROF is slightly different from their course in the country and the Podkarpackie voivodeship, as the drop in dynamics occurred here in 2015, whereas in Poland and the voivodeship, it was as early as in 2014 (Fig. 3).

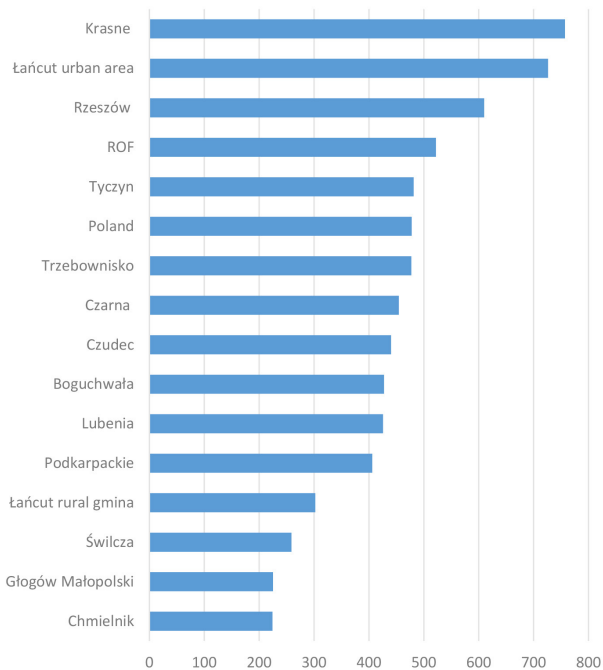
The investment expenditure in 2016 amounted to 183.3 million zł in ROF, of which 114 million zł, that is, more than 62%, was in Rzeszów. They decreased by 34.9% compared to 2012. It was a bigger drop than that in the voivodeship (29.4%) as well as in the country (29.3%). A greater disproportion was observed in BOF where investment expenditure decreased compared to 2012 by 55.0% and by 39.6% in Podlaskie Voivodeship. In LOF, there was a slightly higher drop than in Lubelskie Voivodeship. This decrease should be linked with the rules of functioning of the EU budget funds, which

**Fig. 4.** Investment of gminas and cities of ROF per capita compared to the voivodeship and the country



Source: Own study based on the data from the Statistical Office in Rzeszów.

**Fig. 5.** Investment of gminas and cities of ROF per capita compared to the voivodeship and the country in 2016



Source: Own study based on the data from the Statistical Office in Rzeszów.

are distributed in 7-year prospects. Funds obtained from the European Union are an important source of financing for investments carried out by j.s.t. Investments carried out in the period covered by the research were also related to the EU budget funds from the financial per-

spective 2007–2013. This is also the reason for the decline in investment outlays from 2014 in the voivodeship and also from 2015 in ROF. In 2016, the average value of investment outlays per capita in ROF amounted to 522 zł and was higher than the corresponding figure in the voivodeship of 406 zł and in the country 478 zł, but, at the same time, it was more than twice lower than the expenditure in 2015 (Fig. 4).

The highest level of this expenditure (above the average for ROF) was recorded in Krasne gmina (752 zł), Łańcut urban gmina (726 zł) and Rzeszów, whereas the lowest level was recorded in Chmielnik and Głogów Małopolski gminas – 244 and 225, respectively (Fig. 5).

It is characteristic that majority of gminas with low population density can be characterised by the highest indicators in the region, in relation to the analysed issue.

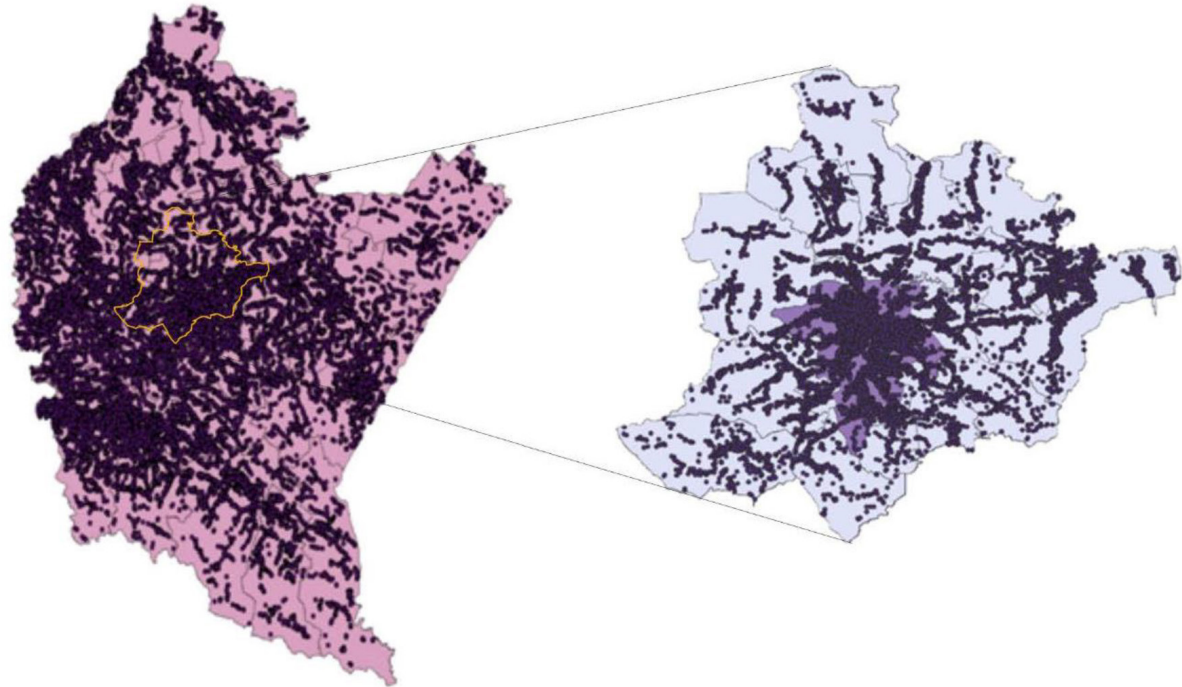
### 3 Synthetic assessment of the level of entrepreneurship

The development of entrepreneurship positively affects the economic growth, the labour market and the wealth of the local community. Success in entrepreneurship depends, to a large extent, on the willingness to take up and develop own business or various factors, for example, family environment, education, personal values, age, work history (Mishra, Mishra and Mishra, 2018), and also on the quality of the institutional environment and spatial development, including in particular infrastructure. The latter makes up the attractiveness of the location of economic activity, is shaped by the territorial self-government responsible for the development of a given unit and requires making expensive investments. Conditions for conducting business activity and their attractiveness are reflected in the spatial distribution of business entities. In spatial terms, ROF is distinguished in the region by the number of enterprises (Map 2). This visual comparison is confirmed by saturation indicators per 10,000 population.

Saturation in ROF in 2017 was definitely higher than the total in the voivodeship. There are 1,142 enterprises per 10,000 population here, compared to 803 in Podkarpackie Voivodeship (1,121 in the country). The greatest saturation of entrepreneurship in ROF is observed in Rzeszów in the gminas directly adjacent to Rzeszów, especially Krasne and Głogów Małopolski and in the city of Łańcut.

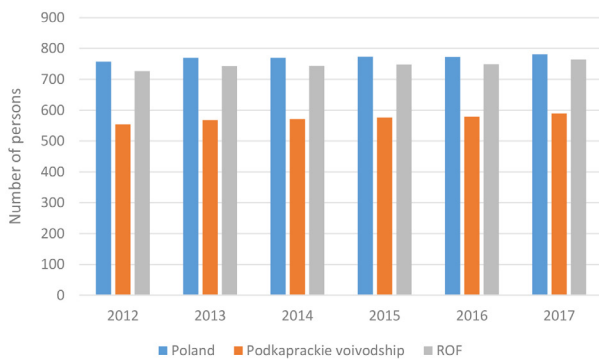


Map 2. Enterprises in spatial layout in 2017  
Podkarpackie voivodeship



Source: Own study based on the data from the Statistical Office in Rzeszów.

Fig. 6. Natural persons per 10,000 population

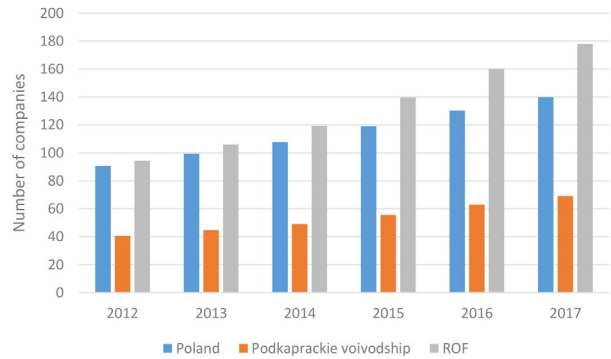


Source: Own study based on the data from the Statistical Office in Rzeszów.

Amongst the entities of the national economy, more than three quarters were natural persons conducting business activity. During the whole of the analysed period, their saturation index in ROF remained at a high level, approximately 700 enterprises per 10,000 inhabitants (only slightly lower than the national index), and significantly exceeded the rate for the Podkarpackie Voivodeship (Fig. 6).

Amongst the enterprises located in the area of ROF, commercial companies were characterised by high

Fig. 7. Commercial companies per 10,000 population

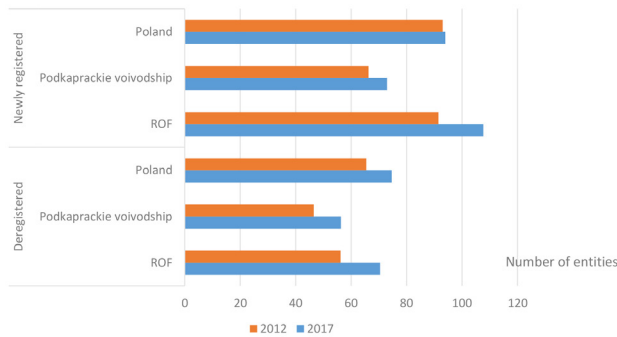


Source: Own study based on the data from the Statistical Office in Rzeszów.

dynamics. Their number per 10,000 population was much higher than that in the voivodeship, and even in the country (Fig. 7).

The final number of enterprises is reflected in their life cycle and related processes of creation (registration) and their collapse (deregistration). The positive balance of these processes usually accompanies the economic situation and optimism on the market and contributes to the enlargement of the economic base of a given territory. In the researched period, the number of newly

Fig. 8. Newly registered and deregistered entities per 10,000 population



Source: Own study based on the data from the Statistical Office in Rzeszów.

Tab. 2. Synthetic indicators in the field of entrepreneurship

Voivodeship	Aggregated measure		Hellwig method		Positional method median of Weber	
	Index	Rank	Index	Rank	Index	Rank
<b>2012</b>						
Poland	0.636	1	0.378	1	0.527	1
Podkarpackie Voivodeship	0.372	3	0.181	3	0.209	3
ROF	0.501	2	0.272	2	0.399	2
<b>2016</b>						
Poland	0.470	2	0.295	3	0.498	2
Podkarpackie Voivodeship	0.436	3	0.295	2	0.268	3
ROF	0.714	1	0.462	1	0.666	1

Source: Own study based on the data from the Statistical Office in Rzeszów.

registered enterprises in ROF area per 10,000 population amounted to around 100. The number of deregistered entities did not exceed in no year, 70 entities per 10,000 residents (Fig. 8). Thus, the balance was positive. It should be added that the highest amount of new enterprises were created in the city of Rzeszów.

In the era of globalisation and growing competition, activities related to increasing the competitiveness of existing entities on the market, which, to a large extent, are connected with innovativeness, are of great importance. The ability of enterprises to constantly search and use in practice the results of research and development (R&D) and adapt to the changing environment is diffi-

cult without R&D. Although Podkarpackie voivodeship is one of the poorest regions of the country (with one of the lowest wages in the country and low gross domestic product (GDP) per capita), it ranks third in the country in terms of internal expenses incurred on R&D in relation to GDP. This may affect the financial results and competitiveness of firms operating in ROF, which will be the subject of further research.

The analysis of synthetic indicators based on the three taxonomic analysis methods (Tab. 2) placed ROF in terms of entrepreneurship on the highest position in 2016.

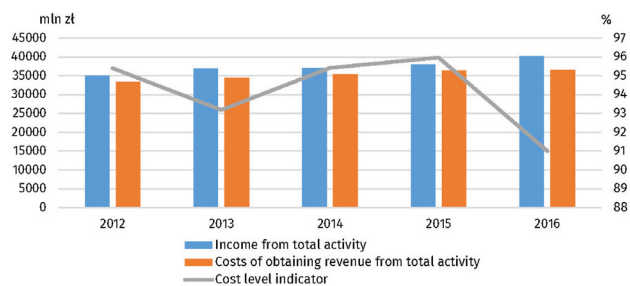
This situation was mainly influenced by the very good financial results of enterprises from ROF and the high balance of the number of newly and deregistered enterprises compared to the voivodeship and Poland as well. The share of net revenues from the sale of products, goods and materials for export and the dynamics of net revenues from sales of products, goods and materials was much lower in ROF. It should be noted that in 2012, the level of entrepreneurship in ROF was lower than that in the voivodeship but higher than that in Poland.

In 2012–2016, upward trends were recorded in both revenues and costs from total activity in enterprises located in ROF. In 2016, a higher revenue growth with a minimal increase in costs resulted in an improvement of the cost level indicator to the level of 91.0% (Fig. 9).

In the analysed years, the enterprises in ROF systematically increased the share of exports in sales revenues (Fig. 10). In 2012–2016, the share of net revenues from the sale of products, goods and materials for export in net revenues from sales of products, goods and materials increased from 9.8% to 16.6%. In the Podkarpackie voivodeship, it increased from 20.1% to 24.0% (in 2015, it decreased to the level of 22.3%).

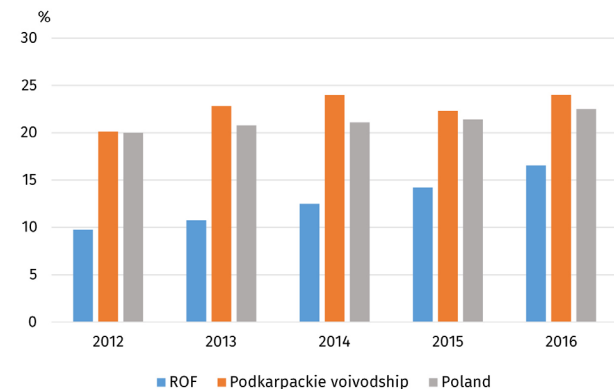
The return on sales (Fig. 11) for the ROF in the analysed period was lower than for the Podkarpackie voivodeship and for Poland. Upward trends were similar to those recorded for the voivodeship, with the exception of 2016, where entities in ROF recorded a large decline. Fluctuations in the return on assets, counted as a ratio of the net financial result to the value of assets, were similar to the trends of the indicators for voivodeship. After slight fluctuations in 2012–2015, a high increase in 2016 was recorded, which suggests an increase in the efficiency of assets management. However, for the country, after a systematic decrease in the years 2012–2015, the return on assets increased in the last year (Fig. 11).

Fig. 9. Revenues, costs and cost level indicator from all activities of companies based in ROF in 2012–2016



Source: Own study based on the data from the Statistical Office in Rzeszów.

Fig. 10. Share of net revenues from the sale of products, goods and materials for export in net revenues from the sale of products, goods and materials

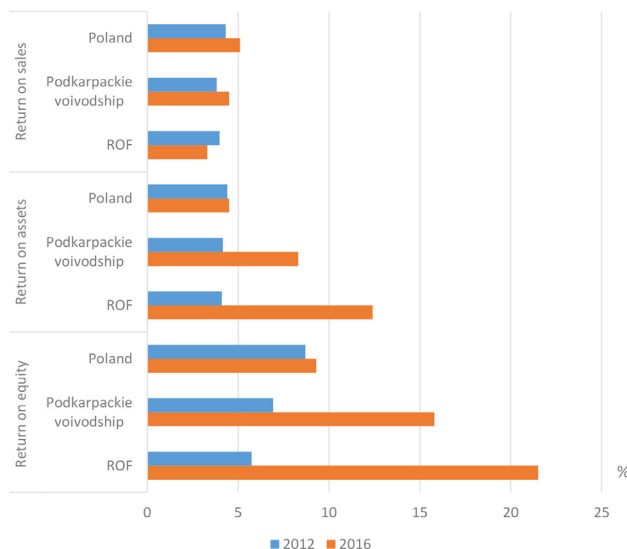


Source: Own study based on the data from the Statistical Office in Rzeszów.

Return on equity (Fig. 11), calculated as the ratio of the net financial result to the value of equity, as opposed to the return on assets, is an expression of the effectiveness of not all capital invested in assets but only parts of it (without liabilities). Similar to the return on assets ratio, this indicator recorded a significant increase in 2016.

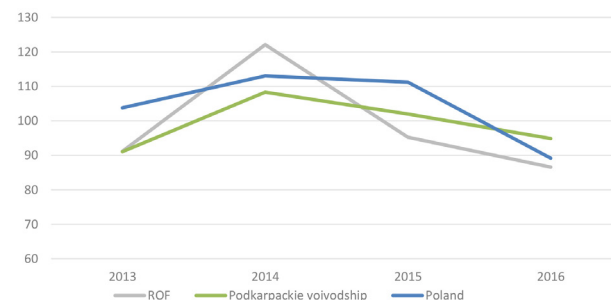
The main reason for the increase in both the return on assets and the return on equity ratio in 2016 is a significant increase in the net financial result, which in entities based in ROF was more than 2.5 times higher compared to 2015. The net financial result after the increases in 2013 fell in both entities in ROF and in the entire voivodship in the following year, with the growth recorded for Poland. Financial liquidity is the ability to pay liabilities on time. The financial liquidity ratios of I, II and III level in enterprises located in ROF were within the desirable

Fig. 11. Return on sales, return on assets and return on capital



Source: Own study based on the data from the Statistical Office in Rzeszów.

Fig. 12. Dynamics of investment (previous year = 100)



Source: Own study based on the data from the Statistical Office in Rzeszów.

ranges of values.<sup>3</sup> It is worth noting that the liquidity ratio of I level in the years 2012–2013 assumed values of more than 35%, which could indicate the non-productive gathering of cash or the lack of the concept of their use in ROF enterprises. Since 2014, this indicator has been steadily declining to 21.9% in 2016. The current liquidity ratio (III level) in the years 2015–2016 was clearly higher in the enterprises of ROF compared to Poland.

Investment expenses for new property objects and purchase of used goods in ROF in 2016 amounted to

<sup>3</sup> The I degree indicator should be higher than 20%; the satisfactory level of the II degree indicator is about 100%, whilst for the III degree, it is in the range of 120–200%.

a total of PLN 913 million, which accounted for 19.2% of expenses incurred by entities located in the Podkarpackie Voivodeship. The highest increase in expenses was recorded in 2014 for enterprises in ROF as well as for the voivodeship and Poland. In 2016, investment expenses declined in the analysed areas (Fig. 12).

The main source of financing *fixed capital formation* in entities located in ROF were own funds as well as credits and loans.

## 4 ROF compared to functional areas of Eastern Poland

A comparison of ROF with LOF and BOF is made to give the complete picture of the analysis. It was based on the extreme years 2012–2016, in order to illustrate the changes that took place in these areas after the implementation of ITIs.

The highest share of export in 2016 in sales revenues was recorded by ROF; however, the highest increase in comparison to 2012 was observed in LOF.

In 2016, ROF recorded the highest increase in the net financial result compared to 2012 (more than 2.5-fold increase), whilst in BOF, the net financial result was higher by nearly 46%, and in LOF, it was higher by more than 23%.

The level and spatial structure of inequalities in the scope of investment expenditures of gminas and investments of enterprises can be characterised using the Theil standardised index (Theil 1979, Okrasa, Cierpiał-Wolan 2014). The level of total inequality can be divided into 'between' and 'within' groups in a combined and exhaustive way. These groups constitute subsets of the set of spatial units.

The population of gminas included in each voivodeship was divided into two groups, gminas from the functional area and from outside this area, for which the Theil index was calculated and its decomposition was made. The analysis shows that the picture of all the functional areas studied is very similar. The difference between functional areas and other gminas in each analysed voivodeship is significant (more than 19%), with the smallest difference in Podkarpackie Voivodeship. It should be noted that enterprises' investments are more evenly distributed in the territory of each voivodeship than gminas' investments. A particularly noticeable difference occurs in Podlaskie Voivodeship (29.3–8.1%). Further research is needed to explain how this 'within'

Fig. 13. Share of net revenues from the sale of products, goods and materials for export in net revenues from the sale of products, goods and materials

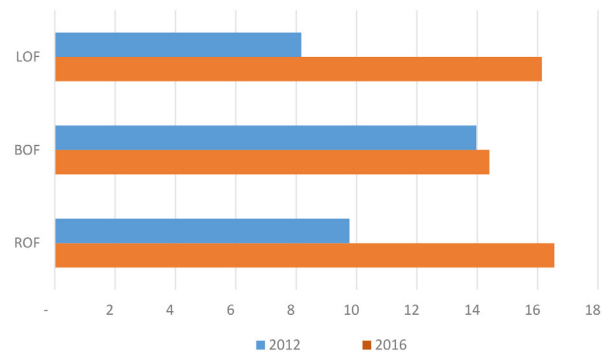
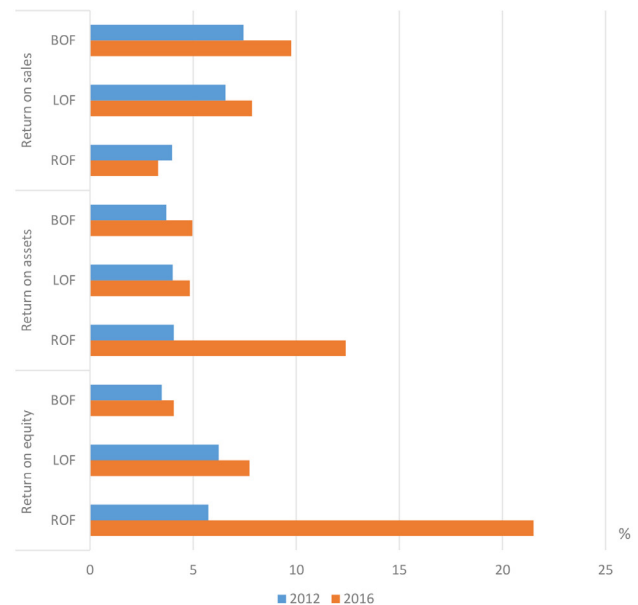


Fig. 14. Return on sales, return on assets and return on capital



and 'between' diversity influences the implementation of cohesion policy objectives and sustainable development at the level of urban functional areas and regions.

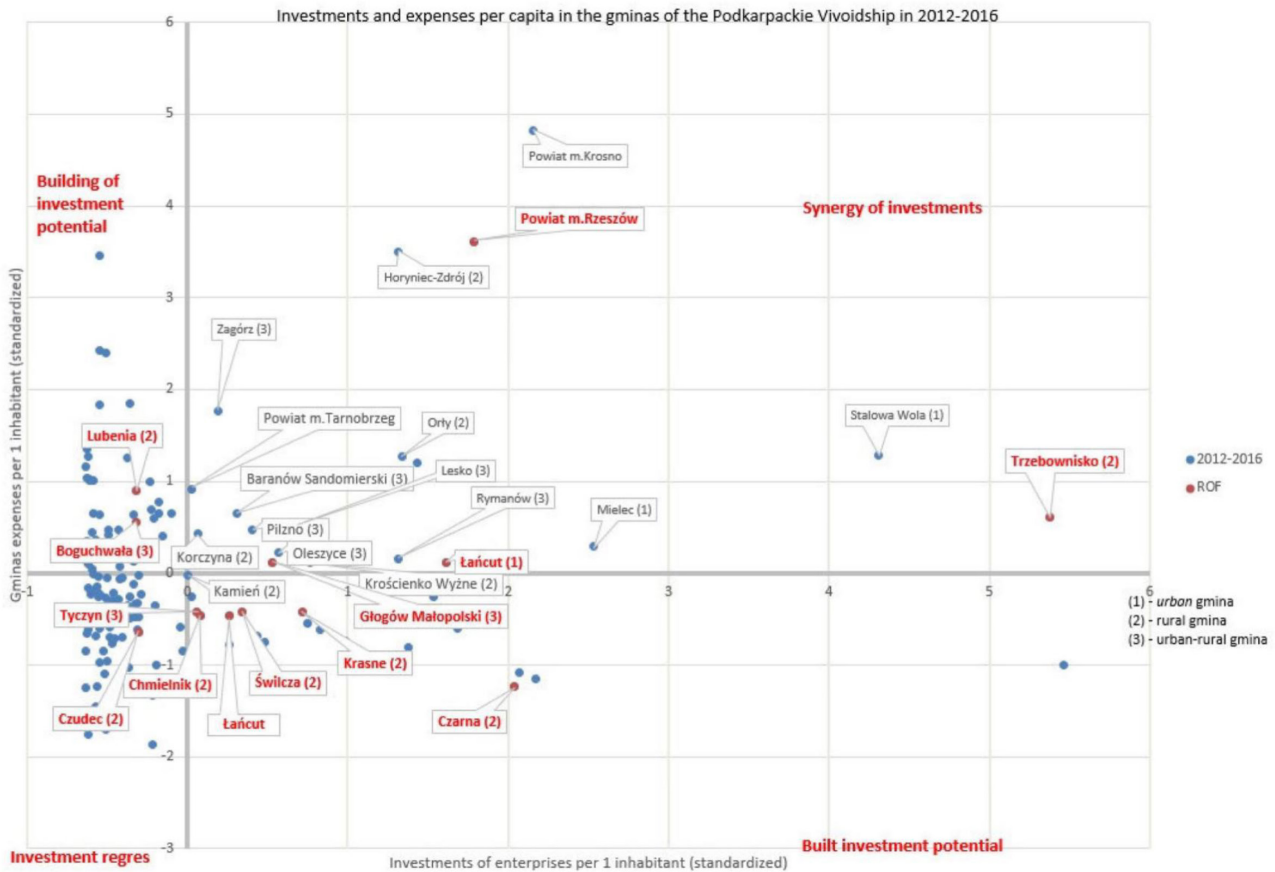
The return on sales ratio in ROF slightly decreased compared to 2012 (by 0.7 percentage points). Both higher ratio and the higher increase in the return on sales compared to 2012 were recorded by LOF. The highest values as well as the highest increases in the return on assets and capital were achieved by ROF units.

Although the theories of the capital structure do not provide unambiguous guidance, it seems that we observe an excessive share of equity in the financing of investments in enterprises of ROF and the Podkarpackie

Tab. 3. Spatial inequalities in the functional areas of Eastern Poland

Spatial units groups	Investment expenditures of gminas per capita			Investments of enterprises per capita		
	Lubelskie	Podkarpackie	Podlaskie	Lubelskie	Podkarpackie	Podlaskie
	Theil standardised index					
Gminas in the functional area	0.0022	0.0034	0.0021	0.0217	0.0287	0.0394
Gminas outside the functional area	0.0135	0.0080	0.0149	0.1087	0.0922	0.0786
Gminas in total	0.0151	0.0090	0.0190	0.1562	0.1115	0.1298
	Decomposition of Theil's index					
Intra-group inequality	68.6%	80.3%	70.7%	68.8%	88.1%	91.9%
Between-group inequality	31.4%	19.7%	29.3%	31.2%	11.9%	8.1%

Fig. 15. Investments and expenses per capita in the gminas of the Podkarpackie Voivodeship in 2012–2016



Voivodeship. A larger share of equity may result from a lower risk-taking in less-developed regions.

Investment activity of gminas can be considered in two dimensions, that is, taking into account expenses of gminas per capita and investments of enterprises per

capita. The first variable clearly indicates the ability to create a friendly environment favourable to the development of entrepreneurship, whilst the second one reveals the preferences of entrepreneurs regarding the location of the investment.



The presented scheme (Fig. 15) and two-dimensional analysis revealed four types of behaviour of ROF gminas. This underlines the indicated diversity of units that constitute ROF. It is not indifferent to the effective management of such functional centres. The *synergy effect* in the area of enterprise investments and activities of self-governments of Rzeszów, Łańcut and Głogów Małopolski, Trzebowniko, that support investments indicates the desired direction of development. Another type that can be defined as the *asymmetry of investment behaviour – building investment potential* characterises gminas that bear relatively high investment expenses seeking to attract investors. This situation occurred in two gminas of ROF, that is, Boguchwała and Lubenia. *Asymmetry of investment behaviour – investment stagnation of communes* is a type that means a built investment potential of gminas or its insufficient level. Its characteristic feature is that entrepreneurs prefer gminas regardless of the level of investment expenses. In this area, most of the gminas from ROF were found. The last type can be described as an *investment regress*, where, apart from inactivity in building investment potential, a low level of enterprise investment is observed. Such an unfavourable situation occurred only in the gmina of Czudec.

## 5 Summary

The development of territorial units is determined by their specificity, resulting from the endogenous conditions, constituting the basis for the development of a given territory. The use of this specificity in stimulating economic activity, increasing the attractiveness and competitiveness of a given territory requires active actions on the part of the territorial self-government responsible for this development. Such objectives inspired by the idea of creating functional areas.

ROF is a tool for the implementation of ITIs aimed at the successful implementation of cohesion policy and the dynamisation of development processes based on the specific resources of functional entities. They are intended to increase the effectiveness and efficiency of management in public administration entities. The final effects of the implementation of the objectives in functional areas will be assessed after the implementation of the Regional Operational Programmes from the 2014–2020 financial perspective.

The study attempts to assess the impact of investment on the development of entrepreneurship in ROF

areas. Research has shown that the scale of investment expenses within ROF is much higher than that in Podkarpackie voivodship. However, these are still insufficient means to increase the cohesion of the entire area and fully activate its endogenous potential.

A synthetic analysis of the level of entrepreneurship indicates that in 2012–2016, a significant improvement in the indicators characterising economic entities operating in ROF has occurred, compared to the voivodeship and the country. On the basis of a comprehensive assessment of the dependence of investment expenses of gminas and enterprises, the difference in the distribution of types of investment behaviour between Podkarpackie Voivodeship and ROF is clearly visible. The phenomenon of synergy of activities of self-government and entities occurs in 31% of gminas in ROF and only in 12% of gminas in the entire voivodeship. Most gminas in the voivodeship (42.5%) are characterised by investment regress, which in turn is the least numerous represented by gminas included in ROF (7.7%).

Thus, the types of investment behaviour of gminas and enterprises as well as the spatial distribution of economic activity indicate that the socio-economic potential of the city of Rzeszów and the benefits of the agglomeration resulting from it are more important than the implemented investments by individual gminas. The size of investments is determined by the availability of funds from the EU funds, and thus the implementation of ROF strategy will depend on the activity in raising funds from the European Union, and this will depend, to a large extent, on the cooperation of gminas under ROF. Higher indicators in the region characterising ROF are the result of the dominance of the city of Rzeszów and testify to the prevalence of its socio-economic potential. In this context, it is important to look for such solutions, such undertakings that will allow to use this asset in launching or dynamising development processes in the gminas creating ROF, allowing for better use of their endogenous potential.

The initial analysis of functional areas of regions of eastern Poland indicates their similar internal diversity. At the same time, what is characteristic is the existence of significant differences between them and the remaining gminas of the region in terms of the level of economic development. The impact of this differentiation on the implementation of cohesion policy in functional areas and regions will be the subject of further research.

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