FOLIA POMERANAE UNIVERSITATIS TECHNOLOGIAE STETINENSIS
Folia Pomer. Univ. Technol. Stetin., Oeconomica 2014, 314(77)4, 177–188

Artur Zimny[1], Robert Jurczak[2]

STATISTICAL ANALYSIS OF THE ALLOCATION OF EU FUNDS IN THE GREATER POLAND PROVINCE

STATYSTYCZNA ANALIZA ABSORPCJI FUNDUSZY UNIJNYCH NA OBSZARZE WOJEWÓDZTWA WIELKOPOLSKIEGO

[1] Department of Managerial Studies and Logistics, Faculty of Social Sciences and Humanities, State University of Applied Sciences in Konin, ul. Przyjaźni 1, 62-510 Konin, Poland, e-mail: artur_zimny@tlen.pl
[2] Chair of Real Estate, Agribusiness and Economics of the Environment, Department of Agribusiness Consulting, Faculty of Economics, West Pomeranian University of Technology, Szczecin, ul. Żołnierska 47, 71-210 Szczecin, Poland, e-mail: rjurczak@vp.pl

Streszczenie. Celem artykułu jest próba udowodnienia, iż fundusze europejskie, które powinny wspierać działania zmierzające do wzmocnienia spójności gospodarczej i społecznej, niestety, nie są równomiernie wykorzystywane na terenie Wielkopolski. Niniejsza teza została zweryfikowana analizą liczb i wartości projektów finansowanych lub współfinansowanych z trzech funduszy unijnych, tj. Europejskiego Funduszu Rozwoju Regionalnego, Europejskiego Funduszu Społecznego i Funduszu Spójności, zrealizowanych w okresie od 1 maja 2004 roku do 31 marca 2014 roku na obszarze 22 powiatów województwa wielkopolskiego, które w świetle typologii stosowanej przez Eurostat można określić mianem powiatów przeważająco wiejskich. Tym samym pozwoliło to ustalić stopień nierównomierności przestrzennej w zakresie wykorzystania funduszy europejskich. W opracowaniu wykorzystano dane pozyskane ze źródła internetowego w postaci witryny „Mapa Dotacji UE", Banku Danych Lokalnych GUS dla poziomu NTS-4, strony internetowej Ministerstwa Finansów oraz serwisów informacyjnych Ministerstwa Infrastruktury i Rozwoju poświęconych funduszom unijnym.

Key words: European funds, measures of dispersion and concentration, the Greater Poland Province.
Słowa kluczowe: fundusze europejskie, miary dyspersji i koncentracji, województwo wielkopolskie.

INTRODUCTION

Pursuant to the EU Regulations, European funds should contribute to the achievement of the three objectives referred to as: convergence, regional competitiveness and employment and European territorial cooperation. A key priority is, undoubtedly, the first of the above objectives. It is in fact aimed at accelerating convergence of the least-developed Member States and regions by improving conditions for growth and employment through quality investment in physical and human capital, development of innovativeness and knowledge based society, boosting adaptability to economic and social changes, environment protection and enhanced administrative efficiency[1]. In other words, European funds should be used for

[1] The regions eligible for funding from the structural funds under the convergence objective are to be the regions where GDP per capita, measured in purchasing power parities and calculated on the basis of the Community data for the years 2000–2002, is less than 75% of the average GDP of the 25 Member States in the same reference period. See. Council Regulation (EC) No 1083/2006 of 11 July 2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund and repealing Regulation (EC) No 1260/1999, OJ EC L 210 of 31.07.2006, Art. 3, paragraph 2 let. a, Art. 5, paragraph 1.

reducing disparities in development among different regions in order to ensure harmonious and sustainable development of the entire Community. The results of analyzes carried out by Eurostat for the EU regions (NUTS-2) indicate that these disparities are actually becoming gradually less pronounced (Eurostat Regional Yearbook 2013)[2]. An alarming phenomenon, however, is the occurrence of significant intra-regional disparities, which are not compensated and are still growing.

In the context of the foregoing considerations the basic question arises whether European funds, which should support efforts to strengthen the economic and social cohesion, are uniformly used in different regions? Their excessive concentration in certain selected territorial units can be interpreted in two ways. Firstly, it may mean that many EU projects are implemented within local government units with the lowest level of development, and thus these units get significant funding from the EU. Secondly, it may mean that most of the projects are implemented in local government units with a high level of development, which keep receiving significant EU funding. In view of the fact that as a rule, the financial potential, and hence the abilities to generate the so-called 'own contribution' and obtain support from the European funds with the help of the local governments with a high level of development (as well as by entities located in these units), are much larger than the other units, it must be assumed that the second of the above mentioned scenarios is much more likely. In this case the uneven use of European funds should be regarded as a serious matter of concern. Such a situation would stand in contradiction to the cohesion policy ideal, and it could be used, in accordance with the theory of the core and the periphery of J. Friedmann, only to stimulate the development of regional growth centres, assuming that the development process itself would spread beyond these centres (Strzelecki 2008). In order to answer the question posed earlier, the authors used the case of the Greater Poland Province to determine the diversity and concentration of the number of the EU projects, as well as to assess the value of the EU funding between certain districts during the whole period of Polish membership in the European Union.

1. THE ESSENCE OF THE EU FUNDS AND OPERATIONAL PROGRAMMES

'European funds' is a term which cannot be found in the Community legislation. This notion is contractual in nature, although it is widely used in the political, journalistic and academic writings – quite often interchangeably with the notion of EU funds, and what is undoubtedly wrong, with the notion of structural funds. Usually all the financial means of the European Union associated with the implementation of the regional cohesion policy as well as agricultural policy and fisheries policy are perceived as the same with these funds. By interpreting, however, the wording of the "Treaty establishing the European Community" it can be stated that these

[2] This is confirmed by the results of calculations made by the authors based on the data obtained from the Eurostat online database. And so, in 2004, the region with the lowest GDP per capita, measured in purchasing power parity, stood at 9% of the EU average, while in 2010 – 12%. In turn, the region with the highest GDP per capita in 2004 reached the level of 359% of the EU average, while in 2010 – 331%. At the same time in 2004–2010 the regional differences in GDP per capita decreased from 53.6% to 50.6%. In addition, some interesting information contains the analysis carried out by M. Obrębalski, the results of which were presented in the article Developmental disparities in countries and regions of the European Union. Statistical News 2013, No. 10.

funds are financial instruments used to develop and carry out actions aimed to strengthen economic and social cohesion of the Community, in particular measures aimed at reducing disparities between the levels of development of the various regions and backwardness of the least favored regions or islands, including rural areas[3]. In 2000–2006 the European funds included: the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund (CF), the European Agricultural Guidance and Guarantee Fund (EAGGF) and the Financial Instrument for Fisheries Guidance (FIFG). In turn, in 2007–2013 the first three of the above-mentioned belonged to these funds as well as the European Agricultural Fund for Rural Development (EAFRD) and European Fisheries Fund (EFF). Later in this study the funds, the use of which became the subject of the analysis, i.e. the ERDF, ESF and CF, will be briefly characterized.

The European Regional Development Fund contributes to strengthening of the social and economic cohesion of the Community by redressing the main regional imbalances through support for the development and structural adjustment of regional economies, including the conversion of declining industrial regions and the regions lagging behind. The ERDF is focusing its assistance in particular on activities in the following areas: research and technological development, innovation and entrepreneurship; development of information society; environment protection and improvement; development of tourism and culture; transport and energy investments; investment in education, infrastructure, health and social infrastructure; innovation and knowledge--based economy; access to transport and telecommunications services; development of cross--border, transnational and interregional cooperation[4].

The European Social Fund contributes to the priorities of the Community with regard to enforcement of social and economic consistency through improvement of employment opportunities, support of high employment rates and an increase in the number and quality of working places. The ESF supports some specific activities, i.e.: increasing adaptability of workers, enterprises and entrepreneurs; increasing access to employment and sustainable inclusion in the labour market of job seekers and inactive people; increasing social inclusion of disadvantaged people; enhancing human capital; strengthening institutional capacity and the efficiency of public administration and public services[5].

The Cohesion Fund was set up with the aim to strengthen the social and economic cohesion of the Community by providing financial support for projects in the fields of environment and trans-European transportation networks. Assistance from FS is focused in particular on activities in the following areas: improvement of the quality of surface waters; improvement of the quality and distribution of drinking water; rationalization of management and protection of the earth's surface; improvement of the air quality; ensuring the flood prevention security; ensuring the consistency of the communication network and good communication of various regions of the country with other European countries; development of safe road infrastructure[6].

[3] Consolidated Version of the Treaty establishing the European Community. OJ EC C 321, 29.12.2006, Art. 158–159.

[4] Regulation (EC) No 1080/2006 of the European Parliament and of the Council of 5 July 2006 on the European Regional Development Fund and repealing Regulation (EC) No 1783/1999. OJ EC L 210 of 31.07.2006, Art. 2, 4–6.

[5] Regulation (EC) No 1081/2006 of the European Parliament and of the Council of 5 July 2006 on the European Social Fund and repealing Regulation (EC) No 1784/1999. OJ EC L 210 of 31.07.2006, Art. 2–3.

[6] Council Regulation (EC) No 1084/2006 of 11 July 2006 establishing a Cohesion Fund and repealing Regulation (EC) No 1164/94. OJ EC L 210 of 31.07.2006, Art. 2.

Funds are realized in the Member States through operational programmes developed by individual states and then submitted for approval to the European Commission. Operational programmes may be of horizontal nature or relate to specific sectors of economy, and may encompass sets of priorities and long-term actions that can be implemented by one or several funds[7]. In the 2004–2006 programming period in Poland the following programs were implemented: the Sector Operational Programme on Restructuring and Modernisation of the Food Sector and Rural Development (SOP), the Sector Operational Programme on Human Resources Development (SOP HRD), the Sector Operational Programme on Fisheries and Fish Processing (SOP FISH), the Sector Operational Programme for Transport (SPOT), the Sector Operational Programme on Improvement of the Competitiveness of Enterprises (SOP ICE), the Integrated Regional Operational Programme (IRDOP) and the Technical Assistance Operational Programme (OP PT). In turn, under the 2007–2013 programming period the following projects were implemented: the Operational Programme of the Innovative Economy (OP IE), the Operational Programme for Infrastructure and Environment (Infrastructure and Environment), the Human Capital Operational Programme (OP HC), the Operational Programme for Development of the Eastern Poland (OP DEP), the Operational Programme for Technical Assistance (TA OP), 16 regional operational programmes (ROP) as well as programmes under the European Territorial Cooperation (ETC).

2. THE SCOPE OF THE ANALYSIS, DATA SOURCES AND STATISTICAL TOOLS

22 districts of the Greater Poland Province were covered in the analysis. Using Eurostat terminology they can be described as predominantly rural districts or districts with more than 50% of the population living in rural areas. The analysis examines the implementation of projects, financed or co-financed from the EU funds, namely the ERDF, ESF and CF, in terms of quantity and value[8]. In addition, the analysis takes into account the division of operational programmes, identifying the same: the SOP HRD, SOP ICE, IRDOP, OP IE, PO IG, HC OP and ROP[9]. The analysis covered the period from May 1, 2004 to March 31, 2014, which was subject to the availability of data on the use of the European funds. The data concerning the number of projects financed or co-financed from the EU funds, as well as the financing values of the EU were obtained from such a reliable source as the Internet site "the EU Subsidies Map''[10]. Furthermore, additional information was obtained from the Local Data Bank GUS (level NUTS-4)[11], the website of the

[7] Council Regulation (EC) No 1083/2006 of 11 July 2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund and repealing Regulation (EC) No 1260/1999. OJ EC L 210 of 31.07.2006, Art. 2, 32.

[8] The analysis did not include the EFOiGW and FIFG programmes in the years 2000-2006 and the EAFRD and EFF in 2007–2013, as they were associated with the implementation of common agricultural policy and common fisheries policy.

[9] The first three of the mentioned programmes were implemented in the programming period 2004–2006, while the remaining ones in the programming period 2007–2013.

[10] Data pertaining to the projects implemented in the period 2004–2006 come from the Accounting System Project, while the data for the projects implemented in the period 2007–2013 are taken from the National Information System SIMIK 07-13. See more: the EU Subsidies Map, http://mapadotacji.gov.pl [date of access: 17.04.2014].

[11] Local Data Bank CSO. http://www.stat.gov.pl/bdl [date of access: 04.01.2014]. The information on the number of people in different counties, with subdivision for the urban and rural population was obtained from the Local Data Bank.

Ministry of Finance and the information services of the Ministry of Infrastructure and Development that deal with the EU funds, i.e. Portal of the Structural Funds (financial prospects for 2004–2006)[12] and Portal of the European Funds (financial prospects for 2007–2013)[13].

The uneven use of the European funds escapes clear-cut description employing a single measurement. Therefore, to conduct a comprehensive analysis of the phenomenon, multiple indicators had to be applied. In order to establish the differences between the districts in the discussed aspect relative measures of dispersion related to all or parts of the distribution were used[14], i.e. the classical coefficient of variation (1), the coefficient of quartile deviation (2) the coefficient of decile deviation (3), the highest values of which gave evidence of greater variations in the use of the European funds – both in terms of number of projects financed or co-financed from the EU funds, as well as values of the EU co-financing (Ostasiewicz 2004, Gołata 2005):

$$V_x = \frac{s(x)}{\bar{x}} \tag{1}$$

$$K_Q = \frac{Q_3 - Q_1}{Me} \tag{2}$$

$$K_D = \frac{D_9 - D_1}{Me} \tag{3}$$

where:

$s(x)$ – the standard deviation of the number of projects or the financing,

$\bar{x}$ – the arithmetic mean of the number of projects or the financing,

Q_1 – the first quartile of the distribution of the number of projects or the financing,

Me – the median of the number of projects or the financing,

Q_3 – the third quartile in the distribution of the number of projects or the financing,

D_1 – the first decile in the distribution of the number of projects or the financing,

D_9 – the ninth decile in the distribution of the number of projects or the financing.

In turn, the concentration of the use of European funds, referred to as uneven distribution of the total number of projects financed or co-financed from EU funds, as well as the value of EU funding among the various districts, was determined by the Gini coefficient. Its calculation came down to find the relation between the line of equal distribution and the Lorenz curve for the triangle 0AB (Fig. 1), using the following formula (Pułaska-Turyna 2005):

$$WL = \frac{5000 - \sum P_i}{5000} \tag{4}$$

[12] Portal of the Structural Funds. http://www.funduszestrukturalne.gov.pl [date of access: 04.01.2014]. From this portal the information on EU funds available in 2004–2006 was obtained.

[13] Portal of the European Funds. http://www.funduszeeuropejskie.gov.pl [date of access: 04.01.2014]. From this portal the information on EU funds available in 2007–2013 was obtained.

[14] The classical coefficient of variation takes into account the whole distribution, the coefficient of quartile deviation refers to its central part, while the coefficient of decile deviation refers to extreme parts of the distribution.

where:

ΣP_i – is the area under the Lorenz curve (the sum of the triangular field and trapezoidal fields).

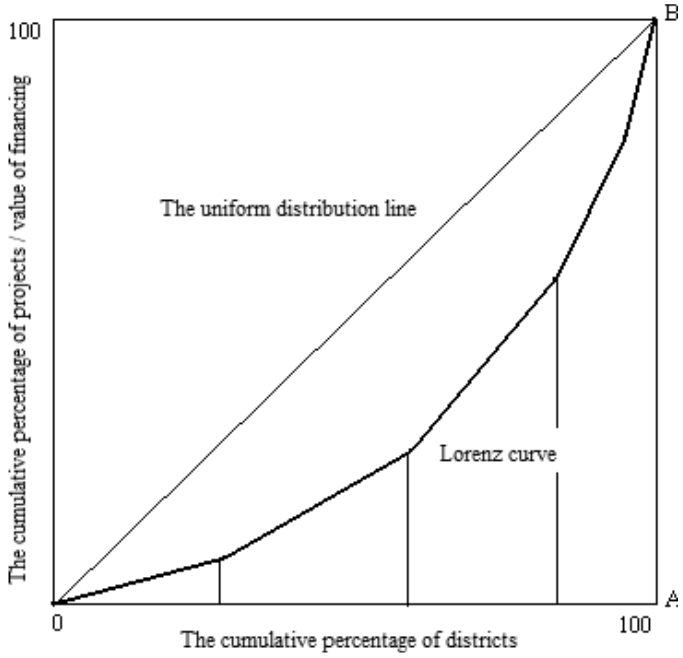

Fig. 1. Lorenz curve

Source: own elaboration.

The resulting values belonged to the interval (0;1), with lower values meaning weaker concentration of the number of projects and the financing, while higher values indicated a stronger concentration.

3. DIFFERENTIATION OF ABSORPTION OF THE EU FUNDS IN THE GREATER POLAND PROVINCE

Differentiation of the number of projects implemented with the support of the European funds in the Greater Poland districts covered by the study, as measured by the classical coefficient of variation (*Vx*), were at the level 0.819. Definitely a lower measure of dispersion was obtained taking into account not the whole decomposition but its central part, i.e. excluding ¼ of the districts with the smallest and ¼ of the districts with the largest number of projects financed or co-financed with the European funds (K_Q). Quite a high value measurement was obtained while taking into account the extreme parts of the distribution, i.e. after exclusion of 10% of the districts with the lowest and 10% of the districts with the largest number of projects (K_D). Therefore, the results of the calculations indicate a significant dispersion in the distribution of the projects among various districts in terms of their volume. For a full picture of the situation it should be pointed out that most of the EU projects were completed in the Poznan district and the least in the Międzychód district (respectively 1.091 and 105 projects). Generally speaking, the three measures of dispersion indicate that the Greater Poland districts are the most diverse in terms of the number of projects carried out with the support of the CF, and less in terms of the number projects carried out under the ESF and the ERDF (Fig. 2).

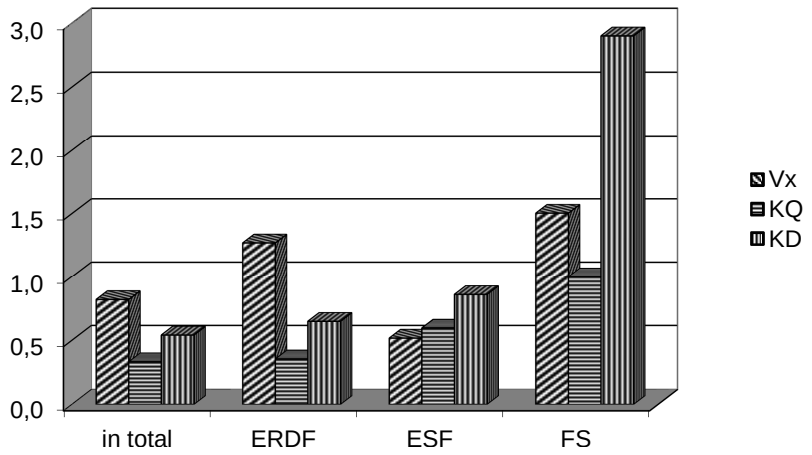

Fig. 2. Values of relative measures of dispersion for the distribution of the volume of projects financed or co-financed with the EU funds in the districts of the Greater Poland Province (by category of funds)
Source: own calculations based on the EU Subsidies Map, http://mapadotacji.gov.pl [date of access: 17.04.2014].

The differences among the districts of the Greater Poland Province with regard to the value of the EU financing are even greater than with regard to the number of projects completed. Considering just the number of projects, a 10-fold difference in volume between the aforesaid Poznan and Międzychód districts can be noted, whereas in the case of co-financing from the EU the difference in value between the district with the largest financial support (the Poznań district: 3.062.79 million PLN) and the district with the lowest financial support (the Grodziski district: 117.15 million PLN) was more than 25-fold. The calculated values of dispersion measures for the distribution of the EU financing confirm this finding (*Vx* = 1.550; *KQ* = 0.747; *KD* = 0.691). As in the case of the number of projects, so in the case of co-financing from the EU, the differentiation among the districts is the greatest with respect to the use of the FS, and the smallest with respect to the involvement of the ESF resources (Fig. 3).

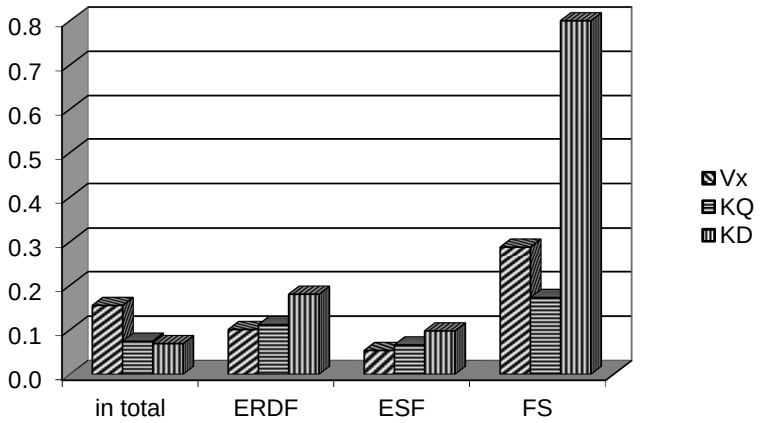

Fig. 3. Values of relative measures of dispersion for the distribution of the EU funding in the districts of the Greater Poland Province (by category of funds)
Source: own calculations based on the EU Subsidies Map, http://mapadotacji.gov.pl [date of access: 17.04.2014].

Analysing the differences in the absorption of European funds in the Greater Poland districts through the prism of operational programmes, it may be noted that both in terms of the number of EU projects and amount of financing, the biggest differences among the districts occurred in relation to the OP IE OP Infrastructure and SOP ICE, while the smallest in relation to the SOP HRD (Table 1).

Table 1. The values of relative measures of dispersion in the distribution of projects financed or co-financed with European funds in terms of their amount and value in the Greater Poland districts (by category of operational programme)

Operational programmes	Number of projects			Value of the EU funding		
	V_x	K_Q	K_D	V_x	K_Q	K_D
SOP HRD	0.186	0.143	0.557	0.606	0.737	1.325
SOP ICE	1.477	0.625	1.650	1.362	1.608	4.880
IRDOP	0.494	0.422	0.613	0.888	0.750	1.856
OP I and E	1.127	0.667	1.633	2.254	2.954	4.140
OP IE	2.022	0.543	1.000	1.762	1.989	3.551
OP HC	0.546	0.635	0.943	0.542	0.648	1.025
WROP	1.103	0.385	0.777	1.111	0.764	1.611

Source: own calculations based on the EU Subsidies Map, http://mapadotacji.gov.pl [date of access: 17.04.2014].

4. CONCENTRATION IN THE ACQUISITION OF EU FUNDING IN THE GREATER POLAND PROVINCE

A certain concentration in the distribution of the total volume of the EU financed or co-financed projects among the Greater Poland districts is evidenced by the fact that the number of the EU projects implemented in 25% of the districts with the smallest project volume accounted for 15% of the total project volume, while the number of projects completed in 25% of the districts with the highest project volume accounted for over 50% of the total volume. This concentration is even more evident when one looks into the value of the EU funding. It's the project value acquired by 25% of the districts with the lowest funding accounted for 9% of the total, whereas the subsidy value in 25% of the districts with the highest co-financing rates amounted to over 61% of the total value. The existence of a certain concentration, in particular in relation to the EU funds, confirms the value of the Lorenz curve, which is 0.398. The results of the calculations allow us to conclude that both in respect to the number of the EU projects completed, as well as the acquired EU co-financing, the concentration is relatively the strongest in case of the FS, while it is the smallest in case of ESF (Fig. 4). It is thus consistent with the previous observations regarding the values of the relative measures of dispersion.

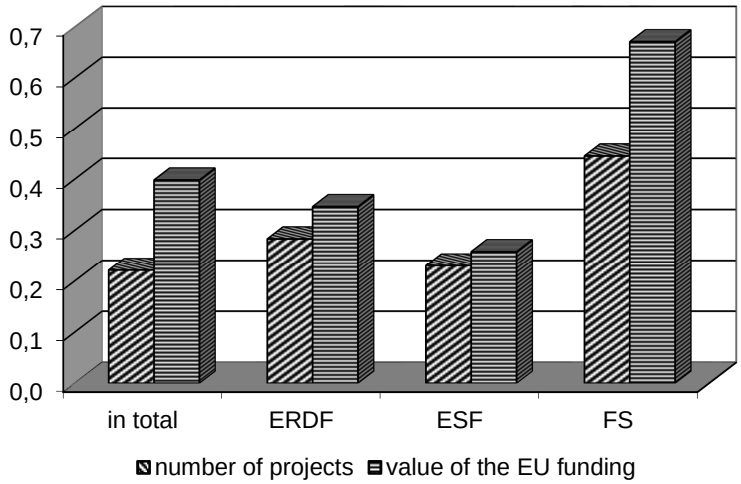

Fig. 4. Values of the Gini coefficient for the number of EU supported projects and the financing values from the EU in the districts of the Greater Poland Province (by category of funds)
Source: own calculations based on the EU Subsidies Map, http://mapadotacji.gov.pl [date of access: 17.04.2014].

When examining the concentration in the use of European funds in the Greater Poland districts with regard to the operational programmes implemented, it can be explicitly stated that both in terms of the support volume and value, the largest concentration was observed in the case of the Operational Programme of Innovative Economy, the Operational Programme for Infrastructure and Environment and the Sector Operational Programme on Improvement of the Competitiveness of Enterprises, while the smallest concentration occurred in the case of the Sector Operational Programme on Human Resources Development (Fig. 5). These findings are consistent with the indications of the relative measures of dispersion.

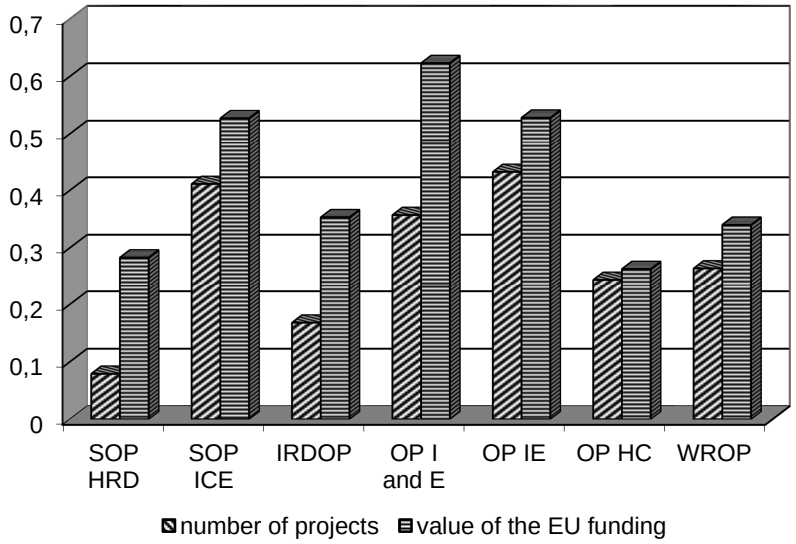

Fig. 5. Values of relative measures of dispersion for the distribution of the EU funding in the districts of the Greater Poland Province (by category of funds)
Source: own calculations based on the EU Subsidies Map, http://mapadotacji.gov.pl [date of access: 17.04.2014].

The uneven use of European funds in the Greater Poland Province, especially with regard to the two funds, i.e. the CF and the ERDF as well as the three operational programmes, i.e. OP IE, OP I and E, SOP ICE, was primarily conditioned by the fact that a large part of these projects was implemented in the district of Poznan (in case of OP IE it equalled to 46% of the total projects in the Province), and thus the entities located in that district received an essential part of the EU funding (in the case of the FS – 63% of the total funding allocated to the Greater Poland Province). Further details are provided in Table 2.

Table 2. Comparison of the number of EU supported projects in terms of volume and value in the Greater Poland Province (WLKP–Wielkopolska) and in the district of Poznan (POZ)

European funds and operational programs	Number of projects		Value of the EU funding (in million of zlotys)	
	WLKP	POZ	WLKP	POZ
FS	38	13	3 063.78	1 917.51
ERDF	2 547	783	4 442.48	1 057.25
OP IE	701	325	909.39	356.43
OP I and E	83	22	3 900.63	1 927.63
SOP ICE	221	72	120.05	30.90

Source: own calculations based on the EU Subsidies Map, http://mapadotacji.gov.pl [date of access: 17.04.2014].

When it comes to the FS, the concentration in the volume and value of projects resulted from the implementation of several key projects in the Poznan district, namely the construction of the western bypass within expressways S11 and S5 (beneficiary: General Directorate for National Roads and Motorways), the arrangements for the water and wastewater treatment plants in Poznan and its environs (beneficiary: Aquanet SA); as well as the construction of sewage system in Puszcza Zielonka Natural Landscape Park and surrounding areas (beneficiary: Association of Districts "Puszcza Zielonka"). As far as the ERDF is concerned, the concentration was the result of the implementation of the following projects (value of support: over 20 million PLN): the construction of the bypass in Murowana Goslina and the expansion of regional roads in the district (beneficiary: local government of the Greater Poland Province), construction of a modern logistics centre for the clothing industry (beneficiary: H & M Hennes & Mauritz Logistics Sp.) and implementation of innovative production technology of ecological building materials using fly ash waste (beneficiary: Baumit Sp.).

CONCLUSIONS

The results of the analysis, contrary to earlier assumptions, do not unambiguously support the thesis formulated at the beginning of this study. There are in fact significant differences in the geographic distribution of European funds, and thus operational programmes. While the ESF funds have been fairly evenly among the Greater Poland Province districts, the use of the FS is characterized by considerable discrepancies in the geographical spread of the FS allocation and their concentration in main district towns. This is confirmed by the data on the number and value of projects financed or co-financed with the European funds. In view of the fact that EU funds are supposed to support efforts aimed at strengthening the Community's social and economic cohesion through balanced financing of projects, it can be concluded that the ESF plays a special role in this regard. It must be stated that even in terms of geography, the use of funds to support projects aimed at enhancing the human capital contributes to the levelling of socio-economic differences among the Greater Poland districts. In turn, the FS, which also should seek to strengthen the social and economic cohesion, due to concentration of FS supported projects only in a few districts, especially in the district of Poznan, seems to have a contrary effect that is to contribute to the accumulation of differences between the districts. Of course, the uneven allocation of the FS resources is determined by the specificity of the fund itself, which aims to support large investment projects in the field of transport and environment, and therefore is generally located in areas with high population density. Nevertheless, even in per capita calculations, the FS support in some districts of the Greater Poland Province (Poznan, Kalisz) was incomparably bigger than in other districts. Therefore, major concentration of the funds in question only in a few districts can be regarded as an expression of a policy whose goal is to stimulate the development of only certain areas, based on an assumption that the development processes are self- spreading beyond these areas. Whilst refraining from an assessment of the validity of this policy, one might venture to say that it is not fully consistent with the overarching objective of EU funding. According to the authors, in the next financial

perspective, that is, in the period of 2014–2020 there should be more attention paid to the uniformity in the allocation and use of EU funds in order to stimulate the development of not only the regional, but also the sub-regional growth centers. The analysis carried out by the authors should therefore be treated as contribution to further research encompassing a broader time frame and broader geographic area.

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