
Evaluation of the European Union investment interventionism effectiveness in the context of Visegrad Group countries economic development in the years 2000-2017

Sikora Artur¹

Chlebisz Adam²

Abstract

Aim of the study: The aim of this work is an attempt to assess the effectiveness of the European Union's investment interventionism based on the relationship between GDP per capita and total EU expenditure for a given country of the Visegrad Group in the years 2000-2017.

Materials and methods: The empirical study used the annual frequency data from the European Union budget for the years 2000-2017 and World Bank data on the Gross Domestic Product per capita in a given year. The study part uses scatter plots of selected variables and the Pearson correlation coefficient.

Results: The results of the research allowed to indicate the tendency of the occurrence of interdependence between the EU expenditure and GDP per capita for the adopted time series.

Keywords: European Union expenditure, economic development, employment, Visegrad Group, European Union investment

Introduction

European Union set itself the objective of working for sustainable development of Europe, based on balanced economic growth. Under the internal market and using the model of the social market economy, it is supposed to support price stability, competitiveness and also scientific and technological advance³, which is referenced as the key element of development for a modern economy. Furthermore, cohesion policy – one of the major EU

¹ Cracow University of Economics, Faculty of Economics and International Relations, Department of Management Strategies and Organization Development, Studencki Instytut Analiz Gospodarczych.

² Cracow University of Economics, Faculty of Economics and International Relations, Department of Management Strategies and Organization Development, Studencki Instytut Analiz Gospodarczych.

³ Traktat o Unii Europejskiej, Dz.U.2004.90.864/30, Art. 3.

areas of activity is intended to close the gaps in the levels of social-economic development among member states⁴.

Devoting funds to reducing disparities between countries and regions under the common policy is one of the fundamental activities undertaken by the European Union. However, as M. Kozak points out, the assessment of the effectiveness of the conducted activities remains ambiguous⁵. Sceptics point mainly to the improper use of funds⁶ and overestimation of this method aimed at developing poorer regions⁷. On the other hand, research commissioned by the European Commission points to a decrease in the income gap between the countries in which cohesion policy and sustainable growth solutions were applied. Nevertheless, it is emphasized that EU funds were not the only source of later observed effects. The result consisted of many factors, including global boom or internal policy of the subsidized country⁸. The European Commission also points out that development is conditioned by many determinants, such as technological changes, changes in the economy or even behaviour of individuals and enterprises⁹.

Aims and methods

The aim of the work was to assess the EU investment interventionism of based on the relationship between GDP per capita and total EU expenditure for a given country of the Visegrad Group in 2000-2017. The annual data from the European Union budget for the years 2000-2017, as well as World Bank data on the Gross Domestic Product per capita in a given year, were used for conducting the study. The theoretical part uses a partial query of the literature and a report published by the European Commission "Investing in Europe's future. Fifth report on economic, social and territorial cohesion". In the empirical study, scatter plots and delays of explanatory variables were used to find a linear relationship (tendency) with a variable indicating economic growth per capita. The selection of variables and the period considered was dictated by the purpose of examining the impact of expenditure from the

⁴ Kudelko J., *Kierunki zmian w polityce spójności Unii Europejskiej*, Zeszyty Naukowe nr 818 Uniwersytetu Ekonomicznego w Krakowie, Kraków 2010, pp. 37-49.

⁵ Kozak M., *Polska polityka spójności – wyzwania*, (in:) Pancer-Cybulska E., Szostak E. (ed.), *Polityka spójności w okresie 2014-2020 a rozwój regionów Europy*, Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu, Wrocław 2011, p. 13.

⁶ Pastuszka S., *Polityka regionalna Unii Europejskiej – cele, narzędzia, efekty*, Difin, Warszawa 2012, pp. 298-299.

⁷ Kozak M., *op. cit.*, p. 13.

⁸ Pastuszka S., *op. cit.*, p. 292.

⁹ Breska E., Komisja Europejska, Dyrekcja Generalna ds. Polityki Regionalnej, *Inwestowanie w przyszłość Europy, piąty raport na temat spójności gospodarczej, społecznej i terytorialnej*, Luxembourg 2010, p. 204.

European Union budget on economic growth in a given country, four years before accession and during membership in the Union.

Interventionism in the European Union

Interventionism can be defined as actions of states interfering in a significant way into free market processes, for example in the form of subsidies, taxes or concessions¹⁰. As noted by S. Bobowski, interventionism is an integral part of the European Union from the beginning of its existence, its scope is defined at the treaty level, and implemented at the level of the general budget¹¹. However, this does not change the fact that the regulatory system remains the subject of discussion and controversy¹². Among the five scenarios presented by the EC in the White Paper on the future of Europe, there is both a proposal of budget increase and a proposal to limit the activities of the European Union to the single market¹³.

In favor of EU interventionism stands the concept of market mechanism imperfections, leading to social inequalities, economic fluctuations or unemployment¹⁴. At the same time, it is noted that cooperation aimed at unification of the European market by active initiatives of the European Union leads to the mitigation of social differences¹⁵. In addition, there is a significant interdependence between decreasing income inequalities and the GDP ratio¹⁶. In this paper, it was decided to determine the effectiveness of the investment intervention of the European Union in the context of economic development of the Visegrad Group countries in the years 2000-2017.

Countries of the Visegrad Group in the European Union

On February 15, 1991, Czechoslovakia, Hungary, and Poland signed in Visegrad a "Declaration on Cooperation in Striving for European Integration", under which countries undertook to participate in the process of European integration, with a view to deepening

¹⁰ Nazarko Ł., *Polityka innowacyjna – inteligentny interwencjonizm?*, Optimum. Studia ekonomiczne, Nr 1 (73) 2015, pp. 85-96.

¹¹ Bobowski S., *Polityka spójności Unii Europejskiej jako narzędzie interwencjonizmu unijnego w świetle teorii ekonomii*, [w:] *Wybrane problemy gospodarki światowej pierwszej dekady nowego wieku*, W. Michalczyk (ed.), Uniwersytet Ekonomiczny we Wrocławiu, Wrocław 2009, pp. 202-211.

¹² Bobowski S., *Ibidem*.

¹³ Biała Księga w sprawie przyszłości Europy, *Refleksje i scenariusze dotyczące przyszłości UE-27 do 2025 r.*, Komisja Europejska, Brussels 2017.

¹⁴ Kryskova, L., *Bezzwrotne i zwrotne instrumenty pomocy publicznej Unii Europejskiej dla przedsiębiorców*, wystąpienie na IX Kongresie Ekonomistów Polskich, Warsaw 2013.

¹⁵ Firlej K., Mierzejewski M., *Analiza nowych form procesu integracji europejskiej*, Tarnowskie Colloquia Naukowe nr 5 (1/2018), PWSZ w Tarnowie, Tarnów 2017, pp. 9-20.

¹⁶ Garncarz J., *Kształtowanie się nierówności społecznych a wzrost gospodarczy w krajach Grupy Wyszehradzkiej w latach 1991-2016*, Rynek-Społeczeństwo-Kultura nr 2(28) 2018, pp. 19-24.

cooperation, and then joining the NATO and European Union structures¹⁷. In addition, a very important element of this cooperation was the restoration of state independence, democracy, as well as the creation of a modern market economy¹⁸. At the time of the division of Czechoslovakia into the Czech and Slovak Republics, on January 1, 1993, these countries began to be called the Visegrad Group¹⁹. On the other hand, on March 1, 1993, the group signed the Central European Free Trade Agreement, which aimed at abolishing customs duties in trade within the Agreement, as well as including parties to the agreement by stimulating their economic development²⁰. On May 1, 2004, along with six other European countries, the four countries forming the Visegrad Group joined the European Union²¹.

The economic situation of the Visegrad Group countries

Figure 1. GDP per capita in the Visegrad Group countries in 2000-2017

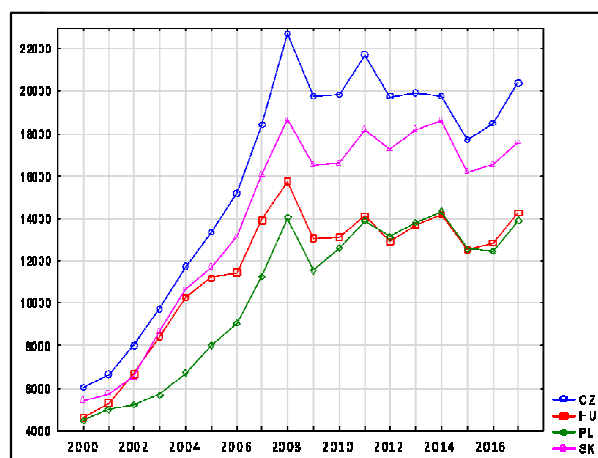


Table 1. Correlation coefficients of GDP per capita in the Visegrad Group countries in 2000-2017

	CZ	HU	PL	SK
CZ	1.000000	0.975054	0.975393	0.991035
HU	0.975054	1.000000	0.935672	0.974932
PL	0.975393	0.935672	1.000000	0.985334
SK	0.991035	0.974932	0.985334	1.000000

Source: Own study based on: The World Bank, *GDP per capita (current US\$)*, <https://data.worldbank.org/> [download date: 23.04.2019].

¹⁷ Visegradgroup.eu, *About the Visegrad Group*, <http://www.visegradgroup.eu/> [access: 28.04.2019].

¹⁸ Deklaracja o współpracy Czeskiej i Słowackiej Republiki Federacyjnej, Rzeczypospolitej Polskiej i Republiki Węgierskiej w dążeniu do integracji europejskiej, 15.02.1991.

¹⁹ Instytut Europa Karpat, *Grupa Wyszehradzka - historia i przyszłość*, <http://www.europakarpat.pl/> [access: 28.04.2019].

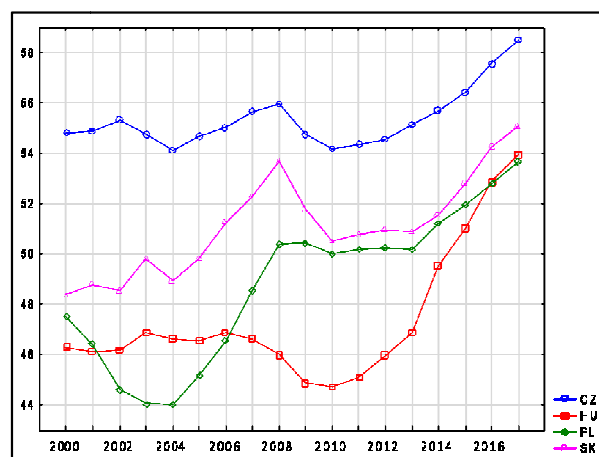
²⁰ Andrzejewski P., Szczepaniak M., *Państwa Grupy Wyszehradzkiej - obraz gospodarczy*, Przegląd Zachodni nr 4, Poznań 1995, pp. 57-58.

²¹ Europa.eu, *The history of the European Union – 2004*, <https://europa.eu/> [access: 28.04.2019].

As can be shown in Figure 1, the Czech Republic is characterized by the highest GDP per capita ratio among the Visegrad Group countries. After 2008, a clear slowdown and decline in the value of the indicator can be observed, which since 2007 has been consolidating and is moving in each country in a horizontal trend. After 2010, particularly similar values of the analysed indicator between Poland and Hungary are visible, which in the years 2002-2004 was noticeable between Slovakia and Hungary. According to Table 1, for the adopted level of significance $p < 0.01$, all these countries are characterized by very high interdependence in relation to their GDP per capita in the analysed period.

Due to the slow growth, high unemployment, and insufficient public and private investments in Europe in 2014, the European Council, appointing the new President of the European Commission, called for bold steps to increase investment²². In response, the European Commission proposed a new initiative - an Investment Plan for Europe²³. The plan primarily covered the new European Fund for Strategic Investments, boosting the real economy with investment funds and improving the investment climate in Europe by guaranteeing predictability of legislation, removing barriers to investment and strengthening the single market²⁴. Despite the six-year investment perspective, one could observe increases in employment after just one year of operation.

Figure 2. Relation of employment to the total population in the Visegrad Group countries in 2000-2017



²² Rada Europejska, Konkluzje Rady Europejskiej z dnia 26-27 czerwca, Brussels 2014, p. 16, <https://www.consilium.europa.eu/> [access: 28.04.2019].

²³ Komisja Europejska, Plan inwestycyjny dla Europy z dnia 26 listopada, Brussels 2014, <https://eur-lex.europa.eu/> [access: 28.04.2019].

²⁴ Komisja Europejska, *Ibidem*.

Table 2. Correlation coefficients of employment in relation to the total population in the Visegrad Group countries in the years 2000-2017

	CZ	HU	PL	SK
CZ	1.000000	0.910218	0.634697	0.805920
HU	0.910218	1.000000	0.546374	0.667788
PL	0.634697	0.546374	1.000000	0.811790
SK	0.805920	0.667788	0.811790	1.000000

Source: Own study based on: The World Bank, *Employment to population ratio, 15+, total (%) (national estimate)*, <https://data.worldbank.org/> [download date: 23.04.2019].

According to Figure 2, for the employment rate in the Visegrad Group countries, the highest value is in the case of the Czech Republic. In every country, with the exception of Hungary after 2004 (accession to the European Union), a very high rate of growth of this indicator is noticeable.

In the case of Hungary, employment clearly decreased after 2006 and the level from before the recession reached only in 2013. The drop in 2006 was most probably caused by the budgetary consolidation and lay-offs in the public sector conducted by the Hungarian government^{25,26,27}. Then in 2008, the economic crisis shaken Europe, entailing declines in employment, economic growth, and investments²⁸, which can be seen both in the above and in Figure 1. However, in terms of employment, Poland has not experienced such a deep decline that has taken place in other countries of the Visegrad Group (up to 3.2% in the case of Slovakia).

It turns out that employment in Poland and Hungary (during the period considered) until 2013 is inversely correlated, despite the very high correlation of GDP per capita (Table1). Only in 2016, Hungary achieves a higher employment relationship to the general population in the country, indicating the highest upward trend.

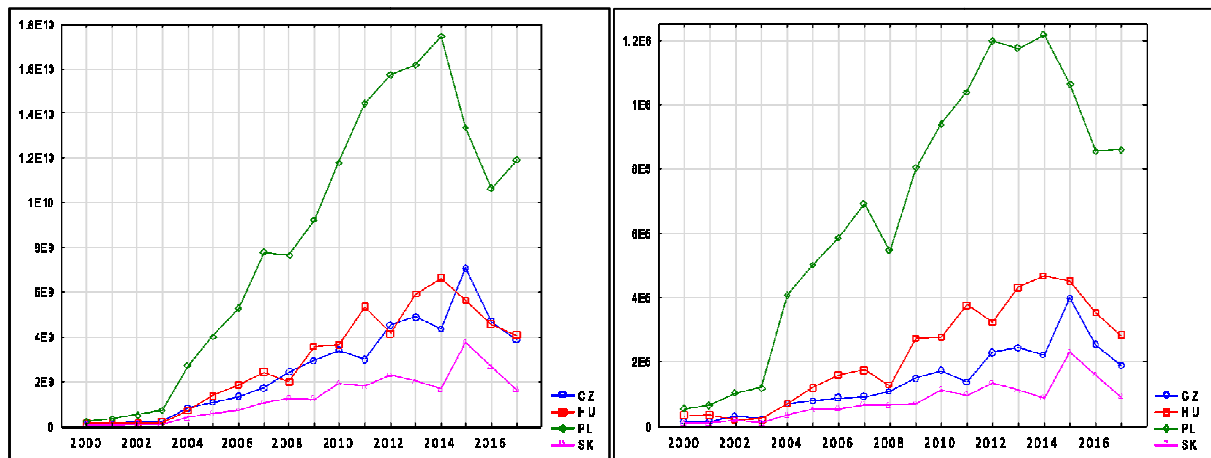
²⁵ European Commission, Economic forecasts Autumn 2006, European Economy No 5/2006, p. 82.

²⁶ European Commission, Economic forecasts Autumn 2007, European Economy No 7/2007, p. 86.

²⁷ Index.hu, *Belpolitikai válság percről percre*, <https://index.hu/> [access: 28.04.2019].

²⁸ European Investment Bank, Evaluation of the European Fund for Strategic Investments, 31.06.2018, p. 16.

Figure 3. and 4. Expenditure of the European Union (left) and European Union expenditure in relation to GDP per capita (right) for the given countries of the Visegrad Group in the years 2000-2017



Source: Own study based on: Europa.eu, *EU expenditure and revenue 2014-2020*, <http://ec.europa.eu/>; The World Bank, *GDP per capita (current US\$)*, <https://data.worldbank.org/> [download date: 23.04.2019].

From figure 3. it can be read that in terms of quantity Poland is the most subsidized country among the respondents. The high growth rate for this country was particularly evident in 2003 -2014. After 2007, there was a small, one-year reduction in the expenditure of the European Union for Poland, which was also visible in the case of Hungary in this period. Then, in these two countries after 2014, a significant decrease in funds received from the EU is noticeable. In addition, for the period 2007-2013, the Visegrad Group countries negotiated a significant share of funds for economic development within the EU budget, which is clearly visible in the above charts. During this period, these countries accounted for 26% of European Union expenditure²⁹, representing only 12.7% of its population³⁰.

In the case of the Czech Republic and Slovakia, after 2003, EU funding in terms of value began to diverge from each other, but remained in a similar form, sensitivity to changes and interdependencies. In these countries, only after 2015 there was a decrease in received funds. Considering EU expenditure in relation to GDP per capita presented in Figure 4, the Czech Republic and Slovakia are even closer together. On the other hand, in the case of a comparison between Hungary and the Czech Republic, it appears that per unit of GDP per capita in Hungary there is more money from the EU than it was in terms of value (Figure 3), where in some periods the EU spent more on the Czech Republic. The ratio of EU

²⁹ Europa.eu, *EU expenditure and revenue 2014-2020*, <http://ec.europa.eu/> [access: 28.04.2019].

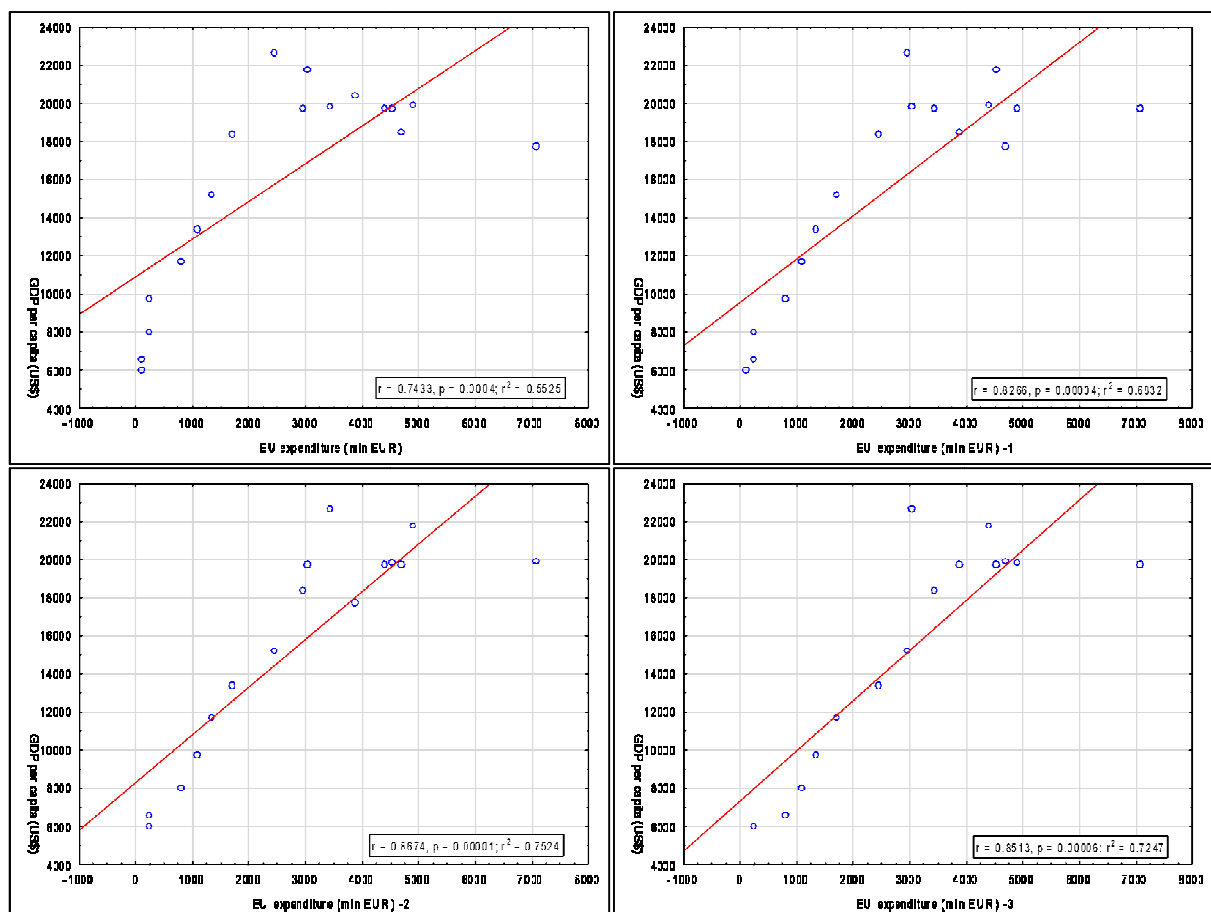
³⁰ Eurostat news release, European demography: EU28 population 505.7 million at 1 January 2013, 20.11.2013, <https://ec.europa.eu/> [access: 28.04.2019].

expenditure to GDP per capita in Poland is at a very high level (in 2014, more than 2.6 times higher than the highest point of Hungary).

Study of the dependence of European Union expenditure on GDP per capita

The following graphs reflect the mutual relations between the expenses of the European Union for a given country of the Visegrad Group and the GDP per capita of these countries. The research aims to determine the occurrence of the tendency of interdependencies between these variables in different time series. The explanatory variable was delayed in each case by one, two and three years, in order to check the reaction to the change, because the impact on the explained variable (GDP per capita) may be characterized by a delay in time.

Figure 5. Dispersion chart of European Union expenditure to GDP per capita for the Czech Republic in 2000-2017



Source: Own study based on: Europa.eu, *EU expenditure and revenue 2014-2020*, <http://ec.europa.eu/>; The World Bank, *GDP per capita (current US\$)*, <https://data.worldbank.org/> [download date: 23.04.2019].

As shown in Chart 5 for the assumed level of significance $p < 0.01$ in the case of the Czech Republic, the strongest interdependence is found in the case of a two-year delay in the

variable determining European Union expenditure in relation to GDP per capita. However, in each case (except for immediate indicator response, without delay), the coefficients very well explain the model and indicate a tendency for causality between these variables.

M. Havlat, D. Havrlant, R. Kuenzel and A. Monks stress that especially in 2003-2008, the Czech Republic recorded a significant increase in gross national income per capita. In the work, they refer to the period from the 90s until the 2008 crisis as the following convergence process towards the richer countries of Western Europe. In addition, as it does in chart 5, they explain economic changes, i.a. through accession to the European Union and benefiting from structural funds³¹.

If we sum up the expenses of the European Union for the Czech Republic, it would amount to 3.895 billion euros, which is about 2.15% of the gross national income generated. On the other hand, Czech contribution to the EU budget amounts to 0.71% of GNI³². As V. Dostál points out, despite high investments, GDP growth in the first years after accession and very good geographical location, Czechs still remain one of the most skeptical nations in the Union. In addition, it indicates that in the 2007-2013 budget program they received the largest subsidies from the EU per capita³³. However, according to the Eurobarometer Surveys, along with the effects of the financial crisis, the confidence in the EU fell in this country in 2009-2012. What could also have been due to the capital owners getting the most profits, while the entire society was bearing the high costs of the short-sightedness of decisions taken by the government during the global crisis³⁴.

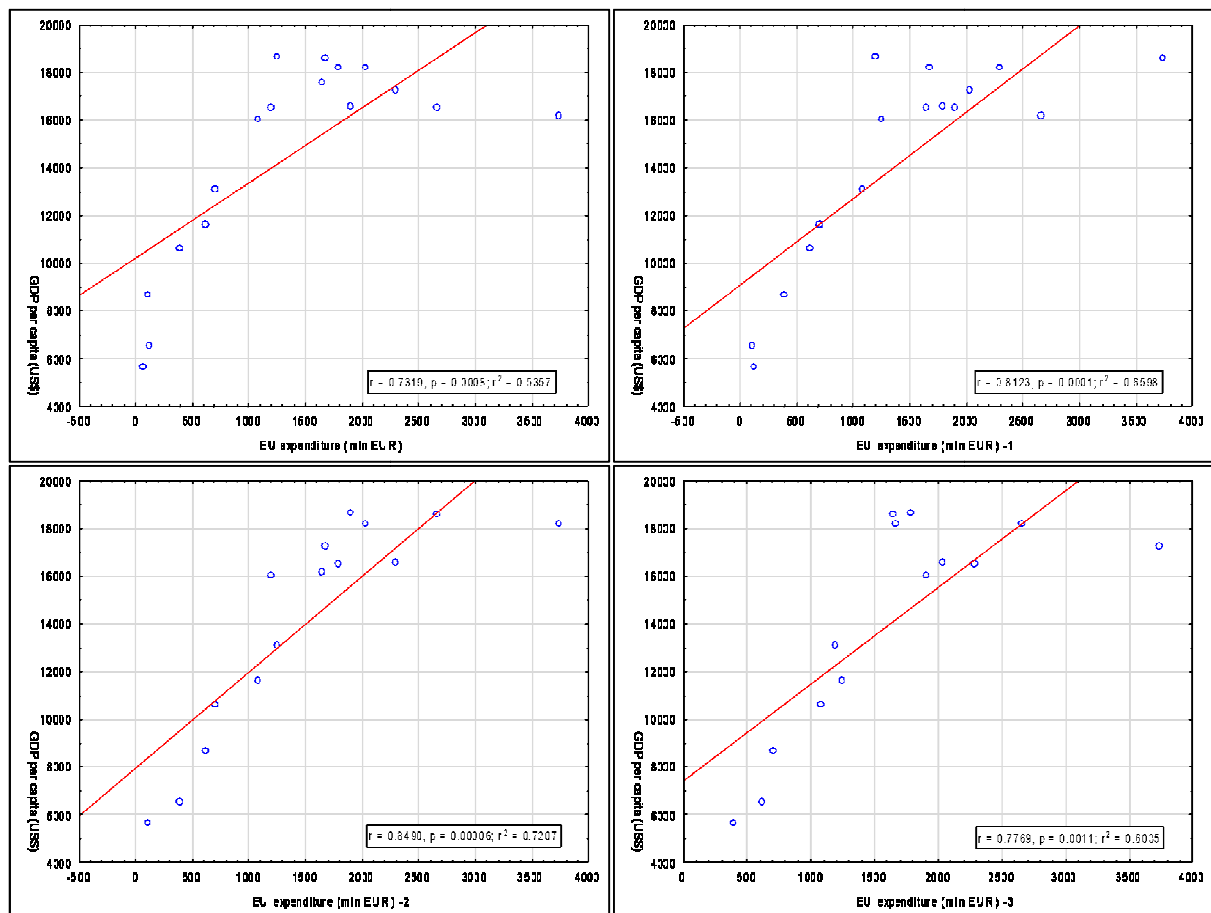
³¹ Havlat M., Havrlant D., Kuenzel R., Monks A., *Economic Convergence in the Czech Republic and Slovakia*, Publications Office of the European Union, Luxembourg 2018, pp. 2-10.

³² Europa.eu, *Czechia: Budgets and Funding*, <https://europa.eu/> [access: 28.04.2019].

³³ Dostál V., *From Integration to Differentiation: The Czech Republic in the European Union Ten Years On*, DGAPanalyse nr 9, 05.2014, pp. 3-10.

³⁴ Mierzejewski M., *Interwencjonizm na liberalnych rynkach. O zmianach w spojrzeniu na gospodarkę w reakcji na kryzys pierwszej dekady XXI wieku*, Rynek-Społeczeństwo-Kultura nr 2(14) 2015, pp. 28-32.

Figure 6. Dispersion chart of European Union expenditure to GDP per capita for Hungary in 2000-2017



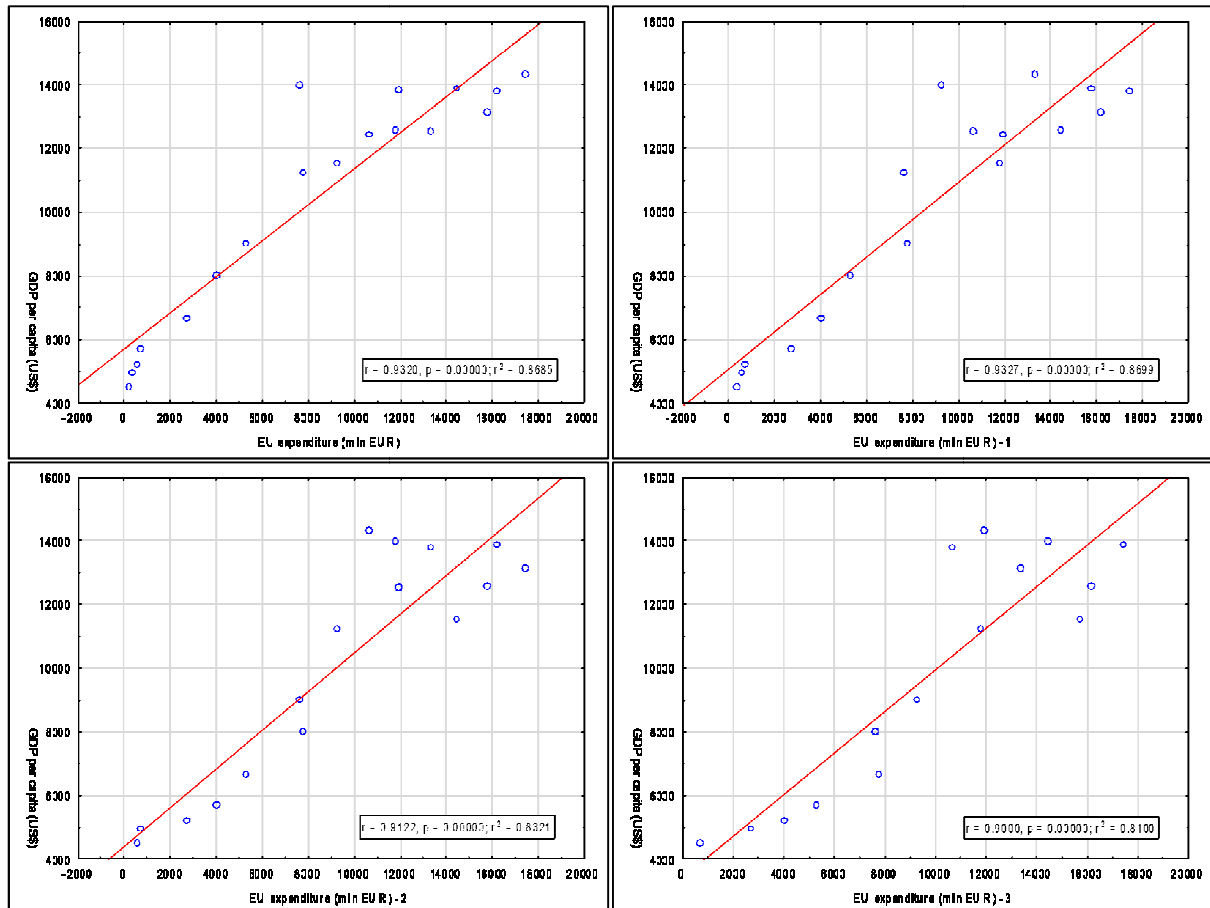
Source: Own study based on: Europa.eu, *EU expenditure and revenue 2014-2020*, <http://ec.europa.eu/>; The World Bank, *GDP per capita (current US\$)*, <https://data.worldbank.org/> [download date: 23.04.2019].

According to Figure 3, there is a tendency that GDP per capita in Hungary is explained in the most accurate way (among respondents) for a two-year delay in the variable determining European Union expenditure. The study published by KPMG and GKI, which showed that the Hungarian economy without European Union funds received in the years 2006-2015 would obtain a lower GDP growth by 2.8 pp, shows similar conclusions to indicate interdependence. about the growth that actually took place (4.6%)³⁵. The research results showed that without EU funding, it would be possible to increase the number of jobs only by less than 38% of the actual increase in this period. Nevertheless, despite the growing inflow from European Union funds, Hungary shows the slowest growth among the Visegrad

³⁵ KPMG, *A magyarországi európai uniós források felhasználásának és hatásainak elemzése a 2007-2013-as programozási időszak vonatkozásában*, 02.03.2017, <https://www.palyazat.gov.hu/> [access: 28.04.2019].

Group countries and if it were not for EU funds, public debt would have risen above 84% of GDP (more by 11 pp than in the analysed years)³⁶.

Figure 7. Dispersion chart of European Union expenditure to GDP per capita for Poland in 2000-2017



Source: Own study based on: Europa.eu, *EU expenditure and revenue 2014-2020*, <http://ec.europa.eu/>; The World Bank, *GDP per capita (current US\$)*, <https://data.worldbank.org/> [download date: 23.04.2019].

In the case of Poland, according to Figure 7, in each of the steps examined there is a positive trend indicating the impact of European Union expenditure on GDP per capita. The strongest turns out to be in the case of the annual delay of the explanatory variable.

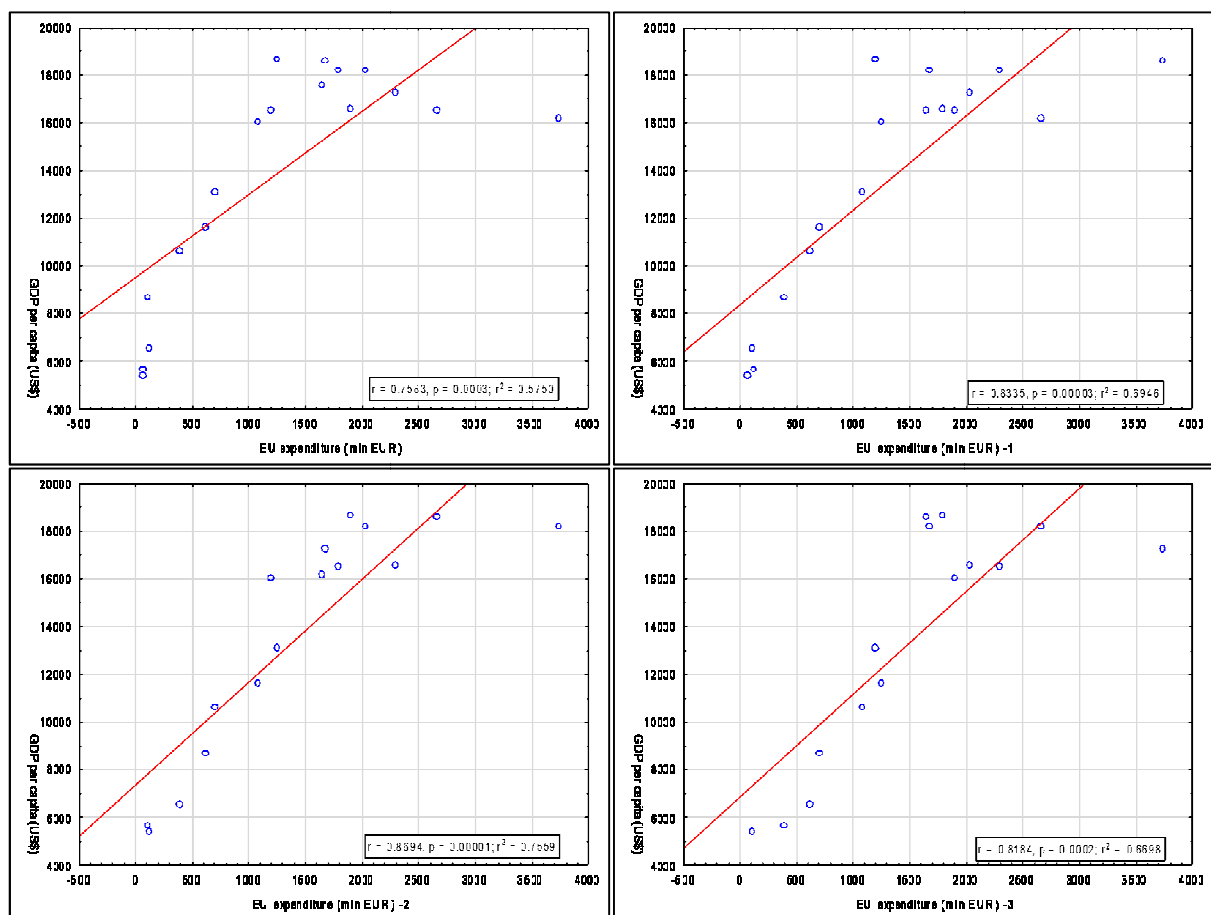
In the work of E. Ambroziak, the author treats the broader concept of European integration as a factor influencing economic growth. In the econometric model introduced in the work and quoted argumentation resulting from the literature query, the subject confirms the thesis about the positive impact of accession (including funds from the EU budget) on

³⁶ Meanwhileinbudapest.com, *Hungary Without EU Funds*, <https://meanwhileinbudapest.com/> [access: 28.04.2019].

economic growth³⁷. Undersecretary of State in the Ministry of Development during the committee meeting in 2017, informed that at the time of Poland's accession to the European Union, the employment rate belonged to one of the lowest in the EU, and by 2015 it increased by 10.7%. Of which almost ¼ was the effect of the funds invested from the EU budget³⁸.

Moreover, A. Grycuk and P. Russel indicate that thanks to funds from the European Union and the single market, the Polish economy has become more competitive, and its GDP has been growing faster than the EU average. However, despite this, it is emphasized that the process of Poland's economic convergence can significantly slow down³⁹.

Figure 8. Dispersion chart of European Union expenditure to GDP per capita for Slovakia in 2000-2017



Źródło: Opracowanie własne na podstawie: Europa.eu, *EU expenditure and revenue 2014-2020*, <http://ec.europa.eu/>; The World Bank, *GDP per capita (current US\$)*, <https://data.worldbank.org/> [download date: 23.04.2019].

³⁷ Ambroziak E., *Wpływ integracji europejskiej na wzrost gospodarczy*, Studia prawno-ekonomiczne, t. 94, Łódź 2015, pp. 187-201.

³⁸ Sejm, *Zapis przebiegu posiedzenia komisji*, Komisja Gospodarki i Rozwoju, 22.03.2017, <http://www.sejm.gov.pl/> [access: 28.04.2019].

³⁹ Grycuk A., Russel P., *Członkostwo w Unii Europejskiej a rozwój gospodarczy Polski. Wybrane zagadnienia*, Biuro Analiz Sejmowych nr 12(235), 25.10.2017, <http://orka.sejm.gov.pl/> [access: 28.04.2019].

Chart 8 shows that GDP per capita with the expenditure of the European Union for Slovakia, as in the case of the Czech Republic (Figure 5), correlates in the highest degree with a two-year delay in the variable determining the funds received from the EU budget. The graphs clearly show a tendency that can determine the causality of the phenomenon.

In each of the graphs above (except for employment) one can observe a situation in which these countries are highly correlated in terms of the analysed indicators, which is most probably still the effect of the combined state from the early 90s of the 20th century. However, despite this, the gross national income of these countries per capita approached in 2009 (i.e. after the financial crisis). In addition, the income per capita of Slovakia from the value of 52% of the EU average in 1998 increased to 76.2% in 2016⁴⁰.

The difference between the economic development of Slovakia and other EU countries has also been significantly reduced by the inflow of investment in the preceding decade and after the accession of this country to the European Union. Structural reforms and greater market efficiency were possible mainly due to funds allocated for investments, which later determined economic growth⁴¹.

Summary

The paper presents the effectiveness of subsidizing countries with funds from the European Union budget on the example of the Visegrad Group countries in the years 2000-2017. The interdependencies between these countries have been identified, and on the basis of key macroeconomic indicators (GDP per capita, employment) an outline of their economic situation before and after accession to the European Union was indicated. The presented empirical studies, the theoretical part and cited literature of the subject allowed us to formulate the following conclusions:

1. There is a positive trend indicating a strong correlation between funds received from the European Union (EU expenditure) and GDP growth per capita.
2. In terms of GDP per capita, the countries of the Visegrad Group are very strongly correlated with each other. In the case of employment in the years 2000-2013, Hungary and Poland remain inversely interdependent.
3. Among the countries of the Visegrad Group, Poland was financed to the greatest extent – both in terms of quantity and in relation to GDP per capita.

⁴⁰ Havlat M., Havrlant D., Kuenzel R., Monks A., *op. cit.*, s. 2-4

⁴¹ Havlat M., Havrlant D., Kuenzel R., Monks A., *Ibidem*, s. 8-10.

4. The Czech Republic and Slovakia show a similar tendency as to the relative change in economic indicators, which may be a result of the times before the division of Czechoslovakia.
5. Most likely, for political reasons in 2006, there was a decline in employment in Hungary, despite the high growth rate in the other countries surveyed.

In summary, the actual causality of the relationship between the increase in European Union expenditure and GDP growth per capita has not yet been examined and cannot be clearly defined. In the above work, based on empirical studies, a tendency for interdependence between these factors was demonstrated and the literature cited observations that together form a partial assessment of the effectiveness of using the European Union's investment intervention in the context of economic development of the Visegrad Group countries in 2000-2017.

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