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ANALYSIS OF THE RELATIONSHIP BETWEEN FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH IN THE EU COUNTRIES

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Abstract. To what extent does financial development determine economic growth? Despite the obvious relationship between the level of financial development and economic growth rates, there is still no consensus on the significance and focus of this relation. Is there a directed impact of the level of financial development on economic growth, or does the development of a financial sector follow economic growth? Or is the relation between financial development and economic growth bidirectional? The aim of the research is to analyze the causal relationship between quantitative and dynamic differences in financial development and economic growth in the EU countries in the period 1995 - 2017. The period of the research from 1995 to 2017 is determined by the availability of financial development indicators for the EU countries. In order to prove the directed impact of the level of financial development on economic growth in the EU countries in the period 1995-2017, the average values of growth in the financial development index with the lag forwarding by one year, with the lag falling behind by one year, without the lag, and average values of the GDP growth per capita were analyzed.

Keywords: financial development; economic growth

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JEL Classifications: E44, G10, G19, O16

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1. Introduction

The evolution of the concept of financial development began in the 6th century BC – 15th century AD and it still continues up to now, going through a number of stages and terminological corrections from elements of the financial market to modern interpretations of financial development according to functions and results. The issue of the impact of the financial market on economic growth was first raised almost 150 years ago within the classical school. In the early 20th century, J. Schumpeter examined the issue applying it to the theory of entrepreneurship. Later, due to objective factors – two world wars and the Great Depression – the issue of relation between the financial market and economic growth was out of the scope of the economic science. Since the early 1960s, there has been a steady increase in interest in this issue: first large-scale research of mainly historical and economic nature, were carried out. In the 1970s-1980s, there were works which rejected a verbal description of the influence of the financial market on economic growth in a particular country or countries in favor of building theoretical models, including those based on economic and mathematical methods, taking into account the determinants of financial development: openness, political power and political institutions, financial liberalization, legal traditions, economic institutions, macroeconomic determinants, as well as determinants that characterize culture and geography (Voghoei at al., 2011, La Porta, at al., 2002, Acemoglu, at al., 2001, Acemoglu at al., 2002, Acemoglu, at al., 2003, Acemoglu, at al., 2005, Acemoglu and Robinson 2006, Rodrik, 2005, Huybens and Smith 1999, Levine, 2005, Stulz and Williamson, 2003, Kitanović and Krstić, 2009). The increasing importance of the financial market for the global economy, processes of its liberalization, development of the finance theory, and emergence of new models of economic growth encouraged the active growth of scientific knowledge in this area (Đekić et al., 2019). Therefore, the concept “financial development” was not defined initially, but rather evolved from that of financial markets. A clear definition and structure of the concept of financial development has not yet been developed. The most detailed description of the definition and structure of financial development was provided in the World Bank documents in the late 1980s in order to reflect the relation between the saturation of the economy with monetary resources, complexity and branching of the financial and monetary system on the one hand, and economic growth rates on the other (Global Financial Development Report, 2013). Therefore, the judgements about financial development should be made according to the resultant structures of the development of financial markets and institutions: financial depth, availability of financial services (financial inclusion), financial efficiency, and financial stability (Čihák et al., 2012).

A. Gershenkron in his analysis of the problems of economic backwardness (Gershenkron, 1962), pointed to the role of the banking sector as one of the factors: the level of economic development before industrialization determines how important the role of the banking sector will be in this process. Thus, speaking about the direction of causal relationship, A. Gershenkron noted that economic development establishes the need for financial services, which increases the demand for external funds. If the difference in growth by sectors or industries is large, the demand for financing will belong to the leading sectors. In this case, mediation encourages economic growth by directing the savings of mostly small investors to large investors.

In 1966 H. Patrick (Patrick, 1966) identified direct and inverse relation between financial development and economic growth calling them “demand following” and “supply leading”. “Demand following” occurs when external sources of financing are needed to sustain the economic growth. “Supply leading” occurs when financial institutions accumulate savings and transform them into investments for the development of certain sectors of the economy. Patrick determined that “demand following” occurs at later stages of development, while “supply leading” is more typical of earlier stages. Thus, it is asserted that financial development affects economic growth, and this direction of the causal relationship is typical of developing countries. In the case of developed countries, its direction is opposite: economic growth itself generates the development of the financial system. A well-known

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expert in the field of economic history R. Cameron applied a similar approach for the research into relationship between the financial market and economic growth and described the relationship between the financial market and economic development in England, Scotland, France, Belgium, Germany, Japan, and Russia in the 19th century. Cameron also argues that financial systems may both encourage economic growth and be a consequence of it.

R. Goldsmith (Goldsmith, 1969) established that there is a linear relationship between finance and economic growth through efficiency gains and cumulative investment, and determined a linear positive relationship between the ratio of financial assets to GDP and GDP per capita for 35 countries in the period from 1860 to 1963. However, he could not prove his assumption about the impact of the financial depth structure on economic growth because of the lack of data on the securities market development for a large number of countries.

Over the past 30 years, research has focused mainly on the impact of financial development on economic growth. In most studies, the model structure is of the AK type (Accumulated Capital Model) (Romer, 1986; Lucas, 1988), in the sense that there is a constant return on a fairly broad concept of capital.

Researchers Aoife Hanley, Wan-Hsin Liu, Andrea Vaona (Hanley et al., 1973) determined that financial development of the region has a positive impact on the efficiency of regional innovation (patenting) in China and, consequently, on economic development. King, R. and Levine, R. (King and Levine, 1993) argue that a higher level of financial development significantly correlates with faster present and future rates of economic growth. Authors Altaf Hossain, Suman Biswas, Md. Nasif Hossain & Arnab Kumar Poddar (Hossain et al., 2017) obtained interesting research results when they used factor analysis for some selected indicators of the financial sector in Bangladesh in the period 1988-2013. The factor analysis shows that financial indicators of size, depth and stability, financial availability and efficiency cause economic growth insignificantly. Khan (Khan et al., 2005) evaluated the relationship between financial development and economic growth using regression analysis in Pakistan. A modern financial system facilitates investment in business, mobilizes savings, controls the manager's work, allows trading, hedging, diversifying risks, and providing services for the exchange of goods and services. He concludes that financial development has a positive impact on economic growth. Levine (Levine, 2002) also believes that the financial structure does not help explain differences between countries in their financial development, nor does it always explain economic growth. Beck and Levine (Beck and Levine, 2002) confirm that there is no single optimal institutional structure for providing financial functions in the economy. Merton and Bodie (Merton and Bodie 2004) also believe that the financial structure is not a particularly useful indicator of the extent to which the financial system contributes to economic growth.

Most of the studies confirmed the relationship between financial development and economic growth rates for different groups of countries and time periods. At the same time, a number of researchers show ambiguity of their conclusions about the direct relationship between the financial market development and economic growth, especially for low-income and middle-income countries. Using the example of loans to a private sector (Arcand et al., 2012) as well as highly liquid liabilities (Law and Singh, 2014), the authors of these studies show that the growth in the financial sector contributes to the development of the economy only up to a certain threshold; further financial development ceases to stimulate growth.

The final resolution on this issue has not yet been reached; it is necessary to clarify the nature of the relationship between financial development and economic growth in the EU countries.

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2. Methodology

The study will examine three main hypotheses that explain the relationship between financial development and economic growth:

H1: there is a directed impact of the level of financial development on economic growth.

H2: development of financial sector follows the economic growth.

H3: there is a bidirectional causal relationship between financial development and economic growth.

H1 is the “financial supply” hypothesis, which explains the impact of the financial sector on the development of the real economy by the fact that financial markets and institutions, by increasing the supply of financial services, create prerequisites for future economic growth. A lack of access to financial resources hinders the creation of new growth points and does not contribute to sustainable economic development (McKinnon, 1973). This hypothesis was confirmed in cross-country studies (King and Levine, 1993) and proved for a number of Asian (Kwan et al., 1998) and African countries (Ndebbio, 2004).

H2 is the “financial demand” hypothesis, according to which financial development depends on changes occurring in the real sector. Financial development follows economic growth as a result of the increased demand for financial services (Robinson, 1952).

H3 hypothesis states that there is a mutual influence of the level of financial development and economic growth, i.e. development of the financial system can contribute to economic growth, and economic development in turn contributes to the development of financial markets (Greenwood and Smith, 1996). The level of development of the financial system largely determines the economic development of countries. In the context of growing globalization and at the same time instability of the global economic system, a stable financial system becomes a “safety cushion” that can help in times of global economic turmoil and maintain a favorable climate in the national economy. There is a number of theoretically founded mechanisms through which financial development contributes to economic growth. Development of financial markets leads to the increase in transaction and information costs (Petrović and Krstić, 2011) and helps to reduce risks when making investment decisions. The financial system affects capital accumulation by mobilizing savings and distributing them among different capital investments. Financial markets also contribute to the growth in the real economy by facilitating the exchange of goods and services (Levine, 1997).

Thus, the purpose of the research is to determine the validity of one of the hypotheses for the EU countries in the period 1995-2017. In this study, the indicator of economic growth is the change in the values of GDP per capita, and the indicator of financial development is the change in the values of the financial development index (Global Financial Development Report).

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3. Results

Analysis of the relationship between economic and financial development in the EU countries

Analyzing dynamics of the average value of the financial development indices and the average value of the GDP per capita in the 28 EU countries in the period 1995-2009 (irrespective of the year of accession), we can also make a conclusion about the relationship of these indicators.

However, since the 2009 crisis year, the significantly “failed” average values of the financial development index started to increase with decreasing average values of the GDP per capita (see Figure 1 below).

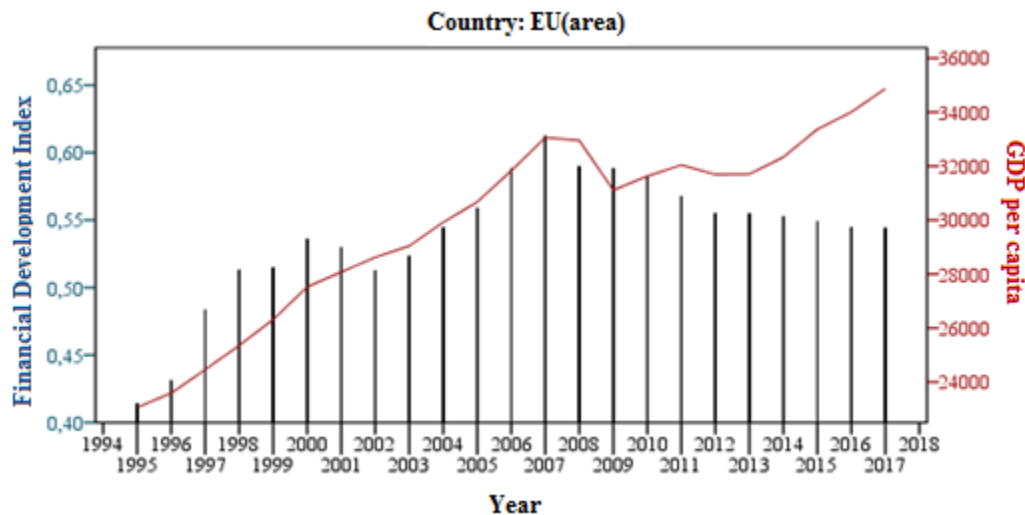


Fig. 1. Dynamics of the average value of the financial development index and the average value of the GDP per capita for all 28 EU countries in the period 1995-2017.

Source: developed by the authors in SPSS

However, if we consider trends in the changes in the values of GDP per capita and the values of the financial development index as far as countries join the EU, i.e. with a changing number of participating countries, since 2013, when Croatia joined the EU, the average values of GDP per capita decreased, while the average values of the financial development index increased in dynamics. It is obvious that the fifth EU enlargement in 2004 had the highest negative impact, much higher than the impact of the 2008-2009 crisis, on both the average values of the financial development index and GDP per capita (see Figure 2 below).

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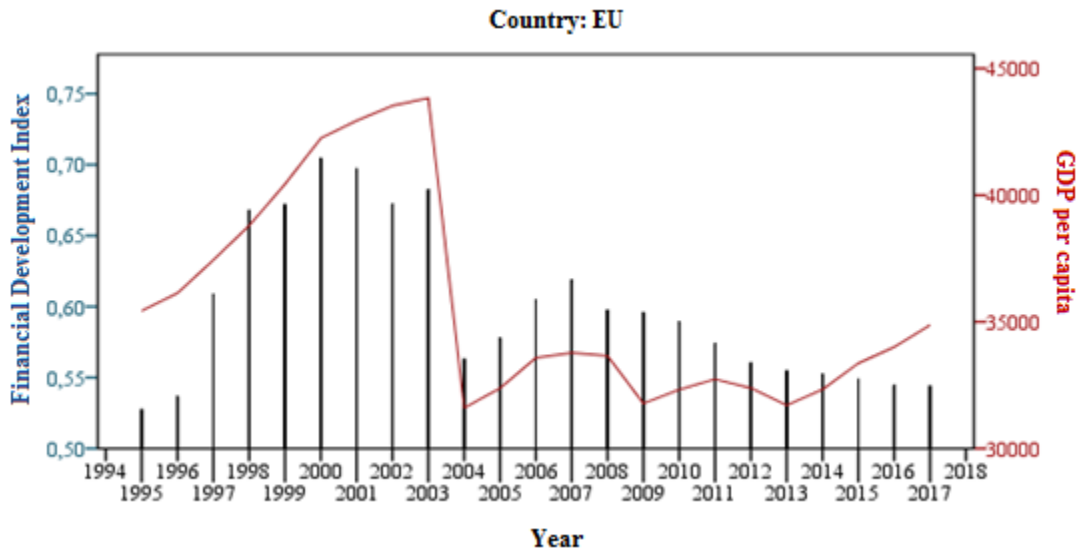


Fig. 2. Dynamics of the average value of the financial development index and the average value of the GDP per capita in the EU* countries in the period 1995-2017.

Source: developed by the authors in SPSS

Note: the EU gradually expands by way of the accession of new member states:*

1957 — signing of the Treaty of Rome setting up the European Economic Community: Belgium, the Federal Republic of Germany, Italy, Luxembourg, the Netherlands, and France.

1973 — first EEU enlargement (Denmark, Ireland, and the United Kingdom joined).

1981 — second EEU enlargement (Greece joined).

1986 — third EEU enlargement (Spain and Portugal joined).

1995 — fourth enlargement (Austria, Finland, and Sweden joined).

1999 — introduction of single European currency — euro (in circulation since 2002).

2004 — fifth enlargement (the Czech Republic, Hungary, Poland, Slovakia, Slovenia, Estonia, Latvia, Lithuania, Cyprus, and Malta joined).

2007 — second wave of the fifth enlargement (Bulgaria and Romania joined).

2013 — sixth enlargement (Croatia joined).

Having carried out the correlation analysis between the indicators of average values of financial development and GDP per capita in groups of countries in the period 1995-2017, two periods, which characterize the linear correlation, were identified: a pre-crisis period (from 1995 to 2008) and a crisis and post-crisis period (from 2008 to 2017).

It is determined that there is a strong linear positive correlation between financial development and economic development for both the 28 EU countries and the EU with the increasing number of member countries in the period 1995-2008, while in the period 2008-2017 there is a rather strong negative linear correlation (see Table 1).

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Table 1. Pearson correlation coefficients (p-value from 0 to 0.05) characterizing a linear correlation between the average values of financial development and GDP per capita in the groups of countries in the period 1995-2008

Country	R (Pearson) 1995-2008	R (Pearson) 2008-2017
EU with the increasing number of member states	0.812	-0.622
EU (EU area)	0.943	-0.756

Source: developed by the authors in SPSS

Thus, it was determined that for the 28 EU countries in the pre-crisis period there is a strong linear positive correlation between financial development and economic development, and in the crisis and post-crisis period there is a strong linear negative correlation between financial development and economic development. The observed linear correlation between the values of the financial development index in the EU countries and GDP per capita in the EU countries for each year from 1995 to 2017 is positive and significant. The correlation appears in cross-sections by year throughout the period under study (1995–2017). Dynamics of the correlation coefficient in the spatial sample is presented in the table 2 below.

Table 2. Dynamics of the Pearson correlation coefficient (p-value from 0 to 0.05) characterizing a linear correlation between the values of financial development and GDP per capita in cross-sections by year in the period 1995–2017. (EU area)

Year	R (Pearson)	Year	R (Pearson)	Year	R (Pearson)	Year	R (Pearson)
1995	0.828	2001	0.765	2007	0.667	2013	0.700
1996	0.795	2002	0.751	2008	0.696	2014	0.662
1997	0.795	2003	0.747	2009	0.702	2015	0.674
1998	0.766	2004	0.746	2010	0.706	2016	0.680
1999	0.752	2005	0.737	2011	0.694	2017	0.690
2000	0.751	2006	0.714	2012	0.722		

Source: developed by the authors in SPSS

Thus, there is a close relationship between the level of financial development and the level of GDP per capita, appeared both in spatial samples of the EU countries throughout the period under study and in dynamic series.

Dynamic analysis of growth in the values of financial development index and the values of economic development.

The previous paragraph stated that there is a linear relationship between financial and economic development. Now, it is necessary to determine whether there is a relationship between the growth in financial development and economic growth, as well as to determine the direction of this relationship.

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From the analysis of Figure 3, which characterizes the dynamics of growth in the average value of the financial development index and growth in the average value of GDP per capita in all EU countries in the period 1995-2017, we can clearly see a causal relationship: the decline in the growth of the financial development index is followed by the decline in the GDP growth, which supports the first hypothesis. The Pearson correlation coefficient which characterizes a linear correlation between the average values of financial development growth and the average values of growth in GDP per capita for the EU countries comprises 0.476 ($p\text{-value} < 0.05$).

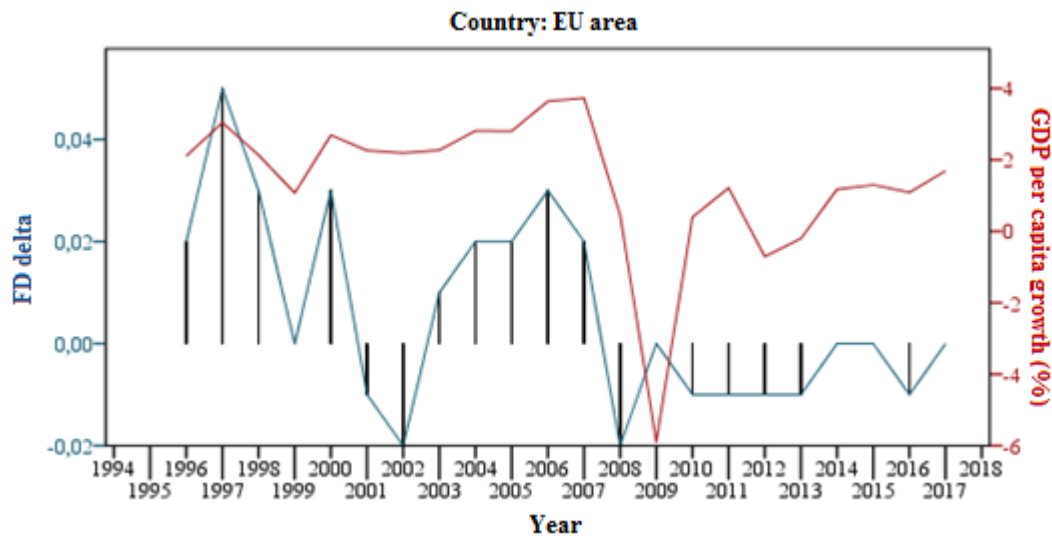


Fig. 3. Dynamics of the growth in the average value of financial development index and the growth in the average value of GDP per capita for all EU countries in the period 1995-2017.

Source: developed by the authors in SPSS

Figure 4 clearly shows the correlation between the growth in the values of financial development index and the growth in GDP per capita. The accession of new member countries to the EU in 2004 influenced significantly the growth in the values of financial development index. The crisis had a great impact on the GDP growth - in 2009 the growth “crashed”. A weak positive linear correlation between the growth indicators of the financial development index and the GDP per capita growth was determined: the Pearson correlation coefficient comprises 0.094 ($p\text{-value} < 0.05$).

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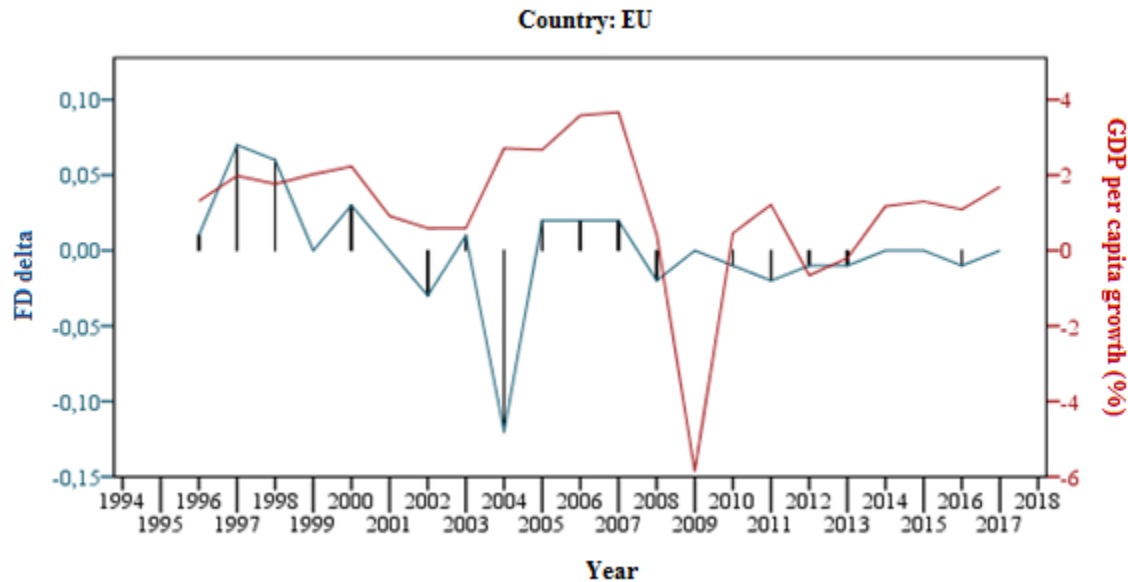


Fig. 4. Dynamics of growth in the average value of financial development index and in the average value of GDP per capita in the EU* countries in the period 1995-2017.

Source: developed by the authors in SPSS

Note: the EU gradually expands by way of the accession of new member states:*

1957 — signing of the Treaty of Rome setting up the European Economic Community: Belgium, the Federal Republic of Germany, Italy, Luxembourg, the Netherlands, and France.

1973 — first EEU enlargement (Denmark, Ireland, and the United Kingdom joined).

1981 — second EEU enlargement (Greece joined).

1986 — third EEU enlargement (Spain and Portugal joined).

1995 — fourth enlargement (Austria, Finland, and Sweden joined).

1999 — introduction of single European currency — euro (in circulation since 2002).

2004 — fifth enlargement (the Czech Republic, Hungary, Poland, Slovakia, Slovenia, Estonia, Latvia, Lithuania, Cyprus, and Malta joined).

2007 — second wave of the fifth enlargement (Bulgaria and Romania joined).

2013 — sixth enlargement (Croatia joined).

Thus, the determined positive linear relationship between the growth in values of financial development and the economic growth confirms the correlation between the abovementioned variables; the growth in values of financial development in general predetermines the economic growth rate, presumably, with the lag of one year. This confirms the hypothesis of “financial supply”.

In order to clarify the data obtained in the previous paragraph, let us consider the dynamics of growth in the average value of the financial development index with the lag $t-1$, $t+1$ and the growth in the average value of GDP per capita in all EU countries, as well as in different groups of countries in the period 1995-2017.

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Figure 5 shows the influence of growth in the values of financial development index on economic growth. The positive linear correlation between the growth indicators of the financial development index and the growth in GDP per capita in all EU countries was determined: the Pearson correlation coefficient for the average value of the financial development index with the t-1 lag comprises 0.326 (p-value<0,05).

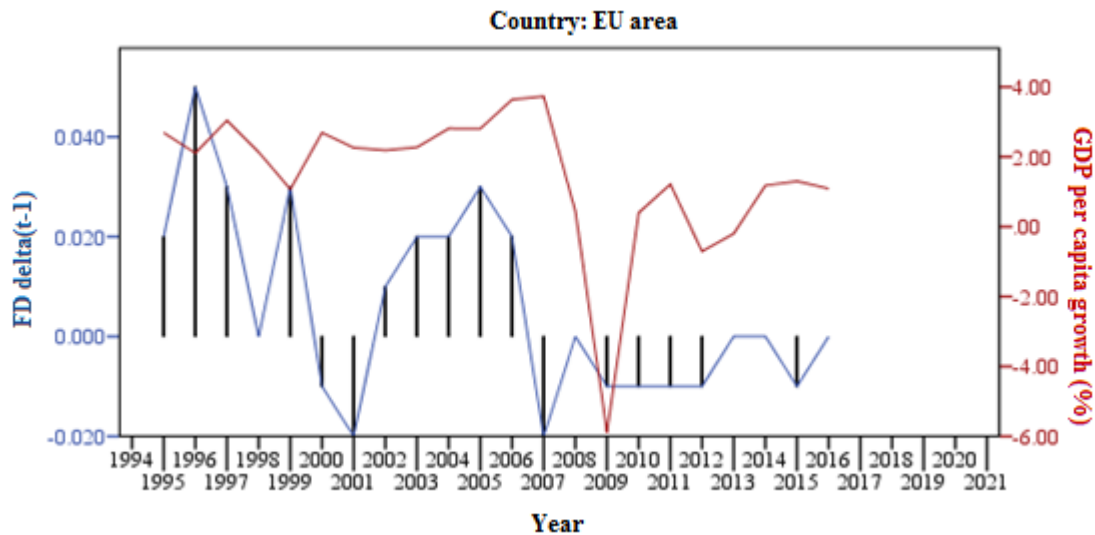


Fig. 5. Dynamics of growth in the average value of the financial development index and in the average value of GDP per capita for all EU countries in the period 1995-2017.

Source: developed by the authors in SPSS

The positive linear correlation between the growth indicators of the financial development index and the GDP per capita growth for all EU countries was determined: the Pearson correlation coefficient for the average value of the financial development index with the lag t+1 comprises 0.484 (p-value<0.05). The Pearson correlation coefficient for the average value of the financial development index without the lag comprises 0.476 (p-value<0.05). Thus, it can be clearly seen in the figure, as well as it is confirmed by the correlation analysis, the growth in values of financial development as a whole predetermines the economic growth rates the lag by 1 year.

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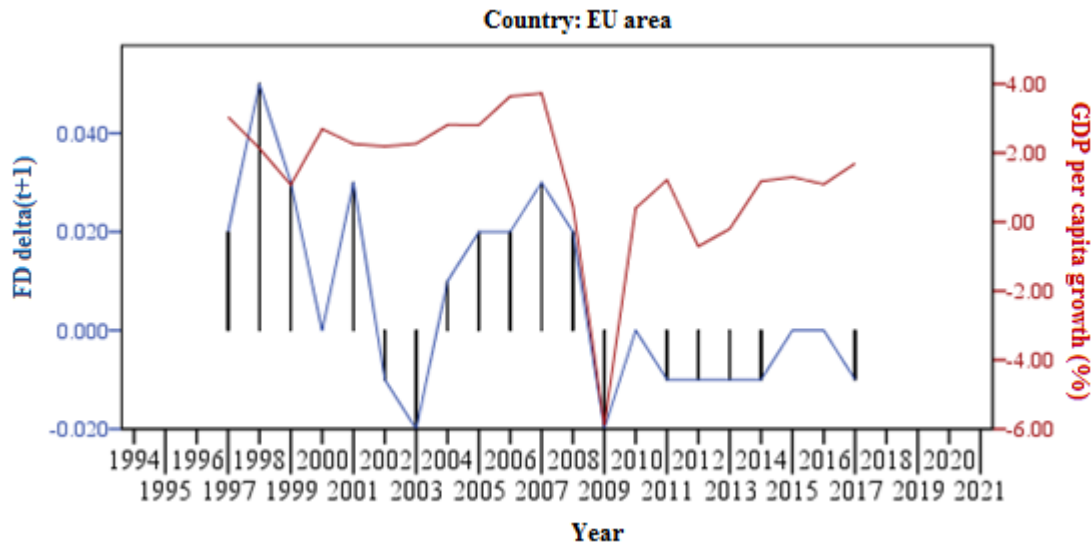


Fig. 6. Dynamics of growth in the average value of financial development index with the lag $t+1$ and in the average value of GDP per capita for all EU countries in the period 1995-2017.

Source: developed by the authors in SPSS

Summarized data of the correlation analysis characterizing the linear correlation between the average values of financial development with lags and the GDP per capita growth in the groups of countries in the period 1995-2008 revise the first hypothesis proposed for the groups of countries (Table 3):

Table 3. Pearson correlation coefficients ($p\text{-value} < 0.05$) characterizing the linear correlation between the average values of financial development with lags and the GDP per capita growth in the groups of countries in the period 1995-2008.

Country	R (Pearson) _{t-1}	R (Pearson) _{t+1}	R (Pearson) _t
Founding country	0.153	0.544	0.536
EU members since 1973	0.245	0.491	0.169
EU members since 1981	0.348	0.192	0.396
EU members since 1986	0.137	0.632	0.493
EU members since 1995	0.137	0.449	0.685
EU members since 2004	0.312	0.495	0.329
EU members since 2007	0.234	0.243	0.358
EU members since 2013	0.200	0.425	0.128
EU	0.326	0.484	0.476

Source: developed by the authors in SPSS

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Thus, in general, the EU countries in the period from 1995 to 2017 are characterized by the hypothesis of “financial supply”, according to which the impact of the financial sector on the development of the real economy is explained by the fact that financial markets and institutions, increasing the supply of financial services, create prerequisites for the future economic growth. However, if we consider certain separate groups of countries, the relationship between economic growth rates and financial development is individual and can change its direction over time, so it was necessary to confirm the hypothesis with the correlation analysis results. Therefore, in the groups of countries that joined the EU in 1981, 1995, 2007 the third hypothesis is true: there is a mutual influence of the financial development level and economic growth, i.e. the development of the financial system can contribute to economic growth, and economic development in turn contributes to financial development.

4. Discussion and conclusions

There is a number of theoretically founded mechanisms through which financial development contributes to economic growth. There are a few channels through which the financial system affects economic growth. In particular, the development of financial markets leads to the reduction in transaction and information costs and helps reduce risks in making investment decisions. The financial system affects capital accumulation by mobilizing savings and distributing them among different capital investments. Financial markets also contribute to growth in the real economy by facilitating the exchange of goods and services (Levine, 1997).

Despite the evident link between the level of financial development and economic growth rates, up to now, there is no consensus on the significance and focus of this link. In this regard, three main hypotheses that explain the relationship between the level of financial development and economic growth were identified. The first hypothesis includes the statement about the directed influence of the financial development level on economic growth. This hypothesis is a “financial supply” hypothesis which explains the impact of the financial sector on the development of a real economy by the fact that financial markets and institutions, increasing the supply of financial services, create prerequisites for the future economic growth. The second hypothesis includes the statement that financial development follows economic growth. This hypothesis is a “financial demand” hypothesis, according to which financial development depends on changes occurring in the real sector. Financial development follows economic growth as a result of the increased demand for financial services. The third hypothesis argues that there is a bi-directional causal link between financial development and economic growth, i.e. development of the financial system can contribute to economic growth, while economic development in turn contributes to the development of financial markets.

The analysis of the impact of financial development in the EU countries on their economic growth in the period 1995-2017 shows that there is a close relationship between the financial development level and the GDP per capita level, manifested both in spatial samples of the EU countries during the period under study and in dynamic rows. The determined positive linear relationship between the growth in the values of financial development and economic growth confirms the dependence of financial development in the EU countries on their economic growth. The analysis of trends in the average values of the financial development index with the lag forwarding by one year, with the lag falling behind by one year, without the lag shows that the increase in the values of financial development in general predetermines the economic growth rate with the lag forwarding by one year for the majority of groups of countries gradually joining the EU. This confirms the “financial supply” hypothesis. However, if we consider separate groups of countries, the relationship between economic growth rates and financial development is individual and can change its direction over time. In this regard, the hypothesis was confirmed by the results of correlation analysis. Therefore, in the groups of countries that joined the EU in 1981, 1995, 2007 the third hypothesis is true: there is a mutual influence of the financial development level and

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economic growth, i.e. development of the financial system can contribute to economic growth, and economic development in turn contributes to financial development.

Thus, the direction of the relationship between economic growth and financial development depends on the period of study and structure of the groups of countries under study. Therefore, all three hypotheses may be true under the above-mentioned circumstances, which is confirmed by the works of various researchers discussed in the article.

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