

FINANCIAL DEVELOPMENT AND ITS IMPACT ON ECONOMIC
GROWTH (THE CASE OF LATVIA)

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Abstract. The discussion about the impact of financial development on economic growth is still relevant for economists. However, in recent years, after the financial crises of the first decade of the 21st century, there has arisen certain scepticism about the positive impact of the growing financial sector on economic growth rates. Moreover, specific cases of negative consequences of such a connection or its absence have become known. The 2008-2010 crises, certainly, played an important role in rethinking the nature of the impact of the financial sector on the real sector in the economy, which led to new arguments in favour of a relatively more cautious approach to stimulating the financial sector, given the potential negative effects on the country's socio-economic security. The aim of the research is to determine the nature of the relationship between financial development and economic growth and its direction in Latvia in the period 1995 - 2017.

Keywords: financial development; economic development; Latvia; EU

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JEL Classifications: E44, G10, G19, O16

1. Introduction

The evolution of the concept of financial development began in the 6th century BC- 15th century AD and continues up to now, going through a number of stages and terminological corrections from elements of the financial market to the modern interpretation of financial development according to its 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 (Schumpeter 1954) 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 fell out of the scope of the economic science.

Different authors reflect different characteristic features providing their definition of “financial development”:

financial depth, expressed in terms of private-sector credit and market capitalization to GDP; “liquid assets of the financial market to GDP”; or financial development is equated with financial sector development and other approaches. The authors support the views of such researchers as Ito, Kawai (Ito, Kawai 2018), Čihák, Demirgüç-Kunt, Feyen (Čihák et al. 2012), Levine (Levine, Zervos 1998; Levine, Zervos 1993; Levine 2002; Levine 2004; Levine 2005; Levine et al. 2000), Sanjaya Kumar LENKA (Sanjaya Kumar LENKA 2015), Sofia Anwar (Anwar et al. 2017), Dubauskas (Dubauskas 2012), Kaźmierczyk (Kaźmierczyk 2012), Kordík and Kurilovská (Kordík, Kurilovská 2017), Novickytė, Pedroja (Novickytė, Pedroja 2014), Ohotina, Lavrinenko, Gladevich, Lazdans, Ignatjeva, Lonska, (Ohotina et al. 2018a, 2018b), Aleksejeva, Šipilova, Jermolajeva (Aleksejeva et.al. 2018) , Adamczyk (Adamczyk et al. 2019), Aleksejeva, Ostrovska, Aleksejevs (Aleksejeva et.al. 2020) and Stasytytė (Stasytytė 2015) and believe that financial development is a multifactorial concept. The authors believe that financial development is a complex concept that reflects the indicators of financial markets and financial indicators of institutions - financial depth, access to financial services (financial integration), financial efficiency, and financial stability, which quantitatively change in the process of globalization, convergence, liberalization, and digital transformation in a certain country or region.

The presence and nature of the dependence of economic growth on financial development depends on the methods for assessing financial development, the study period, and the composition of the sample of countries (Table 1).

Table 1. Impact of financial development paradigms on economic growth

Structure of the sample	Research period	Methods	Source
England	19th century	Method of logical analysis and synthesis	Bagehot 1887
England, the USA, Belgium, Germany, Holland, etc.	19 th -20 th centuries	Method of logical analysis and synthesis	Гильфердинг 1922
The USA, etc. (countries around the world)	20 th century	Method of logical analysis and synthesis, deduction	Schumpeter 1939
England, Scotland, France, Belgium, Germany, Japan, and Russia	19 th century	Method of logical analysis and synthesis, deduction	Cameron 1967
35 countries around the world	1860 - 1963	Linear correlation	Goldsmith 1969
South Korea, Indonesia, Taiwan, Japan, Germany, Argentina, Brazil, Chili, etc.	20 th century	Dynamic rows	McKinnon 1973, Shaw 1973
Ireland, Switzerland, Angola, India, Egypt, South Korea, Japan, the USA, etc.	20th century	Accumulated capital model	Romer 1986, Lucas 1988
Pakistan, India, Sri Lanka, Nepal, Bangladesh	1994. – 2012	Panel data factor analysis	Sofia Anwar, Hina Shahzadi, Samia Nasreen 2017
20 lower-middle-income countries	1990. – 2012	Panel data analysis	Bilal, Songsheng Chen, and Bushra Komal 2016
32 countries	1978 – 1990	Correlation analysis	Dong He, Robert Pardy 1993
Saudi Arabia	1970 – 2010	Dynamic rows with auto regression	Hazem A. Marashdeh 2014
Bangladesh	1988 – 2013	Analysis of factors	Md. Nasif Hossain & Arnab Kumar Poddar 2017
144 countries	2017	Regression analysis	Pietrucha, Acedański 2017
Ireland	1995- 2007	Econometric analysis of time series	Adamopoulos 2010

Source: developed by the author

The result of the studies listed in the table was both evidence of a linear relationship between financial development and economic growth, and its absence or nonlinearity.

In addition to the paradigms described above, researchers raise the question of the direction of the relationship “financial development - economic growth”. However, a predominant direction of causality comes from financial development to economic growth:

- the level of financial development influences the economic growth (McKinnon 1973; Levine 1997; King, Levine, Zervos 1993; Levine et al. 2000; Honohan 2004; Kwan et al. 1998; Ndebbio 2004, etc.)
- development of the financial sector follows economic growth (Robinson 1952; Greenwood, Smith 1996; Demetriades, etc.);
- there is a two-way causal link between financial development and economic growth (Greenwood and Smith 1996; Demetriades, Hussein, 1996, etc.).

Thus, the aim of this research is to determine both the nature of the relationship between financial development and economic growth and its direction in Latvia in the period 1995 - 2017.

2. Design and the sample of the research

In order to achieve the aim of the research, the authors use the financial development index (Rethinking Financial Deepening ... 2015), which has the following structure (Table 2):

Table 2. Indicators that characterise the base series of the financial development index (FDI)

	Financial institutions	Financial markets
Depth	1. Private-sector credit (% of GDP) 2. Pension fund assets (% of GDP) 3. Mutual fund assets (% of GDP) 4. insurance premiums, life and non-life (% of GDP)	1. Stock market capitalization to GDP 2. Stocks traded to GDP 3. International debt securities government (% of GDP) 4. Total debt securities of nonfinancial corporations (% of GDP) 5. Total debt securities of financial corporations (% of GDP)
Access	1. Branches (commercial banks) per 100,000 adult population 2. ATMs per 100,000 adult population	1. Percent of market capitalization outside of top largest companies 2. Total number of issuers of debt (domestic and external nonfinancial corporations and financial corporations)
Efficiency	1. Net interest margin 2. Lending-deposits spread 3. Non-interest income to total income 4. Overhead costs to total assets 5. Return on assets 6. Return on equity	1. Stock market turnover ratio (stock traded/capitalization)

Source: Rethinking Financial Deepening... 2015

Each indicator is standardized from 0 to 1. The lowest value of the indicator for countries is zero, and all other values are measured regarding this minimum value. In order to avoid the pitfalls appearing as a result of extreme data, the values of variables of the 5th and 95th percentile are defined as cut-off levels. Indicators are defined in a such way that higher values indicate better financial development. Then, the indicators are grouped into six sub-indexes in the lower part of the pyramid (see above). The aggregation is a weighted average of the base series, where the weights are derived to reflect the contribution of each base series to a particular sub-index. Finally, sub-indexes are similarly aggregated into higher indexes using the same procedure; the FDI index is aggregated in a similar way. Sub-indexes are constructed as weighted average of the base series where weights are the squares of the factor loadings from the analysis of principal components, in such a way that their sum comprises 1.

The result of the methodology is a relative ranking of countries in terms of depth, access, and efficiency of financial institutions and financial markets, as well as the financial development index FDI.

GDP per capita growth is the indicator of economic growth within the framework of the research.

3. Research results

In 1995, the value of the financial development index in Latvia comprised 0.13 and Latvia occupied the 21st place in the EU ranking; in 2017 the value of the financial development index in Latvia comprised 0.28 and Latvia also occupied the 21st place in the EU ranking. In the period under study, the growth rates of the financial development index values increased by 120% from the base level in 1995 (100%).

Having analysed the dynamics of the financial development index values, 2 periods have been determined: the increase of the index values from 1995 to 2007 and the decrease of the index values (with some short-term fluctuations) after 2007. Although the values of the financial development index increased in 2009 and 2010, a general trend can be observed, which is characterized by a decrease in the values of the index. Having looked at the values of GDP per capita in the period 1995 - 2007, we can note a steady increase, starting from 2007 - a decrease in GDP values until 2010, from 2010 to 2017 - GDP per capita increase in value. In 2013, GDP reached and exceeded the level of 2007.

For the typology of the EU countries according to the data of 1995 by sub-indexes: financial institutions efficiency index, financial institutions depth index, financial markets depth index, financial institutions access index, financial markets access index, financial markets efficiency index, 2 factors have been determined. The second factor, which describes 17% of the dispersion, is characterized by a financial markets efficiency index with a factor loading of 0.992. The first factor describing 53% of the dispersion is described using the following indexes: financial institutions efficiency index (factor loading 0.897), financial institutions depth index (factor loading 0.867), financial markets depth index (factor loading 0.804), financial institutions access index (factor loading 0.734), financial markets access index (factor loading 0.640).

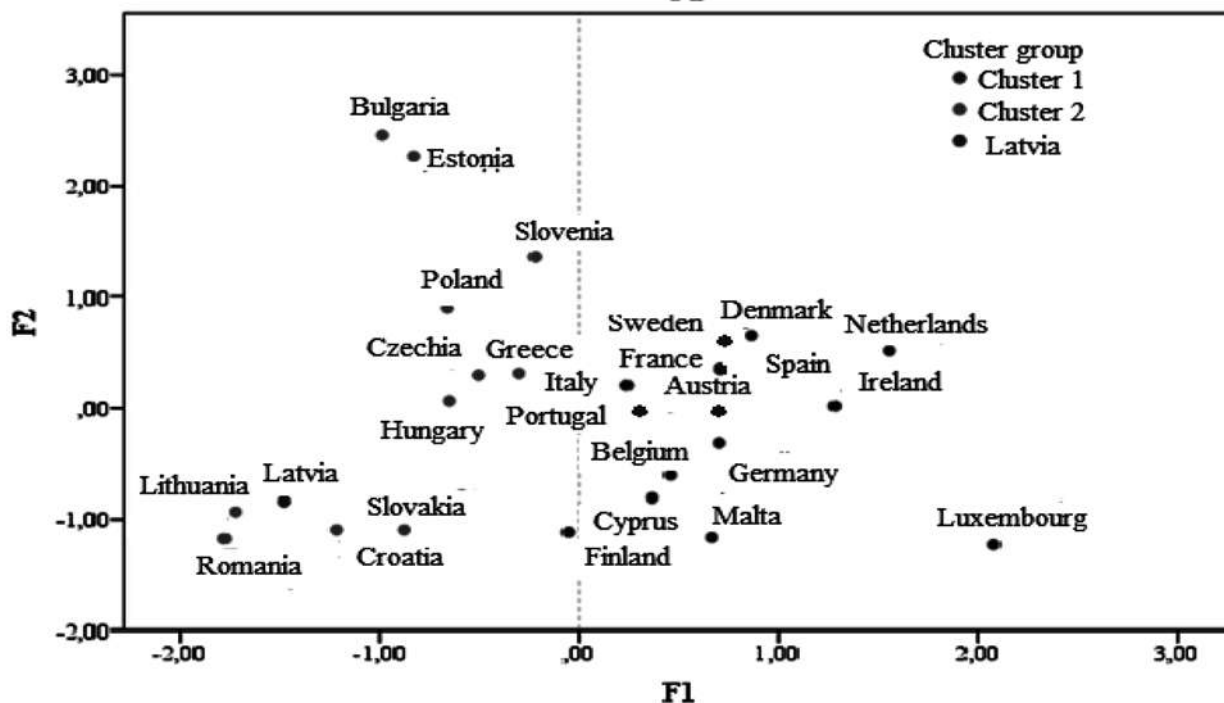


Fig. 1. Cluster groups in the factor space, 1995

Source: authors' calculations in SPSS software

Latvia refers to cluster group 2 in a two-factor space (see Fig. 1). The EU countries are fairly evenly distributed in clusters: 15 countries belong to the 1st cluster, 12 - to the 2nd cluster .

The main difference between the clusters is formed by the financial institutions depth sub-index. The first cluster is characterized by values of this sub-index up to 0.392 (including), the second cluster - values starting from 0.392 and higher. Looking at the cluster profiles (see Fig.2), it can be noted that the first cluster is characterized by relatively higher values of sub-indexes such as the financial institutions efficiency index - with an average value of 0.8, the financial institutions depth index (0.6), the financial markets depth index (0.31), the financial institutions access index (0.67), the financial markets access index (0.4) compared to the second cluster, and a relatively lower value of a sub-index such as the financial institutions efficiency index (0.31) compared to the second cluster. The second cluster, respectively, is characterized by relatively low values of such sub-indexes as the financial institutions efficiency index - with an average value of 0.53, financial institutions depth index (0.19), financial markets depth index (0.06), financial institutions access index (0.36), financial markets access index (0.21), compared to the first cluster and the value of the financial markets efficiency sub-index (0.47), which is relatively higher than in the first cluster.

According to the data of 1995, Latvia belongs to the second cluster with lower sub-index values. Latvia has particularly low values in such indicators as the financial markets depth sub-index (0.01), the financial markets access sub-index (0.05) and the financial institutions depth sub-index (0.05).

A linear relationship was found between the GDP per capita indicator and the financial development index in 1995 in the sample of the EU countries. Thus, Latvia has a positive medium-strength linear relationship between GDP per capita and the financial development index in 1995: Pearson correlation coefficient 0.557 (p-value <0.05), as well as there is a negative weak linear relationship between GDP per capita growth indicator and financial development index in 1996: Pearson correlation coefficient - 0.327 (p-value <0.05). The weakest linear positive relationship between GDP per capita and financial institutions depth sub-index: r (Pearson) = 0.106 (p-value <0.05), as well as between GDP per capita and financial market efficiency sub-index (Pearson) = 0.121 (p-value <0.05). A positive moderately strong linear correlation was found with the other indicators (see Table 3.4). The weakest linear negative correlation is between the GDP per capita indicator and the financial institutions efficiency sub-index: r (Pearson) = - 0.063 (p-value <0.05) and the financial market depth sub-index: r (Pearson) = - 0.063 (p-value <0.05) (see Table 3).

Table 3. Correlation coefficients between the financial development index (and its sub-indexes) and GDP per capita, as well as GDP growth per capita (%) in cluster groups 1 and 2 in 1995

	Cluster group			
	Cluster 1		Cluster 2	
	GDP per capita	GDP growth per capita (%)	GDP per capita	GDP growth per capita (%)
Financial development index	,598	,076	,557	-,327
Financial institutions index	,400	,012	,678	-,171
Financial markets index	,585	,107	,394	-,373
Financial institutions depth index	,314	,374	,106	-,110
Financial institutions access index	,158	-,271	,635	-,184
Financial institutions efficiency index	,520	,215	,679	-,063
Financial markets depth index	,724	-,051	,629	-,063
Financial markets access index	,225	,082	,534	-,384
Financial markets efficiency index	-,030	,172	,121	-,277

Source: authors' calculations in SPSS software

Note: significance level 0.05

For the typology of the EU countries according to 2017 data by sub-indexes: financial institutions efficiency index, financial institutions depth index, financial markets depth index, financial institutions access index, financial markets access index, financial markets efficiency index, 2 factors have been determined. The first

factor describing 41% of the dispersion is characterized by the following sub-indexes: financial institutions efficiency index (factor loading 0.904), financial markets depth index (factor loading 0.896), financial institutions depth index (factor loading 0.715). The second factor, which describes 37% of the dispersion, is characterized by such sub-indexes as the financial markets access index with a factor loading of 0.866, the financial institutions access index with a factor loading of 0.822, and the financial institutions efficiency index with a factor loading of 0.579.

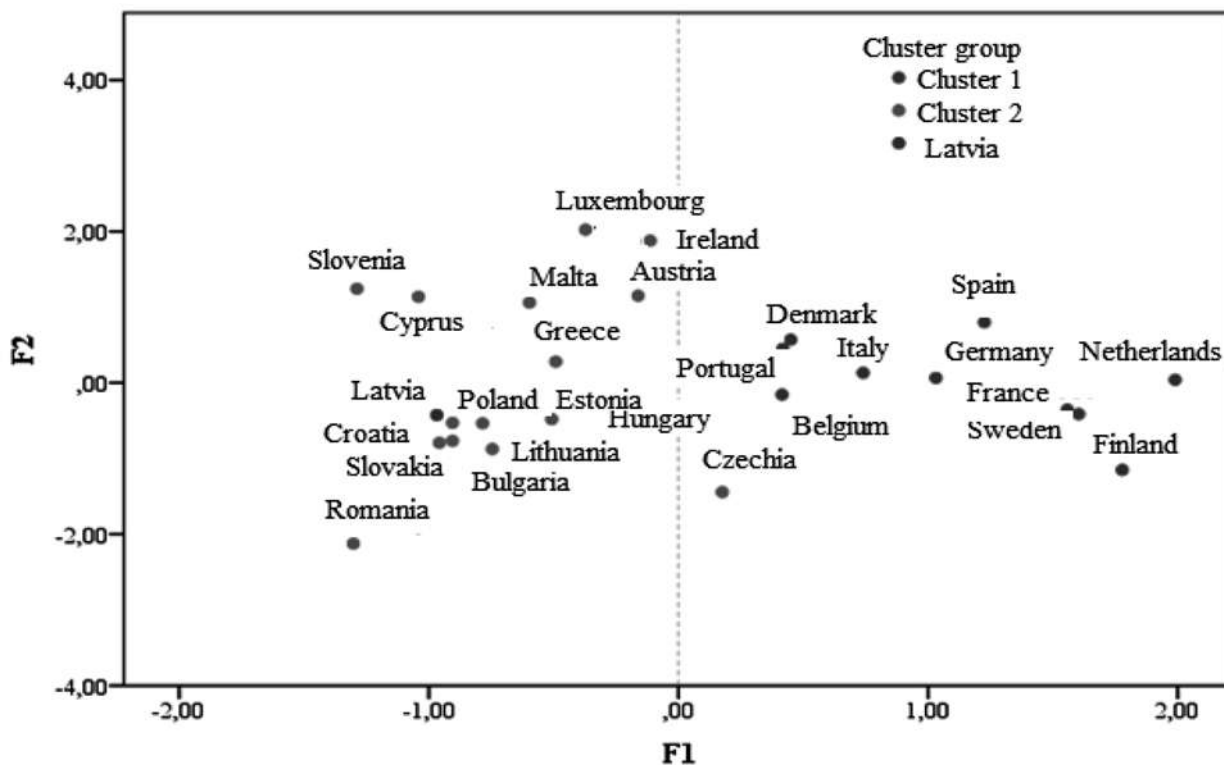


Fig. 2. Cluster groups in the factor space, 2017

Source: authors' calculations in SPSS software

Latvia relates to the second cluster group in the two-factor space (see Fig. 2). The EU countries are evenly divided into clusters as follows: 10 countries belong to the first cluster, 17 - to the second one.

The biggest difference between the clusters is in the values of the financial institutions depth sub-index. A group of 13 countries can be characterized with values of this sub-index up to 0.443 (inclusive), the second group includes countries with values of 0.443 and higher, which are typical for all 10 countries of the first cluster, as well as 4 countries from the second cluster with a financial institutions depth sub-index value higher than 0.443. However, the second group is heterogeneous in terms of financial market access criteria: a group of countries with a financial market access sub-index value below 0.795 (inclusive) consists of 10 countries in the first cluster and 1 country in the second cluster; a group of countries with the financial markets access sub-index value greater than 0.795 includes 3 countries in the second cluster.

According to the data of 2017, Latvia is included in the second cluster with lower sub-index values. The values of indicators are particularly low for Latvia according to the sub-indexes of financial markets depth (0.06), financial markets access (0.15), financial markets efficiency (0.08), and financial institutions depth (0.13) (see Fig. 3). However, compared to 1995, the financial markets efficiency sub-index has negative dynamics: the value of the sub-index decreased from 0.16 to 0.08. Small changes in the positive dynamics are observed in such indicators as the financial institutions access sub-index (increase from 0.23 to 0.57) and the financial institutions efficiency sub-index (increase from 0.48 to 0.78).

Table 4. Correlation coefficients between the financial development index (and its sub-indexes) and GDP per capita, as well as GDP growth per capita (%) in cluster groups 1 and 2 in 2017

	Cluster group			
	Cluster 1		Cluster 2	
	GDP per capita	GDP growth per capita (%)	GDP per capita	GDP growth per capita (%)
Financial development index	,375	-,401	,581	-,698
Financial institutions index	,326	-,417	,345	-,549
Financial markets index	,273	-,247	,483	-,491
Financial institutions depth index	,310	-,337	,610	-,789
Financial institutions access index	,067	-,277	-,063	-,250
Financial institutions efficiency index	,449	,077	,553	-,504
Financial markets depth index	,428	-,139	,594	-,559
Financial markets access index	,176	,127	,151	-,361
Financial markets efficiency index	-,088	-,312	,547	-,384

Source: authors' calculations in SPSS software

Note: significance level 0.05

A linear relationship was found between such indicators as GDP per capita and the financial development index in 2017 in the sample of the EU countries. Thus, Latvia is characterized by a positive linear relationship between GDP per capita and the financial development index in 2017: the Pearson correlation coefficient is 0.581 (p-value <0.05), as well as there is a negative linear relationship between GDP per capita growth rate and financial development index in 2017: the Pearson correlation coefficient is -0.698 (p-value <0.05). The weakest linear positive relationship is observed between the indicators - GDP per capita and the financial institutions access sub-index: r (Pearson) = - 0.063 (p-value <0.05), as well as between such indicators as GDP per capita and financial market access sub-index: r (Pearson) = 0.151 (p-value <0.05). The linear relationship with the other indicators is positive and relatively stronger (see Table 4).

In order to explain the relationship between changes in financial development and economic growth in Latvia's data for the period 1995 - 2017, it is necessary to examine the following hypotheses:

- 1) there is a directed impact of financial development on economic growth;
- 2) development of financial sector follows the economic growth;
- 3) there is a two-way causal link between changes in financial development and economic growth.

In order to prove the hypotheses, it is suitable to use the lags of the financial development index values forwarding by one year and falling behind by one year.

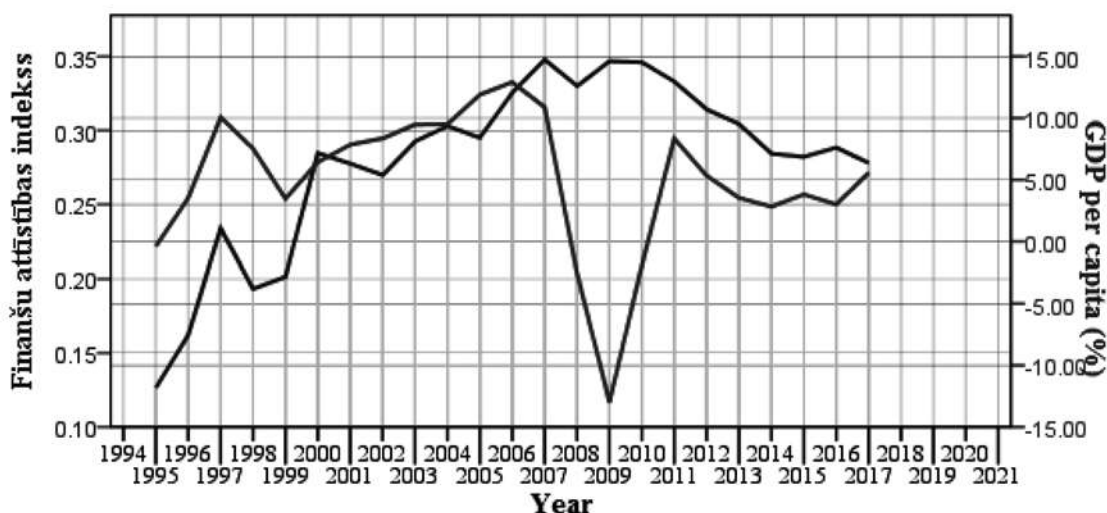


Fig. 3. Dynamics of growth in the values of financial development index and GDP per capita in Latvia in the period 1995-2017

A strong positive linear relationship was found between the financial development index values and the GDP per capita growth rates in Latvia in the period 1995 - 2017: r (Pearson) = 0.860 (p -value <0). There is also a strong linear positive relationship between GDP per capita growth in Latvia in the period 1995 - 2017 and financial institutions index: r (Pearson) = 0.844 (p -value <0); as well as with indexes such as the financial institutions depth index r (Pearson) = 0.795 (p -value = 0.001), the financial institutions access index r (Pearson) = 0.783 (p -value = 0.002), the financial institutions efficiency index r (Pearson) = 0.847 (p -value <0), the financial markets depth index r (Pearson) = 0.800 (p -value = 0.001). There is no linear relationship between GDP growth per capita in Latvia in the period 1995 - 2017 and the financial markets index (p -value = 0.511); as well as with sub-indexes - the financial markets access index (p -value = 0.070); the financial markets efficiency index (p -value = 0.449).

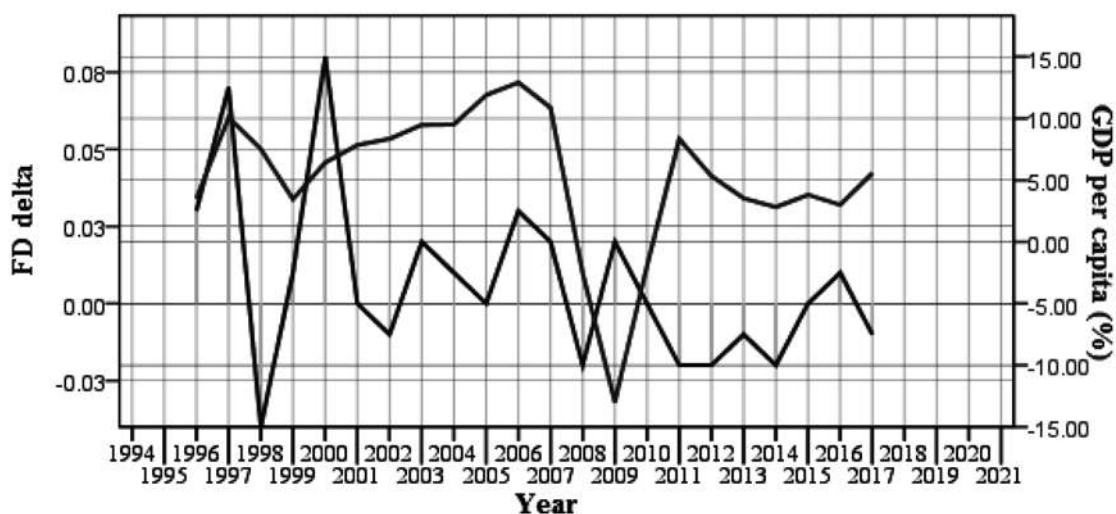


Fig. 4. Dynamics of growth in the values of financial development index and GDP per capita in Latvia in the period 1995-2017

Figures 4, 5, 6 clearly demonstrate the hypothesis about the directed impact of changes in financial development on economic growth.

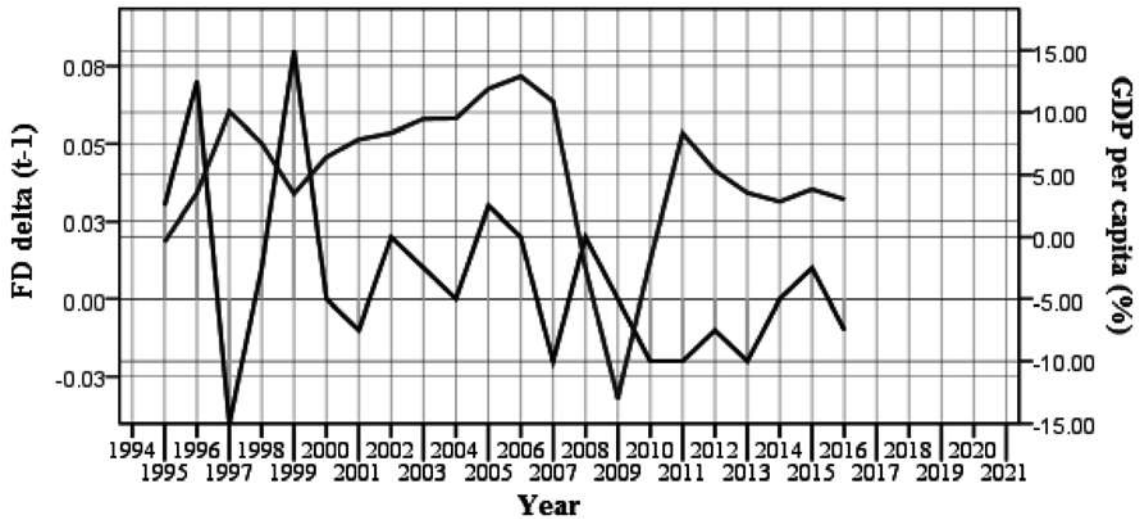


Fig. 5. Dynamics of growth in the values of financial development index with the lag t-1 and in the values of GDP per capita in Latvia in the period 1995-2017

Figure 6, which characterizes the value of the financial development index with the growth dynamics of the lag $t + 1$ and the increase in the value of GDP per capita in Latvia in the period 1995 - 2017, clearly shows the coincidence of line dips in 1999 and 2009. From 2009 onwards, the trend of the two lines being in line with each other's trends is particularly pronounced, indicating the accuracy of the first hypothesis.

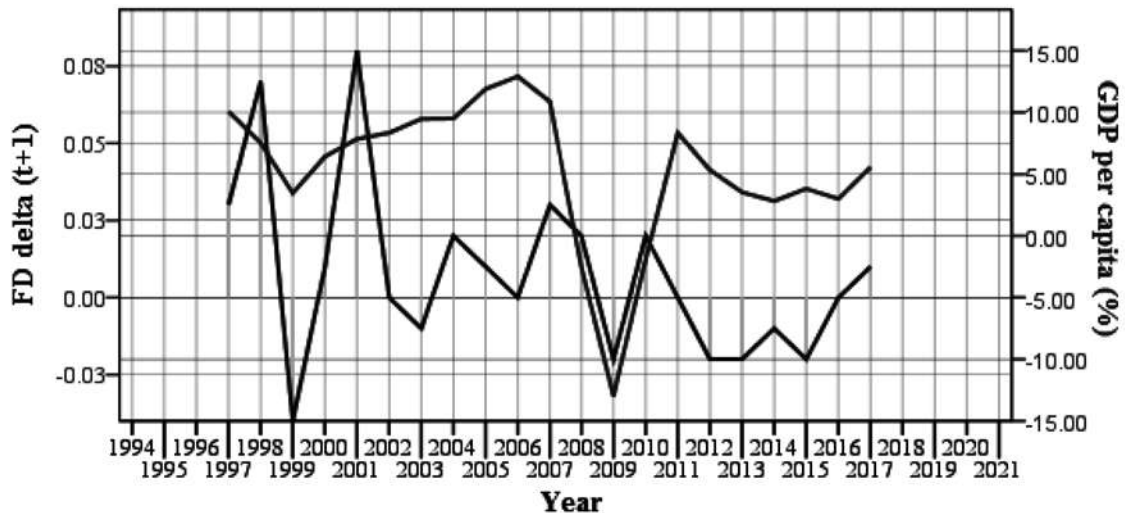


Fig. 6. Dynamics of growth in the values of financial development index with the lag t+1 and in the values of GDP per capita in Latvia in the period 1995-2017.

Thus, it has been determined that the “financial supply” hypothesis is true in Latvia in the period 1995 - 2017. According to this hypothesis, the influence of the financial sector on the development in the real economy is explained by the fact that financial markets and institutions, increasing the supply of financial services, create the preconditions for future economic growth. However, in Latvia, GDP growth is influenced by rather developed financial institutions (their depth, access, efficiency); poorly developed financial markets do not affect GDP growth, the only exception is the financial markets depth, although the value of the financial markets depth sub-index is very low.

Conclusions and discussion

In Latvia in the period 1995 - 2017, the “financial supply” hypothesis is true. According to this hypothesis, the impact of changes in financial development on economic growth is explained by the fact that financial markets and institutions, by increasing the supply of financial services, create preconditions for future economic growth. Rather developed financial institutions (their depth, availability, and efficiency) affect GDP growth in Latvia, while poorly developed financial markets do not affect GDP growth; the exception is the financial markets depth, although the value of this sub-index is very low. This fact is confirmed by the previous studies on the impact of financial development in various groups of the EU countries on their economic growth in the period 1995-2017 carried out by the authors: there is a close relationship between the level of financial development and the level of GDP per capita, which is reflected both in the spatial samples of the EU countries throughout the entire study period, and in time series. The determined positive linear relationship between the growth of financial development values and economic growth confirms the dependence of the financial development in the EU countries on their economic growth (Čižo et al 2020). Analysis of trends in the average values of the financial development index with a lag forwarding by one year, a lag falling behind by one year and with no lag, showed that for most groups of countries gradually entering the EU the increase in financial development values in general predetermines economic growth rates with a lag forwarding by one year. This also confirms the “financial supply” hypothesis. However, if we consider certain groups of countries, the relationship between economic growth and financial development is of individual nature and can change its direction over time. Therefore, in the groups of countries that joined the EU in 1981, 1995, and 2007, the hypothesis about the mutual influence of the financial development level and economic growth is true, i.e. the development of the financial system can contribute to economic growth, and economic development in turn contributes to financial development. Latvia belongs to the group of countries that joined the EU in 2004, therefore, the hypothesis about the impact of financial development on economic growth is true about Latvia.

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