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DETERMINANTS OF FINANCIAL DEVELOPMENT OF THE EU COUNTRIES IN THE PERIOD 1995-2017*

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Abstract. The aim of the research is to determine the impact of openness and political stability which characterize the state of political rights and civil liberties; financial state regulation; the determinant of legal traditions which determines judicial independence, impartiality of the courts, protection of property rights, etc., the determinant of financial institutions, as well as the impact of certain macroeconomic indicators on the financial development of the EU countries in the period 1995 – 2017.

Keywords: financial development; EU; determinants of financial development

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JEL Classifications: E44, G10, G19, O16

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1. Introduction

There is a large number of factors which influence financial development; and specialized literature considers various approaches to the systematization of these factors (Voghouei et al. 2011).

Determinant of openness. It has been determined that a significant growth in international trade and capital flows have a positive effect on financial development (Zingales 2003). Huang and Temple (Huang 2005, Huang & Temple 2005) found that the increase in the level of market openness leads to the increase in financial depth. Moreover, countries with more advanced financial systems are more likely to increase exports of manufactured goods in GDP, and to increase exports of goods. Easing restrictions on international flows affects the liquidity of stock markets, which allows a larger number of foreign banks to operate (Levine 2005), and has a positive impact on the performance of the domestic banking system.

Determinant of financial liberalization. Financial liberalization can be considered as the sum of the following components: privatization of public financial institutions and banks, a guarantee for a free entry into the financial sector and independence of the Central Bank, abolition of tools for monetary control and introduction of free tools for interest rate control (Arestis, 2005; Arestis and Demetriades 1997; Arestis et al. 2002; Caplinska and Ohotina, 2019). Liberalization of financial markets leads to better allocation of resources, and higher levels and efficiency of investment.

Other authors believe that financial development is affected by the prevailing form of ownership of credit institutions, as well as the features of the prevailing model of corporate ownership and management of financial institutions (Novickytė and Pedroja 2014). It is more convenient to consider these factors from the viewpoint of the analysis of their configuration that determines the restriction of financial development and growth of economy (Čižo et al. 2018). Low banking capitalization and a low level of corporate management in banks were important features in the countries that had experienced financial liberalization. “Undercapitalized” banks have incentives to take on excessive risks, especially if additional “guarantees” of security (for example, a system of deposit insurance) have been introduced into the banking system. This phenomenon can be interpreted as a “defect” of the financial market. Minimization of its impact is associated with the establishment of an effective system of financial regulation and supervision. It should include strict requirements to maintenance of the amount of equity, increase in the transparency of banks’ risk management systems, and disclosure of information about the relative exposure to large risks. It is possible to achieve the establishment of a better mechanism for financial intermediation via improving the corporate model, which implies a transition to the market control over banks’ actions, and to the control by the stock market. In this case, it is really possible to connect the establishment of an effective system of bank’s risk management with a system that allows “fining” bank shareholders who take excessive risk. This would entail the enhancement of market discipline of bank managers and could create conditions for sustainable growth.

Determinant of legal traditions. L’opez de Silanes (L’opez de Silanes et al. 1998) emphasizes the significance of a legal system for ensuring the protection of property rights. The relationship between the system of law and the degree of development of capital markets has been established in the works by La Porta, L’opez de Silanes et al., etc. Countries of the French branch of civil law (continental branch) have less developed capital markets, compared to the countries belonging to the Common Law system (the English branch). However, there are not any significant differences between groups of countries in respect of the development of the banking sector. Having studied legal rules and practice of rights protection of minority shareholders and creditors, the authors determined that the countries of the Common Law system create stronger protection for shareholders. Within the group of the code law, countries of the French civil law provide the worst legal protection for shareholders and creditors. The legal origin has a significant impact on the law enforcement practice. Countries of the Common Law system and Scandinavian countries of civil law have a better quality of the law enforcement practice, while

countries of the French civil law have the worst one. An interim conclusion drawn from these studies is that countries with a continental model of law, which presumably provide less legal protection to minority shareholders and creditors, have less developed capital markets and a greater concentration of ownership at the level of industries and firms. However, the importance of belonging to a particular legal tradition turned out to be less pronounced for the development of the banking system.

In addition, as Zingales (Zingales 2003) mentioned, countries with the legal system based on the French civil code in 1913 and 1929 were at the same level of development as the Common Law countries. Their lagging behind started only after World War II. This could be a possible indication against the decisive influence of the factor of belonging to a certain legal tradition. Moreover, as Zingales showed, it is closely related to a set of historical, cultural, socio-economic, and political-economic factors. Therefore, it is extremely difficult to determine the priority and distinguish any of them.

Determinant which characterizes institutions. There is a large number of interpretations of the concept “institution”. North, D.C (North and Thomas 1973; North 1990) provided the following definition of institutions: “Institutions are the rules of the game of a society or more formally are the humanly devised constraints that structure human interaction”. Hodgson (Hodgson 2006) believes that “institutions are the systems of established and prevalent social rules that structure social interaction”. He states that organizations are specialized institutions. Dixit and Greif (Dixit 2004; Greif 2000) define institutions as “a system of social factors – rules, beliefs, norms, and organizations that guide, determine, and constrain human actions”. This definition also included the concepts of an organization and institutions, presenting the organization as an example of institutions.

Institutions can be classified into two groups:

1. Formal or “strict” (public) institutions - universal and transferable (to other people) rules that include the Constitution, laws, statutes, regulations, and norms, as well as their elements such as the rule of law and property rights, strict compliance with the terms of the contract and the independence of regulatory systems (Amin 1999).
2. Informal or “soft” institutions – they form the social capital of society and include a number of features of life in a certain society, such as norms, traditions, social conventions, interpersonal contacts, relationships, and informal groups, which are an important element for the formation of trust within society.

Acemoglu, Johnson и Robinson (Acemoglu et al. 2005; Acemoglu et al. 2001; Acemoglu et al. 2002; Acemoglu et al. 2003; Acemoglu et al. 2005; Acemoglu and Robinson 2006) studied formal institutions in more detail and presented the following interrelated classification:

1. Economic institutions. This group includes factors that determine the structure of incentives in society (i.e. incentives for economic agents to invest, accumulate production factors, make transactions, etc.) and ensure the redistribution of resources in the economy. For example, the structure of property rights, barriers to business, types of contracts formalized in legal documents, and tax transfer redistribution schemes.
2. Political power and political institutions. Economic institutions are the result of the collective choice of society. Society is made up of different groups with often opposite interests. The relative political power of these groups determines their ability to manage resources and implement economic policies. The distribution of political power determines the structure and quality of economic institutions. This, in turn, is a consequence of political power, i.e. the power which arises from economic results. Political institutions include institutions which delegate political power between various groups. They are related to the characteristics of the government and current constitution.

Voghouei (Voghouei et al. 2011) noted that political choice determines the forces of influence on the development and functioning of the financial system. Beck (Beck et al. 2001) highlights that a financial system in the country under centralized, authoritarian, and closed political regime is likely to be less developed than in the country with democracy and an open, highly competitive government that is controlled by law. Political and

economic factors directly affect financial development and have an indirect influence on other determinants of financial development. For example, an economic institution is one of the key factors of financial development. This factor is endogenous and it is determined by political institutions. Acemoglu (Acemoglu et al. 2005) claimed that different economic institutions lead to different distribution of resources. Siegle, Weinstein and Halperin (Siegle et al. 2004) suggest that democracy can be seen as a source for development. The authors believe that democratic systems are “always stronger” than authoritarian regimes; democracy and political freedom can promote financial development, as they support the establishment of such important institutions as mechanisms for checks and balances, a system of self-monitoring and restrictions based on regulations.

Voghouei (Voghouei et al. 2011) identified that political factors both directly affect financial development and play an important role in the formation of institutional openness.

Governments can pursue national economic goals, as well as narrow political interests by controlling banks' decisions regarding credit support for enterprises. This factor and a number of other factors prove that the privatization of banks can improve the efficiency of credit allocation and, therefore, have a positive effect on the quality and volume of investments. La Porta, Lopez-de Silanes, and Shleifer in their work provided the assessment of the impact of bank privatization on the economic growth (La Porta et al. 2002). They discovered that government ownership of banks is negatively correlated with both financial development and growth. At the same time, a 10% decrease in the share of bank assets owned by the government is related to 0.25% increase in growth per year. In addition, they show that it is impossible to achieve a positive effect of growth if the privatization of banks happens without elimination of institutional defects (a weak protection of property rights and low government efficiency).

Governments do not always demonstrate their willingness to use the potential resource of financial development. A political and economic factor can explain a phenomenon of uneven financial development, i.e. the existence and power of a pressure group which either supports or opposes the idea of financial openness and financial development. The history of the 20th century demonstrate that financial development can be neither provided nor be a success if the ruling elite opposes it (Načisčionis et al. 2018.). Poor development of financial markets creates an environment for officials from large and well-known industrial or financial companies to benefit from monopolistic nature of rents. Companies' market power under a poor disclosure system and weak contracts imposes high entry barriers for new potential agents. Therefore, the management of such companies (having a strong influence in the government) often opposes financial openness and financial development.

Development level of the standards of financial reporting. The impact of accounting standards (Subačienė et al. 2018; Nadhir and Wardhani 2019), a bankruptcy system, and management standards and procedures on the growth and development of the financial sector was investigated by Levine and Beck, and others (Beck 2002; Beck et al. 2001; Levine 2005; Puryaev, Puryaev, 2019).

The authors found that countries with better accounting information, with an appropriate level of protection of investors' and creditors' rights, tend to have more intense development of financial intermediation. This way, the growth prospects are enhanced by the fact that the legal environment, formal and informal rules and procedures that structure the information environment and regulate the behaviour of corporate participants and investors, acting together, encourage the development of financial intermediation. Mechanisms for formation of changes and transfer of impulses to the economy provided by the financial sector, as well as the nature of the factors that determine the development of the financial sector are still relevant topics for research.

In addition to Acemoglu's classification, Rodrik (Acemoglu et al. 2001; Acemoglu et al. 2002; Acemoglu et al. 2003; Acemoglu et al. 2005; Acemoglu and Robinson 2006; Rodrik 2005) studied economic institutions in more detail dividing them into the following groups:

1. Institutions of market formation – institutions of judicial, legislative, and administrative state system which ensure property rights and execution of contracts. Guarantees for property rights and execution of contracts affect incentives for economic activity, contribute to increased productivity and resource efficiency. The incentive structure of economy becomes significantly limited without these institutions.

2. Institutions of market stabilization – institutions of monetary circulation and tax regulation, prudential regulation and supervision, institutions of risk coordination and sharing (for example, a banking and credit system, tax authorities, stock market, pension funds, private and state venture companies, and agencies).

Countries need monetary, fiscal and other measures to combat economic cycles (Katan et al. 2019). Ensuring complex security of the financial flows movement in the national economy system, Journal of Security and Sustainability Issues 9(1): 39-50.. Therefore, the effectiveness of market stabilization institutions provides for consolidation of financial resources, helps to coordinate the work of small and medium-sized investors, allows more efficient allocation of resources in the economy, enables to reduce transaction costs, and to support the innovation process and successful emergence of new sectors in the economy.

3. Institutions of market regulation – regulatory government bodies that provide control and monitoring of various aspects of enterprises' daily activities (opening, expansion, and liquidation of business; access to infrastructure, and land; issue of building permits; compliance with the general rules for foreign trade; licensing and certification; tax rules; sanitary and epidemiological regulations; safety regulations), and have the right to suspend enterprises' activity; institutions of antimonopoly regulation and control which ensure the quality of market competition. Market requires comprehensive rules to reduce possibilities for abusing market power, the influence of external factors, and combating information asymmetry, as well as creation of a product and security standards, etc. In general, the profitability of operations and attractiveness of private investment depend on the efficiency and impartiality of functions of market regulation institutions.

4. Institutions of market legitimization – institutions of human capital development (institutions in the sectors of healthcare, education, social security and insurance).

Institutions provide for appropriate environment for creativity, innovations, and protection of intellectual rights. In addition, they increase competition for potential opportunities (resources), at least as long as the rule of law applies to all members of society without exception. Developed institutions provide for protection of property rights; they also promote full consistency with contracts, integration into the global economy, and support for macroeconomic stability; they help manage financial intermediaries' risks, and provide for social insurance and social protection, as well as hold government accountable. These factors create incentives for economic agents to conclude and implement a larger number of long-term contracts, which eventually contributes to the increase in investment and sustainable economic growth. The quality of institutions has a positive impact on such components of the country's economic development as functions of its financial system, development of entrepreneurship, and inflow of foreign direct investment (FDI).

Macroeconomic determinants. Inflation, investments, and economic growth influence financial development. Huybens and Smith (Huybens & Smith 1999) determined that inflation has a negative impact on financial development. The higher the level of inflation is, the lower the real return on money is, which results in decrease in lending. If the financial sector provides less credit, it means that the distribution of money is inefficient, and has a negative effect on financial development. Levine (Levine 2005) found that the gross national income per capita and the savings rate are positively linked to financial development.

Culture and geography. Stulz and Williamson (Stulz & Williamson 2003) identified the influence of cultural differences such as differences in language and religion on the level of financial development. The study confirmed that culture might be the factor that explains differences between countries regarding protection of investors' rights and provision of compliance with contracts, in particular depending on the rights of creditors.

2. Design and the sample of the research

In the research, financial development is reflected by the indicators of financial development (Rethinking Financial Deepening: Stability and Growth in Emerging Markets) in the EU countries available in the period 1995 - 2017. The indicator of financial development has the following structure (Figure 1):

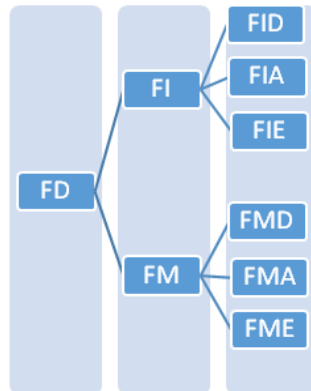


Fig. 1. Structure of financial development indicator

Source: Rethinking Financial Deepening: Stability and Growth in Emerging Markets. Imfstaffdiscussion note 2015.

<https://www.imf.org/external/pubs/ft/sdn/2015/sdn1508.pdf>

Note: FD – financial development; FI – financial institutions; FM – financial markets;

FID - financial institutions depth; FIA - financial institutions access; FIE - financial institutions efficiency; FMD - financial markets depth; FMA - financial markets access; FME - financial markets efficiency.

FID - financial institutions depth is characterized by the following indicators: private-sector credit (% of GDP), pension fund assets (% of GDP), mutual fund assets (% of GDP), insurance premiums, life and non-life (% of GDP).

FIA - financial institutions access is characterized by the following indicators: branches (commercial banks) per 100,000 adults; ATMs per 100,000 adults.

FIE - financial institutions efficiency is characterized by the following indicators: net interest margin; lending-deposits spread; non-interest income to total income; overhead costs to total assets; return on assets; return on equity.

FMD - financial markets depth is characterized by the following indicators: stock market capitalization to GDP; stocks traded to GDP; international debt securities government (% of GDP); total debt securities of nonfinancial corporations (% of GDP); total debt securities of financial corporations (% of GDP).

FMA - financial markets access is characterized by the following indicators: percent of market capitalization outside of top 10 largest companies; total number of issuers of debt (domestic and external, nonfinancial corporations, and financial corporations).

FME - financial markets efficiency is characterized by the following indicator: stock market turnover ratio (stocks traded/capitalization).

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-indices in the lower part of the pyramid (see Fig. above). The aggregation is a weighted average of the base series, where the weights are the squares of the factor loadings from the analysis of principal components, in such a way that their sum comprises 1. Finally, sub-indices are similarly aggregated into higher indices using the factor analysis according to the method of principal components; the FD index is aggregated in a similar way.

The table 1 below presents indicators which characterize determinants of financial development

Table 1. Determinants of financial development: empirical interpretation of indexes

Index	What the index refers to	Source
Freedom to Trade Internationally as a subsystem of Economic Freedom index	Determinant of openness	Fraser Institute
Political Stability index as a subsystem of the Economic Freedom index	Determinant which characterizes institutions: Political power and political institutions	The Freedom in the World Survey
Economic Freedom index Government Regulation index: regulation of business, labour, and credit as a subsystem of Economic Freedom index	Determinant of financial liberalization	Fraser Institute
Legal System and Property Rights	Determinant of legal tradition	Fraser Institute
Sub-indices of Economic Freedom index: freedom of business; freedom of money; freedom of investment; financial freedom, freedom of labour.	Determinant which characterizes institutions: Economic institutions	Heritage Foundation
Inflation Investment Human capital	Macroeconomic determinants	Eurostat
Primary religion	Culture and geography	CIA World Factbook

Source: developed by the authors on the basis of the following sources:

Voghouei et al. 2011, La Porta et al. 2002, Acemoglu et al. 2001, Acemoglu, et al. 2002, Acemoglu et al. 2003, Acemoglu et al. 2005, Acemoglu and Robinson 2006, Rodrik, 2005, Huybens & Smith 1999, Levine 2005, Stulz, R. M. & R. Williamson (2003).

In order to identify the impact of the abovementioned determinants on the financial development of the EU countries in the period 1995-2017, the authors use a correlation analysis; the strength of relationship is characterized by the value of the Pearson correlation coefficient.

3. Research results

In order to calculate the impact of financial liberalization on financial development, the Economic Freedom of the World index (Economic Freedom in the World 2019) published by Fraser Institute in Canada (Fraser Institute) was applied. The integral index consists of sub-indices: Size of Government (a level of state regulation) (EF1), Legal System and Property Rights (EF2), Sound Money (EF3), Freedom to Trade Internationally (EF4), and Regulation (EF5). These 5 areas are divided into 24 components, which in turn also consist of several indicators. In general, 42 variables are used to calculate the index. Their average value determines the level of each component. The assessment of the area is calculated as the average value of all components.

Having calculated correlation coefficients of the Economic Freedom index and the Financial Development index, it is determined that there is a linear dependence; from 1995 until 2000 it was very strong and positive; later, until 2005 the linear dependence was average and positive; after 2005, values of the correlation coefficients decreased gradually, and since 2012, the linear dependence became very weak and positive; in 2017 it became close to 0 (Figure 2).

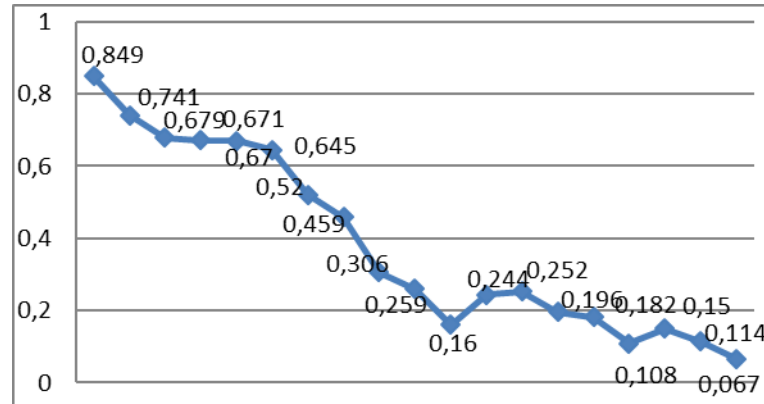


Fig. 2. Pearson correlation coefficients which characterize the linear dependence of the Financial Development index on the Economic Freedom index (p-value<0.01).

Source: the authors' calculations on the data from Rethinking Financial Deepening

In the period 1995 – 2017 the impact of the Economic Freedom index which characterizes financial liberalization gradually decreased from being strong to being very weak.

Size of Government index consists of 4 components: government consumption, transfers and subsidies, government enterprises and investment, top marginal tax rate, and top marginal income tax rate. The index shows to what extent countries rely on a political process when distributing resources, goods, and services. When government spending increases as compared to that of individuals, households, and enterprises, political decision-making replaces personal choice. Government consumption as a share of total consumption, and transfers and subsidies as a share of the GDP are the indicators of the size of government. When government consumption comprises a larger share of the total volume, political choice is replaced with personal choice. Similarly, when governments tax some people in order to provide transfers to others, they restrict people's freedom to keep what they earn. The third component measures the extent to which countries use private investment and enterprises rather than public investment. Governments and state-owned enterprises play by rules that are different from those of private enterprises: they do not depend on consumers and private investors, and often operate in protected markets. The fourth component reflects top marginal income tax rate and top marginal income and payroll tax rate, and the threshold at which these rates begin to apply. These two subcomponents are averaged to calculate the top marginal tax rate. High marginal tax rates, which apply at relatively low levels of income, also indicate the dependence on government. These rates deprive people of results of their work. Therefore, countries with low government spending as a share of the total volume, a smaller sector of state-owned enterprises and lower marginal tax rates have the highest ratings in this area.

There is a negative linear dependence between the values of the **Financial Development** index and the **Government Regulation** index: business regulations, labour market regulations, and credit market regulations (a subsystem of the Economic Freedom index), i.e. the larger the size of government is and the more it interferes in business, labour and credit markets, the poorer the financial development is. In 1995 the Pearson correlation coefficient comprised -0.052, after that it was gradually increasing, and by 2017 it comprised -0.482. Therefore, the influence of this factor on financial development during the period under study increases. At the same time, there is a danger that by controlling the decisions of banks regarding credit support for enterprises, government may pursue not only national economic goals, but also narrow political interests.

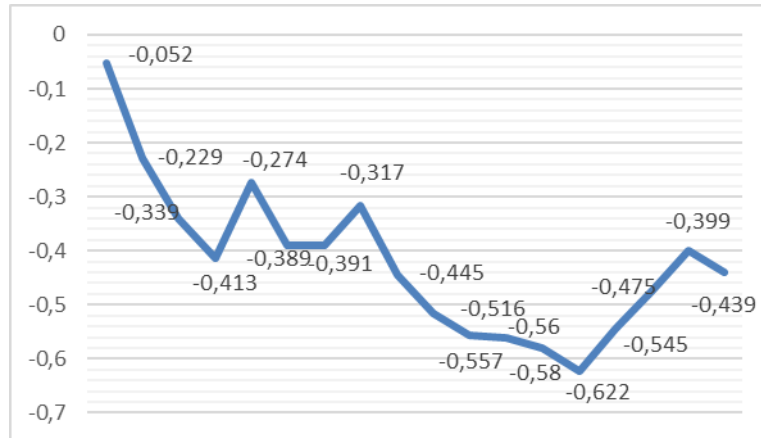


Fig. 3. Pearson correlation coefficients in the period 1995 – 2017 between the values of the Financial Development index and Government Regulation index: business regulations, labour market regulations, credit market regulations (p-value<0.01).

Source: the authors' calculations on the data from Rethinking Financial Deepening

There is a positive impact of the **determinant of financial liberalization** on financial development in the period under study in the EU countries, but this influence decreases sharply every year (Figure 3). However, the impact of government regulation on financial development becomes stronger. For example, J. Stiglitz (Stiglitz 2000) believed that strategies which included financial liberalization (as well as liberalization of capital market) did not take into account one important factor: capital flows are pro-cyclical, so claims that opening of capital markets encourages diversification and increases stability were incomplete. This led to the conclusion that it was necessary to review permitted ways for government intervention which could stabilize the short-term movement of capital, and, therefore, he considered government regulation to be justified.

Freedom to Trade Internationally index reflects international trade taxes (revenue from trade taxes as a share of export and import, mean tariff rate, standard deviation of tariff rates) and regulatory trade barriers (non-tariff trade barriers, compliance costs of importing and exporting), as well as actual volume of foreign trade as compared to the expected one, difference between official exchange rates and black-market exchange rates, government control on international movement of capital (foreign ownership and investment restrictions, restrictions of freedom for citizens to participate in capital operations with foreign partners – the index of monitoring capital operations according to 13 categories of International Monetary Fund).

Having examined the influence of the **determinant of openness**, expressed by the **Freedom to Trade Internationally** index on financial development, a positive linear dependence is determined. However, the value of the Pearson correlation coefficients is gradually decreasing from 0.632 in 1995 to 0.062 in 2017 (Figure 4).

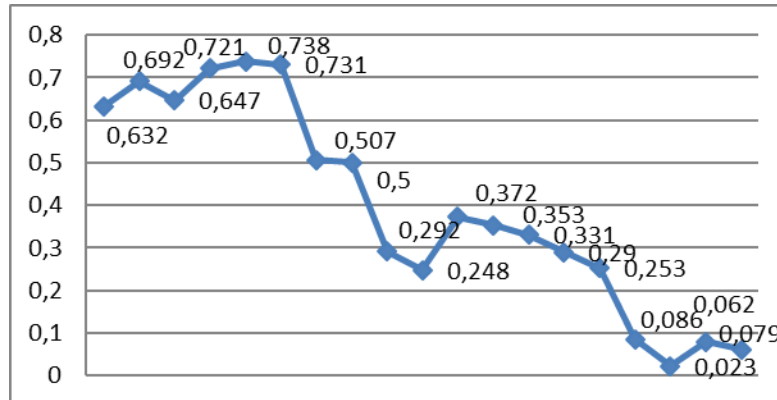


Fig. 4. Pearson correlation coefficients in the period 1995 – 2017 between the values of the Financial Development index and Freedom to Trade Internationally index (p-value<0.01).

Source: the authors' calculation on the data from Rethinking Financial Deepening

Financial development can be neither provided nor be successful if the ruling elite opposes it. Zingales and Rajan explain that the poor development of financial markets creates an environment for officials of large and well-known industrial or financial companies to benefit from monopolistic nature of rents. Companies' market power under a poor disclosure system and weak contracts imposes high entry barriers for new potential agents. Therefore, the management of such companies (having a strong influence in the government) often opposes the openness and financial development. "Open borders decrease the opportunities for politicians to decrease the level of competition and slow down financial and economic growth" (Zingales and Rajan 2003).

Having examined the impact of the **determinant of legal traditions** expressed by the **Legal System and Property Rights** index on financial development, a positive linear dependence is determined. The Legal System and Property Rights index reflexes judicial independence, impartial courts, protection of property rights, military interference in rule of law and politics, integrity of the legal system, legal enforcement of contracts, regulatory costs of the sale of real property, reliability of police, and business costs of crime. Protection of persons and their rightfully acquired property is a central element of civil society. Values of Pearson correlation coefficients decreased insignificantly from 1995 to 2017, and comprises 0.716 and 0.562 respectively. Legal system which guarantee and provide property rights is a key basis for financial development, which was confirmed in the study conducted by L. Zingales and R. Rajan (Zingales, Rajan, 2003). See Figure 5.

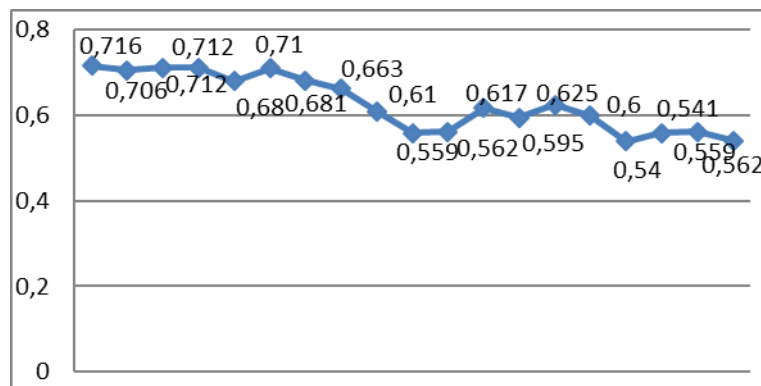


Fig. 5. Pearson correlation coefficients in the period 1995 – 2017 between the values of the Financial Development index and Legal System and Property Rights index (p-value<0.01).

Source: the authors' calculation on the data from Rethinking Financial Deepening

The determinant characterizing **Political Power and Political Institutions** is expressed by the **Political Stability** index which represents the data of the survey on 2 areas: political rights (0-40 points) and civil liberties (0-60 points) (Freedom in the World is Freedom House's flagship annual report assessing the condition of political rights and civil liberties around the world). Free press, active public participation in political life and competitive political parties contribute to the solution of the issue on pressure imposed by influential persons who are interested in the development of only those institutions which are beneficial to them and which will support their power. However, it possible to effectively prevent the subordination of economic policy to the interests of new influential circles only in the context of foreign economic competition... which forces politicians to pursue a more effective policy aimed at the market development (Zingales and Rajan, 2003). There is a positive linear dependence between the values of the Financial Development index and Political Stability index. However, there is a trend for decline in the values of Pearson coefficients in the period 1995 – 2017. During this period, the linear dependence changed from being strong to very weak; it comprises 0.088 in 2017. See Figure 6.

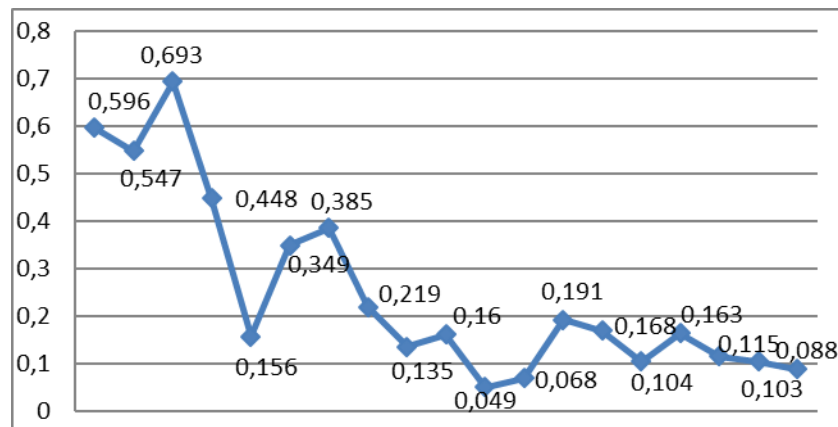


Fig. 6. Pearson correlation coefficients in the period 1995 – 2017 between the values of the Financial Development index and Political Stability index (p-value<0.01).

Source: the authors' calculation on the data from Rethinking Financial Deepening

The determinant characterizing **Economic Institutions** includes factors which determine the structure of incentives within society (i.e. incentives for economic agents to invest, and accumulate factors of productions, to make deals, etc.) and provide the redistribution of resources in the economy. The following sub-indices of the Economic Freedom index calculated by the **Heritage Foundation** have been selected as indicators which characterize this determinant: freedom of business, freedom of investment, and financial freedom. A linear dependence of the Financial Development index on Freedom of Business index is positive and it does not have an explicitly expressed trend for changing: it ranges from 0.562 to 0.314 in the period 1995 - 2017. (See Figure 7).

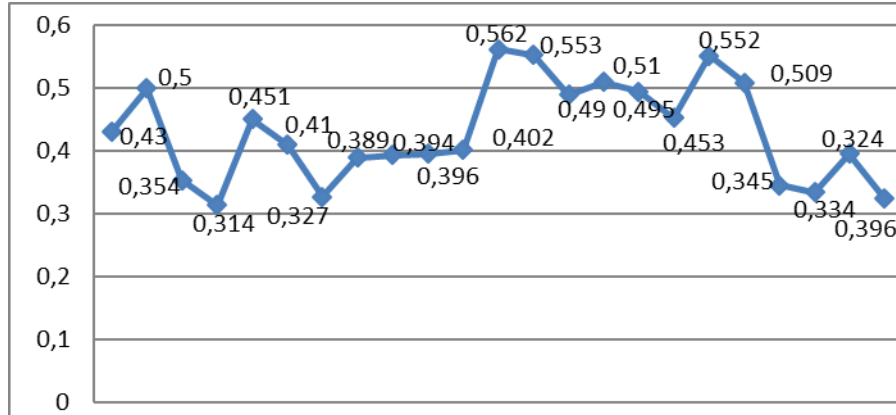


Fig. 7. Pearson correlation coefficients in the period 1995 – 2017 between the values of the Financial Development index and Freedom of Business index (p-value <0.01).

Source: the authors' calculation on the data from Rethinking Financial Deepening

In the period 1995 – 2017, the linear dependence between the Financial Development index and Economic Freedom index is positive (except for 2006), but it becomes weaker from 0.552 to 0.236. However, during the years of economic recession, the linear dependence sharply decreases, and then increases. (See Figure 8).

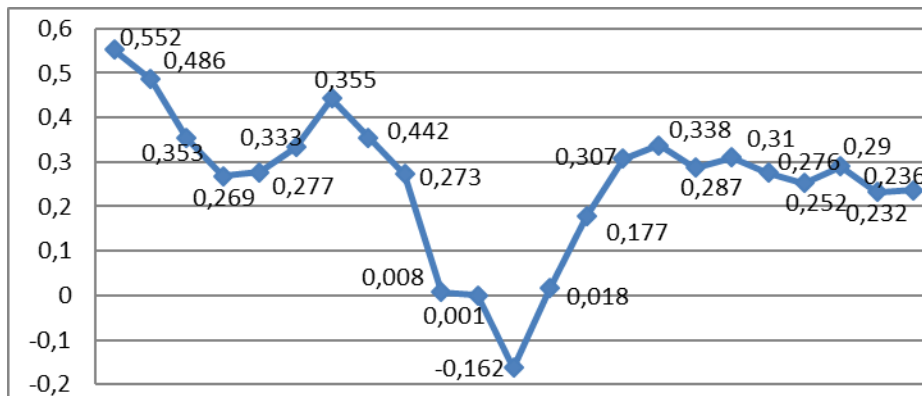


Fig. 8. Pearson correlation coefficients in the period 1995 – 2017 between the values of the Financial Development index and Economic Freedom index (p-value <0.01).

Source: the authors' calculation on the data from Rethinking Financial Deepening

In the period 1995 – 2017, the linear dependence between the Financial Development index and Freedom of Investment index is positive. Despite some fluctuations, it tends to increase (in 1995 the value of the correlation coefficient comprised 0.216, by 2017 it increased to 0.470). (See Figure 9).

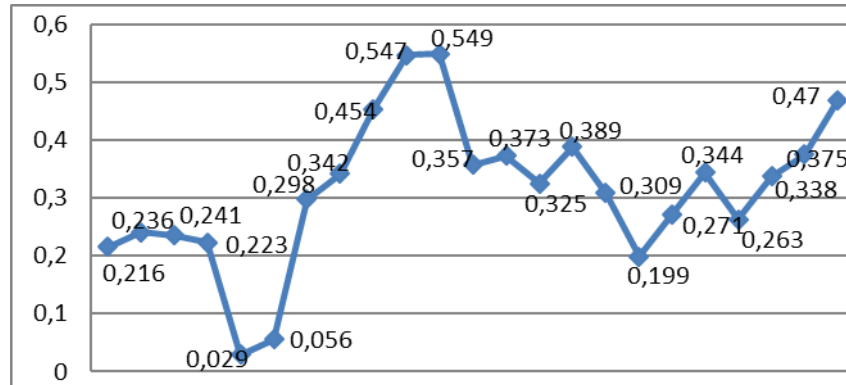


Fig. 9. Pearson correlation coefficients in the period 1995 – 2017 between the values of the Financial Development index and Freedom of Investment index (p-value <0.01).

Source: the authors' calculation on the data from Rethinking Financial Deepening

Macroeconomic determinants: inflation, gross fixed capital formation. A linear dependence characterizes the impact of inflation on financial development. However, in the period 1995 – 2013 it was negative (the correlation coefficient ranges from -0.330 to -0.739), i.e. it had a negative impact on financial development. In the period 2014 – 2016, it was positive (the correlation coefficient ranges from 0.104 to 0.379). In 2017, it again became negative (the correlation coefficient -0.402). The higher the inflation is, the lower the return on money is, which leads to decrease in credit activities. If a financial sector provides less credit, it means that the distribution of money is inefficient, and has a negative effect on financial development (See Figure 10).

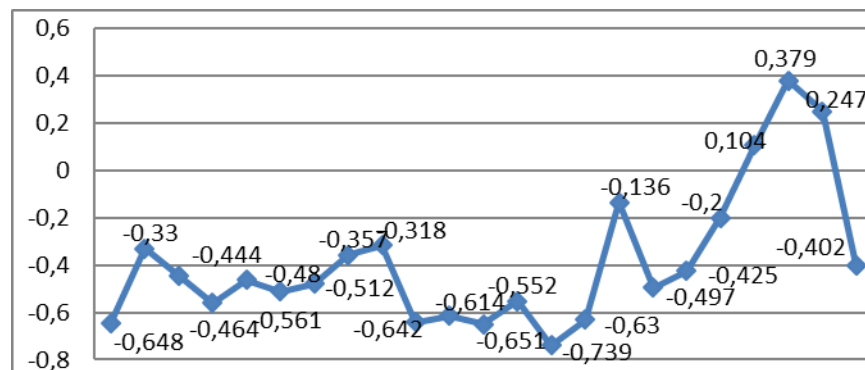


Fig. 10. Pearson correlation coefficients in the period 1995 – 2017 between the values of the Financial Development index and inflation (p-value <0.01).

Source: the authors' calculation on the data from Rethinking Financial Deepening

An extremely weak linear dependence characterizes the impact of investment into fixed capital on financial development in pre-recession and post-recession years. During the periods of recession and economic recovery, the linear dependence is expressed by the average value of Pearson correlation coefficients (See Figure 11).

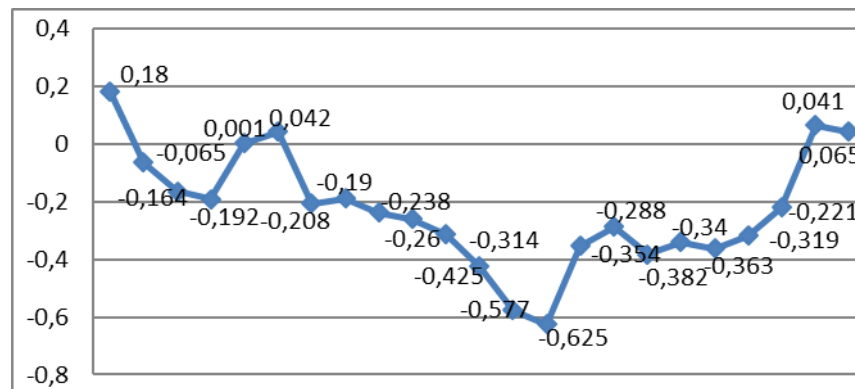


Fig. 11. Pearson correlation coefficients in the period 1995 – 2017 between the values of the Financial Development index and Gross Fixed Capital Formation (% of GDP) (p-value<0.01).

Source: the authors' calculation on the data from Rethinking Financial Deepening

Determinants of culture and geography will be not considered within the framework of the research as they do not belong to the sphere of economy.

Conclusions and discussion

In general, the correlation analysis of the impact of liberalization on financial development of the EU countries in the period 1995 – 2017 confirms the ideas by Arestis, Demetriades, Bassam and Kostas (Arestis 2005; Arestis and Demetriades 1997; Arestis et al. 2002) that liberalization of financial markets leads to better redistribution of resources, a higher level of investment and higher efficiency of investment, and, therefore, has a positive impact on financial development. However, this influence weakened by the end of the period under study.

The ideas by Zingales (Zingales 2003), Huang and Temple (Huang 2005, Huang & Temple 2005) about the impact of openness on financial development were also confirmed on the sample of the EU countries in the period 1995 – 2017: having examined the impact of the determinant of openness which is expressed by the Freedom to Trade Internationally index, a positive linear dependence was determined. However, the dependence significantly weakened by the end of the period under study.

The idea by La Porta, L'opez de Silanes (L'opez de Silanes et al. 1998) about the relations between the legal system and the degree of market development is confirmed: having examined the impact of the determinant of legal traditions expressed by the Legal System and Property Rights index on financial development, a strong positive linear dependence was determined during the whole period 1995 - 2017.

The ideas by Voghouei (Voghouei et al. 2011), Zingales L., Rajan R. (Zingales and Rajan 2003) about the impact of political factors on financial development were confirmed: there is a positive linear dependence between the values of the financial development index and political stability index. However, the values of Pearson coefficients have a tendency to decrease in the period 1995 – 2017. During this period, the linear dependence changes from being strong to being very weak: in 2007 the correlation coefficient comprised only 0.088.

Acemoglu's ideas (Acemoglu et al. 2005) about such a key factor of financial development as economic institutions were confirmed. The determinant characterizing economic institutions includes factors that determine the structure of incentives within society (i.e. incentives for economic agents to invest, and accumulate factors of productions, to make deals, etc.) and provide the redistribution of resources in the economy. The linear dependence of Financial Development index on the Freedom of Business index is positive and does not have a

vividly expressed tendency to change: the coefficients range from 0.562 to 0.314 in the period 1995 - 2017. The linear dependence of Financial Development index on the Financial Freedom index is positive in the period 1995 – 2017 (except for the year 2006), although it becomes weaker: from 0.552 to 0.236. However, during the years of recession there was a sharp decrease of the linear dependence, followed by an increase. The linear dependence of the Financial Development index on the Freedom of Investment index was positive in the period 1995 – 2017. Despite some fluctuations, it tends to increase (in 1995, the value of correlation coefficient comprised 0.216; by 2017 it increased to 0.470).

The ideas by Huybens and Smith (Huybens & Smith 1999) about the negative impact of inflation on financial development were partially confirmed: the influence of inflation on financial development is characterized by a linear dependence. However, from 1995 to 2013 it was negative (the correlation coefficient ranges from -0.330 to -0.739), i.e. it had a negative impact on financial development. From 2014 to 2016 it was positive (the correlation coefficient ranges from 0.104 to 0.379); in 2017, it was negative again (the correlation coefficient comprised -0.402).

Levine's ideas (Levine 2005) about the impact of investment in fixed capital on financial development in the EU countries are confirmed. There is an extremely weak linear dependence during both the pre-recession and post-recession period. The linear dependence is expressed by the average value of Pearson correlation coefficients during the recession and economic recovery periods.

The following conclusions can be drawn about the determinants of financial development of the EU countries in the period 1995-2017:

- 1) the impact of the determinants of openness, political stability characterizing the state of political rights and civil liberties, and financial liberalization with the increasing influence of government regulation on financial development of the EU countries in the period 1995 – 2017 is decreasing significantly;
- 2) the impact of the determinant of legal traditions which includes judicial independence, impartial courts, protection of property rights, etc., as well as the impact of the determinant of economic institutions on financial development of the EU countries in the period 1995 – 2017 remain very strong;
- 3) there are divergent trends (both enhancing and weakening) of the impact of the considered macroeconomic indices on financial development of the EU countries in the period 1995 - 2017.

It is obvious that the abovementioned determinants to a greater or lesser extent affect the financial development of the EU countries, but the degree of their influence varies during the period under study.

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