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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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 | Baghehot 1887 |
| England, the USA, Belgium, Germany, Holland, etc. | 19th-20th centuries | Method of logical analysis and synthesis | Гильфердинг 1922 |
| The USA, etc. (countries around the world) | 20th century | Method of logical analysis and synthesis, deduction | Schumpeter 1939 |
| England, Scotland, France, Belgium, Germany, Japan, and Russia | 19th 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, Chile, etc. | 20th 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):

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

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                       | .598      | .557      |
| GDP growth per capita (%)            | .076      | -.327     |
| Financial development index          |           |           |
| Financial institutions index         | .400      | .678      |
| Financial markets index              | .585      | .394      |
| Financial institutions depth index   | .314      | .106      |
| Financial institutions access index  | .158      | .635      |
| Financial institutions efficiency index| .520      | .679      |
| Financial markets depth index        | .724      | .629      |
| Financial markets access index       | .225      | .534      |
| Financial markets efficiency index   | -.030     | .121      |

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.

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  | 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 efficiency index | | .067       | .277       | -.063      | -.250      |
| 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.
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).

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

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.

References

Adamopoulos, A. (2010). Financial Development and Economic Growth an Empirical Analysis for Ireland. International Journal of Economic Sciences and Applied Research, 3(1), 75-88.

Adamczyk, M.; Betlej, A.; Gondek, J.; Ohotina, A. (2019). Technology and sustainable development: towards the future?, Entrepreneurship and Sustainability Issues 6(4), 2003-2016.https://doi.org/10.9770/jesi.2019.6.4(32)

Aleksejeva, L.; Ostrovska, I.; Aleksejevs, M. (2020). A comprehensive place-based approach for smart growth in cross border territories. In ACM International Conference Proceeding Series DEFIN ‘20: Proceedings of the III International Scientific and Practical Conference. Retrieved January 11, 2020. URL: https://dl.acm.org/doi/abs/10.1145/3388984.3390645

Aleksejeva, L.; Šipilova, V.; Jermolajeva, E., Ostrovska, I.; Oļehnovičs, D. (2018). Regional Risks and Challenges in Smart Growth in Latgale Region (Latvia). Journal of Security and Sustainability Issues, 7(4), 727-739. http://jssidoi.org/jssi/papers/papers/view/305

Anwar, S., Shahzadi, H., Nasreen, S. (2017). Determinants of Financial Development for Selected SAARC Countries: A Panel Data Analysis. Journal of Applied Environmental and Biological Sciences, 7(7), 109-118.

Bagehot, W. (1887). Lombard Street: A Description of the Money Market. Westport, Connecticut: Hyperion Press, INC. Retrieved February 21, 2020. URL: https://fraser.stlouisfed.org/files/docs/meltzer/baglom62.pdf

Bilal, Songsheng Chen, Komal, Bushra. (2016). Impact of Stock Market Development on Economic Growth: Evidence from Lower Middle-Income Countries. Management and Administrative Sciences Review, 5(2), 86-97.

Cameron, R. (1967). Banking in Early Stages of Industrialization: Essays in Comparative Economic History. New York, Oxford University Press

Čihák, M., Demirgüç-Kunt, A., Feyen, E., Levine, R. (2012). Benchmarking Financial Systems around the World. August 1, World Bank Policy Research Working Paper, No. 6175.

Čižo, E., Ignatjeva, S., Lavrinenko, O. (2018). Assessment of Convergence Processes of Financial Depth Indicators in States with Different Levels of Economic Development. Journal of Security and Sustainability Issues, 7(3), 459-476. https://doi.org/10.9770/jssi.2018.7.3(8)
Čižo, E., Lavrinenko, O., Ignatjeva, S. (2020). Analysis of the Relationship between Financial Development and economic growth in the EU countries. *Insights into Regional Development*, 2(3), 645-660. https://doi.org/10.9770/IRD.2020.2.3(3)

Demetriades, P., Hussein, K. (1996). Does Financial Development Cause Economic Growth? Time Series Evidence from 16 Countries. *Journal of Development Economics*, 51(2), 387-411.

Dubauskas, G. (2012). Sustainable Growth of the Financial Sector: The Case of Credit Unions. *Journal of Security and Sustainability Issues*, 1(3), 159-166. https://doi.org/10.9770/jssi/2012.1.3(1)

Gil’ferding R. (1959). *Finansovyj kapital. Issledovanie novejshej fazy v razvitii kapitalizma*. Moskva. 268 s.

Goldsmith, R. (1969). *Financial Structure and Development*. New Haven: Yale University Press.

Greenwood, J., Smith, B. (1996). Financial Markets in Development and the Development of Financial Markets. *Journal of Economic Dynamics and Control*, 21(1), p. 145-181.

He, D., Pardy, R. (1993). Stock Market Development and Financial Deepening in Developing Countries Some Correlation Patterns. *Policy Research Working Papers*. Country Economics Department. The World Bank February 1993. WPS 1084. Retrieved January 14, 2020. URL: https://www.researchgate.net/publication/23721608_Stock_market_development_and_financial_deepening_in_developing_countries_some_correlation_patterns

Honohan, P. (2004). Financial Development, Growth and Poverty: How Close are the Links? *World Bank Policy Research Working Paper* 3203, February.

Ito, H., Kawai, M. (2018). Quantity and Quality Measures of Financial Development: Implications for Macroeconomic Performance. *Public Policy Review*, 14(5), 803-834.

Kaźmierczyk, J. (2012). Information Technology Systems and their Impact on the Employment Level in the Polish Banking Sector. *Journal of Security and Sustainability Issues*, 1(3), 187-195. https://doi.org/10.9770/jssi/2012.1.3(4)

King, R., Levine, R. (1993). Finance, Entrepreneurship, and Growth: Theory and Evidence. *Journal of Monetary Economics*, 32(3), 513-542.

Kordík, M., Kurilovská, L. (2017). Protection of the National Financial System from the Money Laundering and Terrorism Financing. *Entrepreneurship and Sustainability Issues*, 5(2), 243-262. https://doi.org/10.9770/jesi.2017.5.2(7)

Kwan, A., Wu, Y., Zhang, J. (1998). An Erogeneity Analysis of Financial Deepening and Economic Growth: Evidence from Hong Kong, South Korea and Taiwan. *The Journal of International Trade & Economic Development*, 7(3), 339-354.

Lenka, S.K. (2015). Measuring Financial Development in India: A PCA approach. *Theoretical and Applied Economics*, 22 (1), 187-198.

Levine, R. (1997). Financial Development and Economic Growth: Views and Agenda. *Journal of Economic Literature*, 35(2), 688-726.

Levine, R. (2002). Bank-Based or Market-Based Financial Systems: Which is Better? *Journal of Financial Intermediation*, 11(4), 398-428.

Levine, R. (2004). Finance and Growth: Theory and Evidence. *NBER Working Paper No. 10766*. Issued in September 2004. Retrieved January 14, 2020. URL: http://www.nber.org/papers/w10766

Levine, R. (2005). Finance and Growth: Theory and Evidence. In: *Handbook of Economic Growth*. Eds.: P. Aghion, S. Durlauf. Vol. 1, 865-934.

Levine, R., Loayza, N., Beck, T. (2000). Financial Intermediation and Growth: Causality and Causes. *Journal of Monetary Economics*, 46(1), 31-77.

Levine, R., Zervos, S.J. (1993). What we have Learned about Policy and Growth from Cross-Country Regressions? *The American Economic Review*, 83(2), 426-430.

Levine, R., Zervos, S.J. (1998). Stock Markets, Banks and Economic Growth. *American Economic Review*, 88(3), 537-558.

Lucas R. E. (1988). On the Mechanics of Economic Development. *Journal of Monetary Economics*, 22(1), 3-42.

Marashdeh, Hazem A., Al-Malkawi, Husam-Aldin N. (2014). Financial Deepening and Economic Growth in Saudi Arabia. *Journal of Emerging Market Finance*, 13(2), 139-154.

McKinnon, R. I. (1973). *Money and Capital in Economic Development*. Washington, D.C.: The. Brookings Institution.
Ndebbio, J. E. U. (2004). Financial Deepening, Economic Growth and Development: Evidence from Selected Sub-Saharan African Countries. Department of Economics University of Calabar Caiabar, Nigeria. AERC Research Paper 142. African Economic Research Consortium, Nairobi August 2004. Retrieved January 14, 2020. URL: https://opendocs.ids.ac.uk/opendocs/bitstream/item/2846/RP%20142.pdf?sequence=1

Novickytė, L., Pedroja, G. (2014). Banking Consolidation as Value Creation to the Buyer and the Financial System (Case of Lithuania). Journal of Security and Sustainability Issues, 4(2), 159-173. https://doi.org/10.9770/jssi.2014.4.2(5)

Ohotina, A.; Lavrinenko, O.; Gladevich, J.; Lazdans, D. (2018a). The investment climate in Latvia’s, Lithuania’s and Belarus’s cross-border regions: the subjective-objective assessment, Entrepreneurship and Sustainability Issues 6(2), 767-780. https://doi.org/10.9770/jesi.2018.6.2(20)

Ohotina, A.; Lavrinenko, O.; Ignatjeva, S.; Lonska, J. (2018b). Socio-economic security as a determinant of regional differences in the investment climate in the region, Journal of Security and Sustainability Issues 7(3), 427-438. https://doi.org/10.9770/jssi.2018.7.3(5)

Pietrucha, J., Acedański, J. (2017). Financial Depth and Post-2008 Change of GDP. Equilibrium. Quarterly Journal of Economics and Economic Policy, 12(3), 469-482. DOI: 10.24136/eq.v12i3.25

Rethinking Financial Deepening: Stability and Growth in Emerging Markets. (2015). Prepared by: R. Sahay, M. Čihák, P. N'Diaye…at all. International Monetary Fund, Monetary and Capital Markets Department and Strategy and Policy Review Department, with inputs from other departments. Retrieved February 21, 2020. URL: https://www.imf.org/external/pubs/ft/sdn/2015/sdn1508.pdf

Robinson, J. (1952). The Generalization of the General Theory. In: Robinson J. The Rate of Interest and Other Essays. London: MacMillan.

Robinson, J. (1952). The Rate of Interest and Other Essays. London: MacMillan.

Romer, P.M. (1986). Increasing Returns and Long-Run Growth. The Journal of Political Economy, 94(5), 1002-1037.

Schumpeter J. A. (1939). Business Cycles: A Theoretical, Historical, and Statistical Analysis of the Capitalist Process. New York: McGraw-Hill.

Schumpeter, J.A. (1954). History of Economic Analysis. Editor E. Boody. New York: Oxford University Press.

Stasytytė, V. (2015). Conceptualization of Financial System Sustainability. Journal of Security and Sustainability Issues, 4(4), 391-402. https://doi.org/10.9770/jssi.2015.4.4(6)

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