Short-Run and Long-Run Causality Between the Structure of Financial System and Economic Development

Vilma Deltuvaitė[1], Lina Sinevičienė[2], [1, 2]*Kaunas University of Technology*

Abstract – **This study analyses the implications of the structure of financial system on country's economic development. The aim of the paper is to analyse short-run and long-run causality between the structure of financial system and economic development. The following research methods were used: systemic, logical and comparative analysis of scientific literature; analysis of statistical data; time series model (Autoregressive Distributed Lag (ARDL) Model). The empirical results indicate positive short and long term very weak effect of financial system's shift from bank-based to market-based on GDP per capita.**

Keywords – **Bank-based financial system, economic development, market-based financial system, structure of financial system.**

I. INTRODUCTION

Scientific problem of the article. Beck highlights that a sound and effective financial system is critical for economic development and growth [4]. Bollard and other scientists raise the question – what structure of financial system is optimal for country's economic development, however, the answer is not straightforward [6]. According to Bollard, Allen & Carletti, banks play an important role in bank-based financial system, however, the failure of any one of larger banks could have serious repercussions for the rest of the economy [6], [1]. Bollard also notes that larger capital markets might stimulate greater competition in financial system by providing a substitute for banks funding of both small and large businesses, however, due to the high fluctuations in financial markets the access to funds is not always available [6]. The investigation of the relationship between the structure of financial system and economic development is also important from the perspective of public policy makers. The empirical results could suggest which type of financial system's structure (bank-based or market-based) should be fostered by policy makers aiming for a long-term economic growth and development.

Scientific novelty of the article. Most scientists focus on the analysis of the relationship between the structure of financial system and economic growth, however, the number of scientific publications analysing the short and long run relationship between the structure of financial system and economic development is quite limited. This empirical study focuses on the large heterogeneous sample of countries from different world regions. Comprehensive analysis of short-run and long-run causality between the structure of financial system and economic development is the main scientific novelty of this article.

The aim of the article: to analyse short-run and long-run causality between the structure of financial system and economic development.

The research object: relationship between the structure of financial system and economic development.

The research methods: systemic, logical and comparative analysis of scientific literature; analysis of statistical data; and the time series model (Autoregressive Distributed Lag (ARDL) Model).

II. THE REVIEW OF STUDIES ANALYSING THE RELATIONSHIP BETWEEN THE STRUCTURE OF FINANCIAL SYSTEM AND ECONOMIC DEVELOPMENT

According to Allen & Carletti, the efficiency of the process through which savings are channeled into productive activities is crucial for growth and general welfare [1]. Allen *et al.*, Cecchetti *et al.*, Allen & Carletti, Hubbard & O'Brien, Deltuvaitė argue that the lenders of funds (households and firms) can supply funds to the ultimate borrowers (firms, governments and households) in two ways: the first is through financial markets and the second is through banks and other financial intermediaries [2], [8], [1], [14], [10]. These two channels are distinguished by the way how funds flow from savers (lenders) to borrowers and by the financial institutions involved. According to Hubbard & O'Brien, funds flow from lenders to borrowers indirectly through financial intermediaries, such as banks, or directly through financial markets [14]. Financial systems, where banks play the main role as financial intermediaries, are called the bank-based financial systems, while the financial systems with more developed financial market are called the market-based financial systems.

According to Arestis *et al.*, the relationship between the financial structure and economic development can be examined on the basis of competing theories of financial structure: the bank-based, the market-based and the financial services [3]. The bank-based theory emphasizes the positive role of banks in country's development and growth, and stresses the shortcomings of market-based financial systems. By contrast, the market-based theory highlights the advantages of well-functioning financial markets, and stresses the problems of bank-based financial systems. The financial services theory states that financial services themselves are by far more important than the form of their delivery and

emphasizes the creation of better functioning banks and markets rather than the type of financial structure. Lin *et al.* and Cull *et al.* summarized the literature related to the relationship between the structure of financial system and economic development, however, a number of such publications is quite limited [18], [9].

Beck et al. explored the relationship between financial structure and economic development [4]. The cross-country regressions, the industry panel estimations, and the firm-level analyses provided remarkably consistent conclusions that financial structure does not explain economic growth, industrial performance, or firm expansion and the results are inconsistent with both market-based and bank-based views. The authors found overwhelming evidence that the overall level of financial development and the legal environment in which financial intermediaries, and markets operate, critically influence economic development. Levine analysed which type of financial structure is more important for long-run economic growth. The results indicated that although overall financial development is robustly linked with economic growth, there is no support for either the bank-based or the market-based view [17]. Arestis *et al.* investigated whether financial structure influences economic growth [3]. They found a robust co-integrating relationship between the output per capita, capital stock per capita and the financial structure. According to the authors, financial structure exerts significant effect on the level of output per capita in most of countries. Furthermore, the magnitude of the long-run effects (cointegrating parameter) of financial structure on per capita output is extremely heterogeneous across countries. Ergungor investigated how the structure of a financial system affects economic growth. In contrast to earlier research, the author found that there is a nonlinear (contingent) relationship between the growth and financial structure and countries that have an inflexible judicial system grow faster when they have a more bank-oriented financial system [13]. Luintel *et al.* analysed the relationship between financial structure and economic growth. The research results revealed that financial structure significantly explains output levels in most of countries [19]. Oima & Ojwang examined the impact of financial structure on economic growth of some selected countries of Economic Community of West African States (ECOWAS) [21]. Based on the long-run and short-run estimate, it was concluded that some of the countries are bank-based financial systems while others are market-based financial systems, and that financial structure matters for the growth of these economies. Sahoo empirically evaluated the role of financial structures in economic development of India. One-way Granger causality running from private sector credit to real GDP confirms the supply-leading process of bank intermediation, while ARDL cointegration test suggests that both the bank-based and market-based financial deepening have positive roles in driving India's economic development [23].

Summarizing recent empirical studies on the relationship between the structure of financial system and economic development and growth, it can be stated that financial structure is irrelevant for country's economic development and growth, however, the results of different empirical studies are quite mixed.

III. SHORT-RUN AND LONG-RUN CAUSALITY BETWEEN THE STRUCTURE OF FINANCIAL SYSTEM AND ECONOMIC DEVELOPMENT: RESEARCH METHODOLOGY

While the development of financial markets and banking sector is crucial for country's economic development and vice versa, the relationship between the type of the structure of financial system and economic development is analysed in this study.

Identification of the type of structure of financial system. Demirgüç-Kunt & Levine use a conglomerate index of financial structure based on measures of size, activity and efficiency. Specifically, they study the ratios of banking sector development (measured in terms of size, activity, and efficiency) relative to stock market development (also measured in terms of size, activity, and efficiency). According to Demirgüç-Kunt & Levine methodology, countries with larger ratios are classified as bank-based, while countries where the conglomerate ratio of banking sector development to stock market development is below the mean are classified as market-based. Thus, this grouping system produces two categories of financial system: bank-based and market-based. However, Demirgüç-Kunt & Levine argue that this bivariate classification system presents a number of complications [11]. For this reason we will classify the financial systems into three categories: bank-based, market-based and mixed (both market-based and bank-based) as recommended by Allen & Carletti, and use the following mathematical equation (1), [1].

$$FSSI_{i,t} = \frac{PCRDBOFGDP_{i,t}}{STMKTCAP_{i,t} + PRBOND_{i,t}}, \qquad (1)$$

Comprehensive analysis of the structure of financial system requires incorporation of private and public sector data, however, lack of statistical data did not allow to incorporate public and private sector data in financial system's structure index and the identification of financial system's structure was performed using data only on private sector.

We also suggest use of larger intervals on classification of financial system's structure, i.e., less strict condition as proposed by Demirgüç-Kunt & Levine (Table I), [12].

TABLE I
CLASSIFICATION OF FINANCIAL SYSTEM'S STRUCTURE BASED ON FINANCIAL SYSTEM'S STRUCTURE INDEX

The range of financial system's structure index (*FSSI*)	The type of financial system's structure
$FSSI_{i,t} > 1.1$	Bank-based financial system
$FSSI_{i,t} < 0.9$	Market-based financial system
$FSSI_{i,t} = [0.9; 1.1]$	Mixed financial system

Source: [compiled by authors']

Investigation of the relationship between the structure of financial system and economic development. In order to

estimate the short-run and long-run effect of financial system's structure on economic development the Autoregressive Distributed Lag (ARDL) model (2) was applied to the data. ARDL models are used to estimate the speed of return to equilibrium after a deviation has occurred; long-term equilibrium relationships between variables and long and short term effects of independent variables on the dependent variable.

$$\Delta \ln GDPPC_{i,t} = \alpha + \beta_0 \Delta \ln GDPPC_{i,t-1} + \sum_{n=0}^{5} \delta_n \Delta \ln FSSI_{i,t-n} + \varepsilon_t \quad (2)$$

The first differences of the logarithms of endogenous and exogenous variables (Table II) were included in ARDL model with a suitable number of lags. The coefficients $\alpha, \beta_0, \delta_n$ will be estimated using Ordinary Least Squares (OLS) method. Coefficient β_0 estimates the proportion of the deviation from equilibrium at $t-1$ that is maintained at time t and $\beta_0 - 1$ tells us the speed of return to equilibrium of dependent variable. Coefficient δ_0 estimates the short-term effect of $\Delta \ln FSSI$ on $\Delta \ln GDPPC$ and sum of δ_n estimates the long-term effect of a unit change $\Delta \ln FSSI$ on $\Delta \ln GDPPC$. The total long-term effect/long-run multiplier k_1 therefore is:

$$k_{i,1} = \sum_{n=0}^{5} \delta_n / (1 - \beta_0) \quad (3)$$

Some scientists apply ARDL or Error Correction Models (ECMs) for panel data, however, Pesaran & Smith point out the heterogeneity of coefficients across countries [22]. Luintel & Khan show that panel estimates often do not correspond to country-specific estimates [19]. Consequently, generalizations based on panel results may proffer incorrect inferences for several countries of the panel and panel estimates may be misleading at country level. For this reason ARDL model (2) will be applied for cross-country data.

Data. Empirical research focuses on the annual data for 22 countries (Argentina (ARG), Australia (AUS), Brazil (BRA), China (CHN), Colombia (COL), Finland (FIN), Greece (GRC), Hong Kong (HKG), India (IND), Italy (ITA), Japan (JPN), Korea (KOR), Malaysia (MYS), Mexico (MEX), Portugal (PRT), Singapore (SGP), South Africa (ZAF), Spain (ESP), Switzerland (CHE), Thailand (THA), United Kingdom (GBR), United States (USA)) and covers the period from 1990 to 2011. The data sample selection was based on the availability of statistical data. The list of variables used in this research is presented in Table II.

TABLE II

VARIABLES USED IN RESEARCH ON SHORT-RUN AND LONG-RUN CAUSALITY BETWEEN THE STRUCTURE OF FINANCIAL SYSTEM AND ECONOMIC DEVELOPMENT

Variable	Variable description	Data source
PCRDBOFGDP	Private credit by deposit money banks and other financial institutions to GDP (%)	WB (2013)
STMKTCAP	Stock market capitalization to GDP (%)	WB (2013)
PRBOND	Private bond market capitalization to GDP (%)	WB (2013)
GDPPC	Gross domestic product based on purchasing-power-parity (PPP) per capita GDP (PPP dollars per person)	IMF (2014)
FSSI	Financial system's structure index	Authors' calculation

Source: [compiled by authors']

IV. SHORT-RUN AND LONG-RUN CAUSALITY BETWEEN THE STRUCTURE OF FINANCIAL SYSTEM AND ECONOMIC DEVELOPMENT: RESEARCH RESULTS

When analysing the statistical data presented by World Bank (WB, 2013), it can be noted that the level of stock market development is higher than of banking sector or bond market. The analysis of statistical data also shows that the most remarkable development over the last few decades has been observed in stock markets of different countries around the world. Analysing financial systems' developments in the world's largest countries, it can be noted that in most of these countries (China, Japan, United Kingdom, Italy) banks dominate as financial intermediaries, however, the contrary trends can also be observed (Brazil, India) (Table III). The empirical results also indicate that in European and Central Asian countries (United Kingdom, Finland, Italy, Spain, Greece and Portugal) banks dominate as main financial intermediaries (except Switzerland). However, market-based financial system was indicated in most of East Asian and Pacific countries (Singapore, Hong Kong, Australia, Korea, and Malaysia) except Japan, Thailand and China. The trend of averaged financial system's structure index also indicates the financial system's shift from bank-based to market-based (or mixed).

TABLE III

CLASSIFICATION OF FINANCIAL SYSTEMS BASED ON THE INDEX OF FINANCIAL SYSTEM'S STRUCTURE IN 2011

Country	Private credit by deposit money banks and other financial institutions to GDP	Stock market capitaliza-tion to GDP	Private bond market capitaliza-tion to GDP	Financial system's structure index	Type of financial system's structure
GRC	123.56	18.99	34.09	2.33	Bank-based financial system
ITA	121.76	17.50	37.79	2.20	
PRT	193.55	31.50	69.46	1.92	
JPN	177.65	68.58	37.19	1.68	
ESP	207.84	76.48	54.45	1.59	

Country	Private credit by deposit money banks and other financial institutions to GDP	Stock market capitaliza-tion to GDP	Private bond market capitaliza-tion to GDP	Financial system's structure index	Type of financial system's structure
CHN	121.49	58.74	23.08	1.48	
THA	130.87	81.69	12.73	1.39	
GBR	191.54	126.53	12.32	1.38	
FIN	93.85	50.95	21.43	1.30	
ARG	13.96	11.82	1.97	1.01	Mixed financial system
USA	187.70	110.16	91.86	0.93	
ZAF	141.52	145.23	18.77	0.86	
AUS	129.24	103.39	49.26	0.85	
CHE	167.05	179.48	29.49	0.80	Market-based financial system
BRA	63.45	58.33	21.68	0.79	
SGP	106.91	145.19	10.01	0.69	
COL	42.00	62.82	0.57	0.66	

Country	Private credit by deposit money banks and other financial institutions to GDP	Stock market capitaliza-tion to GDP	Private bond market capitaliza-tion to GDP	Financial system's structure index	Type of financial system's structure
IND	47.15	68.67	4.89	0.64	
KOR	98.43	96.24	59.25	0.63	
MYS	106.40	144.09	58.09	0.53	
MEX	24.03	37.44	15.68	0.45	
HKG	186.24	396.88	15.28	0.45	

Source: [authors' calculation]

In testing for unit root behaviour in the first differences of the logarithms of endogenous and exogenous variables, the Augmented Dickey-Fuller (ADF) test was implemented. All time series appear stationary in their first differences. The financial system's structure index is assumed exogenous and the parameter estimates of ARDL models are reported in Table IV.

TABLE IV

PARAMETER ESTIMATES OF THE ARDL MODELS (P-VALUES IN PARENTHESIS) AND THE SHORT AND LONG-TERM EFFECT OF FINANCIAL SYSTEM'S STRUCTURE INDEX ($\Delta \ln FSSI$) ON GDP PER CAPITA ($\Delta \ln GDPPC$)

	ARG	AUS	BRA	CHE	CHN	COL	ESP	FIN	GBR	GRC	HKG	IND	ITA	JPN	KOR	MEX	MYS	PRT	SGP	THA	USA	ZAF
α	0.04 (0.04)	0.03 (0.01)	0.05 (0.05)	0.02 (0.11)	0.06 (0.11)	0.03 (0.05)	0.01 (0.15)	0.03 (0.19)	−0.01 (0.62)	0.00 (0.99)	0.04 (0.12)	0.04 (0.24)	0.02 (0.10)	0.03 (0.03)	0.06 (0.04)	0.04 (0.02)	0.02 (0.35)	0.01 (0.45)	0.06 (0.05)	0.05 (0.14)	0.01 (0.35)	0.03 (0.05)
β_0	−0.26 (0.41)	0.11 (0.65)	−0.03 (0.96)	0.29 (0.47)	0.57 (0.05)	−0.35 (0.44)	0.53 (0.10)	0.33 (0.39)	1.08 (0.00)	0.89 (0.01)	0.40 (0.26)	0.45 (0.37)	0.31 (0.40)	−0.24 (0.52)	−0.03 (0.95)	−0.37 (0.26)	0.56 (0.16)	0.76 (0.01)	−0.02 (0.97)	−0.21 (0.74)	0.70 (0.02)	0.10 (0.79)
δ_0	0.16 (0.02)	−0.04 (0.04)	−0.03 (0.65)	−0.10 (0.14)	−0.01 (0.67)	−0.05 (0.40)	−0.08 (0.13)	−0.08 (0.12)	−0.04 (0.43)	−0.03 (0.37)	0.02 (0.87)	−0.09 (0.01)	−0.05 (0.56)	−0.09 (0.31)	0.05 (0.35)	−0.14 (0.05)	−0.15 (0.02)	0.01 (0.81)	−0.11 (0.09)	−0.05 (0.48)	−0.09 (0.47)	−0.05 (0.37)
δ_1	−0.05 (0.47)	−0.07 (0.01)	−0.05 (0.29)	−0.02 (0.76)	0.03 (0.36)	−0.16 (0.08)	−0.13 (0.07)	−0.01 (0.88)	−0.13 (0.04)	0.01 (0.76)	−0.10 (0.47)	0.07 (0.36)	−0.16 (0.21)	−0.10 (0.36)	−0.19 (0.01)	−0.12 (0.18)	−0.10 (0.15)	−0.16 (0.01)	−0.10 (0.27)	−0.11 (0.16)	−0.34 (0.14)	−0.11 (0.15)
δ_2	0.13 (0.05)	−0.04 (0.15)	0.05 (0.21)	0.03 (0.70)	0.03 (0.56)	−0.05 (0.47)	0.10 (0.17)	0.11 (0.30)	0.23 (0.01)	−0.04 (0.60)	0.24 (0.17)	−0.09 (0.12)	0.20 (0.12)	−0.04 (0.73)	0.09 (0.27)	−0.07 (0.37)	0.13 (0.05)	0.20 (0.01)	0.07 (0.38)	0.00 (0.94)	0.63 (0.03)	−0.03 (0.67)
δ_3	−0.06 (0.37)	−0.05 (0.13)	0.00 (0.93)	0.04 (0.68)	0.03 (0.48)	−0.11 (0.21)	−0.07 (0.27)	−0.15 (0.26)	−0.16 (0.06)	0.03 (0.72)	−0.11 (0.48)	0.09 (0.25)	−0.17 (0.16)	0.00 (0.97)	−0.13 (0.12)	0.04 (0.60)	−0.12 (0.01)	−0.24 (0.00)	−0.11 (0.18)	−0.08 (0.15)	−0.54 (0.09)	−0.04 (0.49)
δ_4	−0.06 (0.37)	−0.02 (0.44)	0.06 (0.04)	0.02 (0.81)	0.02 (0.65)	0.06 (0.41)	0.08 (0.23)	0.10 (0.36)	0.04 (0.61)	−0.04 (0.58)	0.11 (0.39)	−0.05 (0.36)	0.13 (0.28)	0.03 (0.73)	0.09 (0.15)	−0.01 (0.83)	0.06 (0.20)	0.21 (0.01)	0.05 (0.51)	−0.02 (0.68)	0.41 (0.16)	0.01 (0.87)
δ_5	−0.04 (0.26)	−0.04 (0.16)	0.03 (0.39)	0.02 (0.76)	0.03 (0.39)	−0.04 (0.41)	−0.04 (0.41)	−0.04 (0.57)	−0.01 (0.85)	0.02 (0.72)	0.02 (0.83)	0.02 (0.56)	−0.05 (0.59)	0.05 (0.54)	−0.03 (0.63)	0.08 (0.20)	−0.03 (0.45)	−0.07 (0.12)	0.00 (0.97)	0.01 (0.81)	−0.25 (0.16)	−0.03 (0.47)
$\sum_{n=0}^{5} \delta_n$	0.29	−0.11	0.06			−0.16	−0.13		−0.06			−0.09			−0.19	−0.14	−0.14	0.01	−0.11		0.09	
k_1	0.23	−0.12	0.06			−0.12	−0.28		0.75			−0.16			−0.18	−0.10	−0.32	0.04	−0.11		0.30	
Adj. R^2	0.53	0.73	0.18	0.18	0.71	0.50	0.69	0.20	0.68	0.37	0.02	0.39	0.16	−0.09	0.54	0.35	0.74	0.72	0.40	0.51	0.68	0.08
$\hat{\sigma}$	0.04	0.01	0.02	0.02	0.01	0.02	0.01	0.03	0.02	0.03	0.04	0.02	0.02	0.03	0.03	0.03	0.02	0.01	0.04	0.04	0.01	0.02
JB	0.73 (0.69)	1.46 (0.48)	1.42 (0.49)	0.85 (0.65)	0.44 (0.80)	0.30 (0.86)	0.64 (0.73)	3.37 (0.19)	1.23 (0.54)	0.90 (0.64)	1.06 (0.59)	0.93 (0.63)	0.01 (0.99)	0.22 (0.89)	2.82 (0.24)	0.17 (0.92)	1.05 (0.59)	1.30 (0.52)	4.16 (0.13)	1.17 (0.56)	0.52 (0.77)	1.75 (0.42)
LM(1)	6.16 (0.04)	0.00 (0.97)	0.14 (0.72)	0.06 (0.82)	3.64 (0.09)	2.45 (0.16)	0.34 (0.58)	0.49 (0.51)	0.01 (0.92)	0.07 (0.80)	0.21 (0.66)	0.03 (0.87)	0.09 (0.77)	1.07 (0.34)	0.43 (0.53)	0.30 (0.60)	6.92 (0.03)	0.48 (0.51)	0.01 (0.91)	1.39 (0.28)	1.67 (0.24)	0.63 (0.45)
LM(5)	3.14 (0.19)	0.14 (0.97)	0.55 (0.74)	0.80 (0.61)	0.62 (0.70)	1.15 (0.48)	2.29 (0.26)	0.90 (0.57)	0.97 (0.55)	3.93 (0.14)	0.17 (0.96)	0.51 (0.76)	1.17 (0.48)	3.24 (0.18)	1.03 (0.52)	1.76 (0.34)	2.07 (0.29)	0.80 (0.62)	0.30 (0.89)	0.54 (0.75)	1.26 (0.46)	0.64 (0.70)
BPG	0.47 (0.83)	0.46 (0.84)	1.64 (0.25)	0.55 (0.77)	1.46 (0.30)	1.63 (0.25)	2.90 (0.08)	0.69 (0.68)	0.31 (0.93)	1.10 (0.44)	0.99 (0.50)	1.59 (0.26)	1.66 (0.25)	4.44 (0.03)	0.16 (0.99)	4.10 (0.03)	0.94 (0.53)	0.57 (0.76)	0.39 (0.88)	0.85 (0.58)	2.15 (0.15)	0.56 (0.77)

Notes: Adj. R^2 – adjusted coefficient of determination; $\hat{\sigma}$ – standard error of regression; JB – Jarque-Bera normality test; LM(n) – Breusch-Godfrey Lagrange Multiplier test for autocorrelation up to order n; BPG – Breusch-Pagan-Godfrey test for heteroskedasticity.
Source: [authors' calculation]

The empirical results show that parameters β_0 and δ_n estimates are found to be statistically significant only in 15 countries. While the ARDL models are well representing short-run relationship in GDP per capita the best available estimate of the financial system's structure index elasticity is the δ_0 parameter estimate. Thus, the short-run financial system's structure index elasticity is relatively low, especially for Australia, and in most countries (Australia, India, Mexico, Malaysia and Singapore) except Argentina negative. These results indicate positive short-run effect of financial system's shift from bank-based to market based on GDP per capita.

Evaluated from Table IV the long-run elasticity between the growth rates of financial system's structure index and GDP per capita is close to zero in most countries except Argentina. However, the results of long-run effect of financial system's structure on GDP per capita are mixed. In most countries (except Argentina, Brazil, and USA) positive long-term effect of financial system's shift from bank-based to market-based on GDP per capita was indicated, however, this long-term effect is very weak. The highest positive long-term effect (long-run multiplier) was observed in Argentina, UK and USA suggesting positive long-term effect of bank-based financial system on GDP per capita in these countries.

The empirical results of this study confirm the financial services theory explaining that the distinction between bank-based and market-based financial systems matters less than was previously thought. According to this view, financial services themselves are more important than the form of their delivery. The financial services theory states that the issue is not the source of finance rather the creation of an environment where financial services are efficiently provided and emphasizes the creation of better functioning banks and markets rather than the type of financial structure. According to Boyd and Smith, Levine, Demirgüç-Kunt and Levine, banks and financial markets are different components of the financial system which ameliorates different costs, transaction and information in the financial system [7], [17], [11]. According to Arestis, "under these circumstances, financial arrangements emerge to ameliorate market imperfections and provide financial services that are well placed to facilitate savings mobilization and risk management, assess potential investment opportunities, exert corporate control, and enhance liquidity" [3]. Levine also argues that "the financial services view places the analytical spotlight on how to create better functioning banks and markets, and relegates the bank-based versus market-based debate to the shadows" [17].

V. CONCLUSION

Summarizing the research results on short-run and long-run causality between structure of financial system and economic development, the following conclusions can be made:

1. In such countries as China, Japan, the United Kingdom and Italy banks dominate as financial intermediaries, however, contrary trend can be observed in Brazil and India. Bank-based financial system is specific to European and Central Asian countries (UK, Finland, Italy, Spain, Greece, and Portugal except Switzerland), while market-based financial system – to East Asian and Pacific countries (Singapore, Hong Kong, Australia, Korea, and Malaysia, except Japan, Thailand and China). The development of financial system's structure index also indicates the shift from bank-based to market-based (or mixed) financial system.

2. Positive short-run effect of financial system's shift from bank-based to market based on GDP per capita was identified only in Australia, India, Mexico, Malaysia and Singapore. The results of long-run effect of financial system's structure on GDP per capita are mixed. In most countries positive long-term effect of financial system's shift from bank-based to market based on GDP per capita was indicated, however, this long-term effect is very weak.

3. The empirical results of this study confirm the financial services theory explaining that financial services themselves are more important than the form of their delivery. According to the financial services theory, the issue is not the source of finance rather the creation of an environment where financial services are efficiently provided and the emphasis is on creation of better functioning banks and markets rather than onthe type of financial structure.

REFERENCES

[1]   Allen, F., Carletti, E., *The Roles of Banks in Financial Systems*, In A. Berger, P. Molyneux, & J. Wilson (Eds.), The Oxford Handbook of Banking by Oxford. Oxford University Press, 2012, pp. 24–29.

[2]   Allen, F., Chui, M., and Maddaloni, A., "Financial Systems in Europe, the USA, and Asia," *Oxford Review of Economic Policy*, 20, pp. 490–508, 2004. http://dx.doi.org/10.1093/oxrep/grh029

[3]   Arestis, P., Luintel, A. D., and Luintel, K. B., "Does Financial Structure Matter?" Money Macro and Finance (MMF) Research Group Conference, 2004.

[4]   Beck, T. *The Role of Finance in Economic Development: Benefits, Risks, and Politics*. European Banking Center Discussion Paper No. 2011-038, 2011.

[5]   Beck, T., Demirgüç-Kunt, A., Levine, R. and Maksimovic, V., *Financial Structure and Economic Development: Firm, Industry, and Country Evidence*. World Bank Policy Research Working Paper No. 2423, 2000.

[6]   Bollard, A., "The Role of Banks in the Economy – Improving the Performance of the New Zealand Banking System after the Global Financial Crisis," The New Zealand Shareholders Association Annual Meeting, Tauranga, 6 August, 2011.

[7]   Boyd, J. H. and Smith, B. D., "The Evolution of Debt and Equity Markets in Economic Development," *Economic Theory*, 12, pp. 519–560, 1998. http://dx.doi.org/10.1007/s001990050234

[8]   Cecchetti, S. G., Schoenholtz, K. L., and Fackler, J. S. *Money, Banking, and Financial Markets*. New York: McGraw-Hill/Irwin, 2011.

[9]   Cull, R., Demirgüç-Kunt, A., and Lin, J. Y., "Financial Structure and Economic Development: A Reassessment," *The World Bank Economic Review*, 27, pp. 470–475, 2013. http://dx.doi.org/10.1093/wber/lht006

[10] Deltuvaitė, V. *A Framework for Systemic Risk Management Decision Making Simulation in the Banking Sector*. (Doctoral dissertation, Kaunas University of Technology). 2013.

[11] Demirgüç-Kunt, A. and Levine, R. *Bank-Based and Market-Based Financial Systems–Cross-Country Comparisons*. World Bank Policy Research Working Paper Series 2143, 1999.

[12] Demirgüç-Kunt, A. and Levine, R. *Financial Structures and Economic Growth: A Cross-Country Comparison of Banks, Markets and Development*. Cambridge, Mass.: MIT Press, 2001.

[13] Ergungor, O. E., "Financial System Structure and Economic Growth: Structure Matters," *International Review of Economics & Finance*, vol. 17, pp. 292–305, 2008. http://dx.doi.org/10.1016/j.iref.2006.09.001

[14] Hubbard, R. G. and O'Brien, A. P. *Money, Banking, and the Financial System*. Boston: Pearson, 2012.

[15] International Monetary Fund (IMF) *World Economic Outlook Database*, 2014.

[16] Levine, R., "Financial Development and Economic Growth: Views and Agenda," *Journal of Economic Literature*, vol. 35, pp. 688–726, 1997.

[17] Levine, R., "Bank-Based or Market-Based Financial Systems: Which Is Better?" *Journal of Financial Intermediation*, vol. 11, pp. 398–428, 2002. http://dx.doi.org/10.1006/jfin.2002.0341

[18] Lin, J. Y., Sun, X. and Jiang, Y., "Toward a Theory of Optimal Financial Structure," *Conference on Financial Structure and Economic Development*, June 16, 2011, World Bank, Washington, DC, 2011.

[19] Luintel, K.B. and Khan, M., "A Quantitative Reassessment of Finance-Growth Nexus: Evidence from Multivariate VAR," *Journal of Development Economics*, vol. 60, pp. 381–405, 1999. http://dx.doi.org/10.1016/S0304-3878(99)00045-0

[20] Luintel, K. B., Khan, M., Arestis, P. and Theodoridis, K., "Financial Structure and Economic Growth," *Journal of Development Economics*, vol. 86, pp. 181–200, 2008. http://dx.doi.org/10.1016/j.jdeveco.2007.11.006

[21] Oima, D., and Ojwang, C., "Market-Based and Bank-Based Financial Structure on Economic Growth in Some Selected Ecowas Countries," *International Journal of Education and Research*, vol. 1, pp. 398–428, 2013.

[22] Pesaran, M.H. and Smith, R., "Estimating Long-Run Relationships from Dynamic Heterogeneous Panels," *Journal of Econometrics*, vol. 68, pp. 79–113, 1995. http://dx.doi.org/10.1016/0304-4076(94)01644-F

[23] Sahoo, S., "Financial Structures and Economic Development in India: An Empirical Evaluation," RBI Working Paper Series No. WPS: 02/2013.

[24] World Bank (WB) *Financial Development and Structure Dataset*, 2013.

Vilma Deltuvaitė received the Doctoral degree in Social Sciences (Management) from Kaunas University of Technology in 2013. She is a Lecturer with the Department of Finance, School of Economics and Business, Kaunas University of Technology Lithuania.

She has worked as Accounting and Logistics Specialist, Chief Financial Officer, Head of Logistics Department and as General Manager (CEO) in private enterprises.

Her research interests include systemic risk management in banking sector, banking crises, banking sector's financial stability, assessment of banks' profitability and efficiency, cross-border contagion risk.

Address: K. Donelaicio Str. 73, LT-44309 Kaunas, Lithuania.

E-mail: vilma.deltuvaite@ktu.lt

Lina Sinevičienė was born in Lithuania in June, 1977. She received the Doctoral degree in Social Sciences (Economics) from Kaunas University of Technology in 2013.

She is a Lecturer with the Department of Finance, School of Economics and Business, Kaunas University of Technology, Lithuania. She has worked as Chief Financial Officer in private enterprises. Her research interests include capital investment, fiscal policy, fiscal policy interaction with private investment, public finance, financial system.

Address: K. Donelaicio str. 73, LT-44309 Kaunas, Lithuania.

E-mail: lina.sineviciene@ktu.lt