



William Davidson Institute

AT THE UNIVERSITY OF MICHIGAN

*Financial intermediation and
economic growth*

By: Leyla Yusifzada, Aytan Mammadova

William Davidson Institute Working Paper Number 1091
April 2015

Financial intermediation and economic growth

*L.Yusifzada*¹

*A.Mammadova*²

Abstract:

Financial depth does not fully reflect how well the financial intermediaries serve to economic agents in stimulating economic growth. Additional aspects of financial system such as access, efficiency and stability should be taken into account in order to shed light into the relationship between finance and economic growth. In our paper we capture the four aspects of finance – depth, access, efficiency and stability – to investigate the impact of financial development and economic growth. Our results suggest that the impact of four parameters of financial development differs depending on the level of financial development and has an inverted S-shape function.

Keywords: Financial intermediaries, financial development, economic growth, financial depth, access to finance, efficiency, financial stability

JEL Classification: E44, O16

¹ Leyla Yusifzada - Chief of the Financial Sector Stability Division, Centre for Research and Development, Central Bank of Azerbaijan, email: leyla_yusifzade@cbar.az

² Aytan Mammadova – Economist at the Financial Sector Intermediation Division, Centre for Research and Development, Central Bank of Azerbaijan, email: aytan_mammadli@cbar.az

1. Introduction

The role of financial intermediation in economic growth has been widely recognized in theoretical and empirical research. Finance can stimulate the main drivers of growth such as capital and total factor productivity. Financial intermediaries decrease transaction costs of capital accumulation and encourage savings. Financial intermediaries are also essential in increasing total factor productivity by directing investments to the most productive projects and monitoring them in a cost efficient way.

Most of research papers that investigate the relationship between finance and growth mainly concentrate on the financial depth indicators. However, both experience and research prove that financial depth does not fully reflect how well the financial intermediaries serve to economic agents in stimulating the productivity and capital accumulation. Additional aspects of financial system such as access, efficiency and stability should be taken into account in order to shed light into the relationship between finance and economic growth.

In our paper we capture the four aspects of finance – depth, access, efficiency and stability – to investigate the impact of financial development and economic growth. We use Cihak et al.'s (2012) approach for characterization of financial system using several indicators of depth, access, efficiency and stability. We construct indices to measure these four aspects of the financial system for a sample 118 countries and 8 years from 2004 to 2011. Then we use the indices to assess the relationship between finance and growth by running dynamic panel GMM regressions. Our approach also allows us to capture non-linearity of finance-growth relationship by adding squared form the indices to the regressions.

The results suggest that the impact of four parameters of financial development differs depending on the level of financial development. Thus, relationship between economic development and finance is not linear. We conclude that the relationship between finance and growth can be best explained by Favara's (2003) inverted S shape function.

The paper is organized as follows: The second chapter reviews the literature on the role of finance in economic growth. In chapter three we analyze financial depth, access to finance, efficiency and stability indicators, as well as the indices constructed from these indicators in three groups of developed, developing and emerging

countries. Next chapter introduces the methodology. The fifth chapter presents the results and conclusions are discussed in the final chapter.

2. Literature review

Early theoretical discussions of the relationship between financial development and economic growth, by Bagehot (1873) and Schumpeter (1912) recognized the role of financial intermediaries in allocation of resources to the most effective producers (Levine, 1997). Later in the 60s-70s Goldsmith (1969), McKinnon (1973), Shaw (1973) emphasized those financial restrictions such as interest rate limits, and reserve requirements may jeopardize financial sector development and economic growth. However, it was as late as the 1980s when the importance of financial intermediaries' monitoring and screening functions for economic growth were widely recognized to be one the conditions for economic growth (Bernanke, 1980; Diamond, 1984; Bernanke and Gertler 1988, 1989). In later years substantial body of research has been accumulated to support the view that financial intermediaries have a positive impact on economic growth (King & Levine, 1993; Obstfeld, 1994; Bencivenga et al., 1995; Greenwood & Smith, 1997; Levine, 1997; Levine & Demirgüç-Kunt, 2008).

Pagano (1993) explains three channels through which financial development may affect the economic performance. First of all, financial intermediaries improve efficiency of investments. Second, efficient financial systems decrease transaction costs and as a result increase savings. Third, financial sector development may increase or decrease savings.

Along with the screening and monitoring the most productive investments, financial intermediaries increase productivity through risk sharing and risk minimization. Saint-Paul (1992) notes that improvement in productivity can occur as a result of specialization of producers, however this specialization bears some risk. Developed financial intermediaries mitigate risks by diversifying and sharing these risks between investors (Acemoglu & Zilibotti, 1997). In contrast, it is too risky for producers and investors in countries with inefficient financial markets to increase productivity by specialization. Benhabib and Spiegel (2000) also confirm the hypothesis that financial intermediaries support the economic growth by increasing total factor productivity.

Moreover, King and Levine (1993) argue that in addition to increasing efficiency, financial intermediaries also propel economic growth through capital accumulation. Development of financial services networks, financial markets, and instruments are necessary for transformation of savings to investments for economic growth (Montiel, 1995). However, Beck (2000) finds evidence that financial sector affects the economic growth through productivity rather than capital accumulation. Financial impact conduit for economic growth may also differ depending on the level of economic development of countries. Industrialized countries might be more sensitive to productivity path, whereas capital accumulation is more important for developing countries (Rioja & Valey, 2004).

Futhermore, results of empirical research also support the proposition that cost efficient financial intermediaries are capable of fuelling the economic growth (Hasan, Koetter, Lensink, & Meesters, 2008; Hasan, Koettler & Wedow, 2009). This proposition implies that financial intermediaries can drive economic growth if they decrease the transaction costs.

It should be mentioned that the impact of financial development on economic growth proved to be positive regardless of the bank or markets dominated structure of the system (Michael, 2001; Levine, 2002). In addition, transmission of financial development to economic growth is conditioned on protection of investors' rights and contract enforcement (Levine, 1997, 2002). Protection of investors' rights and contract enforcement in their turn are determined by legal origin (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1997, 1998).

Although there is wide agreement on positive impact of financial development, the positive relationship may reverse after financial system reaches some threshold level. Santomero and Seater's (1999) theoretical model proves that optimal size of financial system exist and it depends on the level of development of production and monitoring technologies, rather than economic cycles. The threshold size of financial sector above which the relationship between finance and economic growth becomes negative is estimated to be 80-100% of GDP (Arcand, Berkes, & Panizza, 2012; Cecchetti & Kharroubi, 2012). The negative impact of excessively large financial sector is associated with existence of too big to fail banks (Laeven, Ratnovski, & Tong, 2014). However, Werkhoven and Schoenmaker (2012) argues that presence of multinational corporations might substantiate the existence of large banks.

Favara (2003) suggests an inverted S-shape function, whereas Shen and Lee (2006) propose inverted U-shape function to describe the non-linearity of the relationship between finance and economic growth. It follows that finance - economic growth relationship is not linear.

The impact of financial development on economic growth is not homogeneous across countries, regions and income levels. Country case studies for China (Shan & Jianhong, 2006), India (Ray, 2013), Greece (Adamopoulos & Dritsakis, 2000) and Nigeria (Odeniran & Udejaja, 2010) find evidence in favor for positive relationship between finance and growth. On the other hand, in Turkey the impact of financial development was negative due to the distortion in the structure of the system towards government finance (Pinar & Damar, 2006). Moreover, economies in oil-exporting countries, in Middle Eastern and North African countries, and in low-income countries benefited less from financial development (Riaoja & Valev, 2004; Barajas, Çami, & Yousefi, 2012).

Reviewed literature characterizes financial development mainly by financial sector depth indicators. Beck (2013) summarizes deficiencies of financial depth indicators in three groups: 1) they do not reflect the quality of financial intermediation, 2) they include both household and enterprise lending whereas only enterprise lending has growth boosting quality, 3) they reflect the talent drain from other sectors.

Therefore, measurement of the impact of financial development on economic performance based only on financial depth indicators might not reveal the true relationship. Other aspects of financial system such as access, efficiency and stability can reflect the quality of financial intermediation. In this sense Cihak et al.'s (2012) and World Bank's (2013) approach to describing financial development in four dimensions of depth, access, efficiency and stability may solve the first of the deficiencies mentioned by Beck (2013).

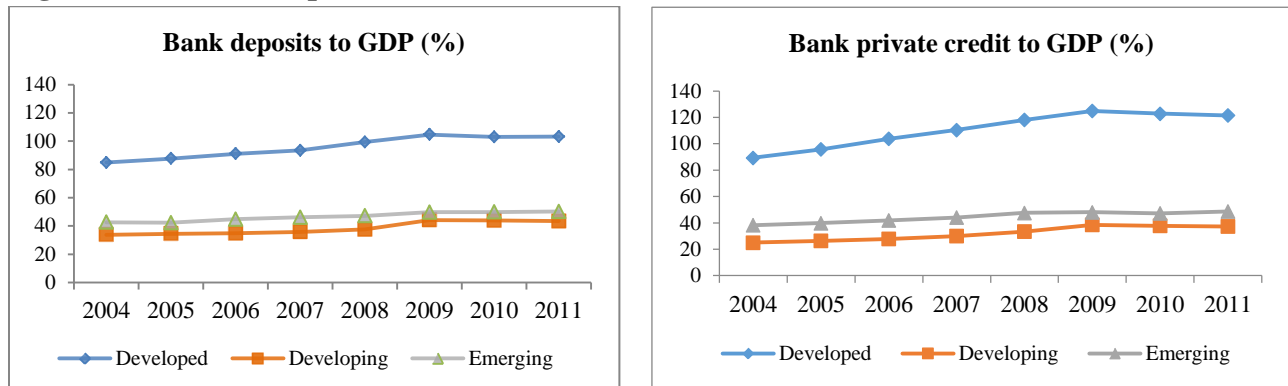
We contribute to the existing literature by using the above mentioned four dimensions of financial development to assess the relationship between finance and economic growth. The magnitudes of depth, access, efficiency, and stability indicators differ substantially depending on the stage of development of countries. Consequently we divide our sample of 118 countries into three groups: developed, developing and emerging. In following chapter we will analyze each of these dimensions.

3. Financial sector development indicators

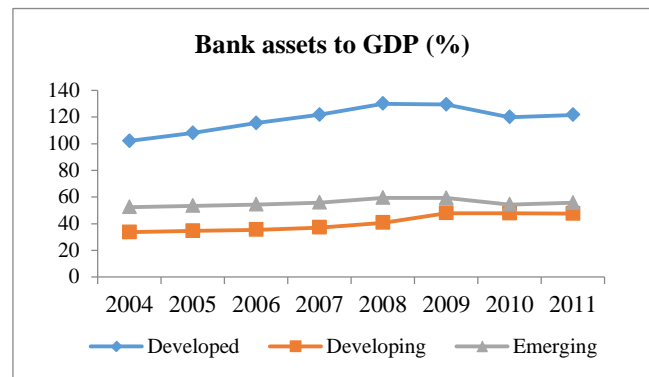
3.1. Financial depth

Financial depth is widely used to describe financial sector development. Such indicators as *private sector credit to GDP*, *assets to GDP* and *deposits to GDP* are widely used to measure the financial depth.

Figure 1. Financial depth indicators



The graphs show that developed countries are in the leading positions in terms of financial depth. Considerable expansion was observed in all three financial depth variables until 2009. After financial crisis these variables declined slightly. Along with being in leading position according to the level



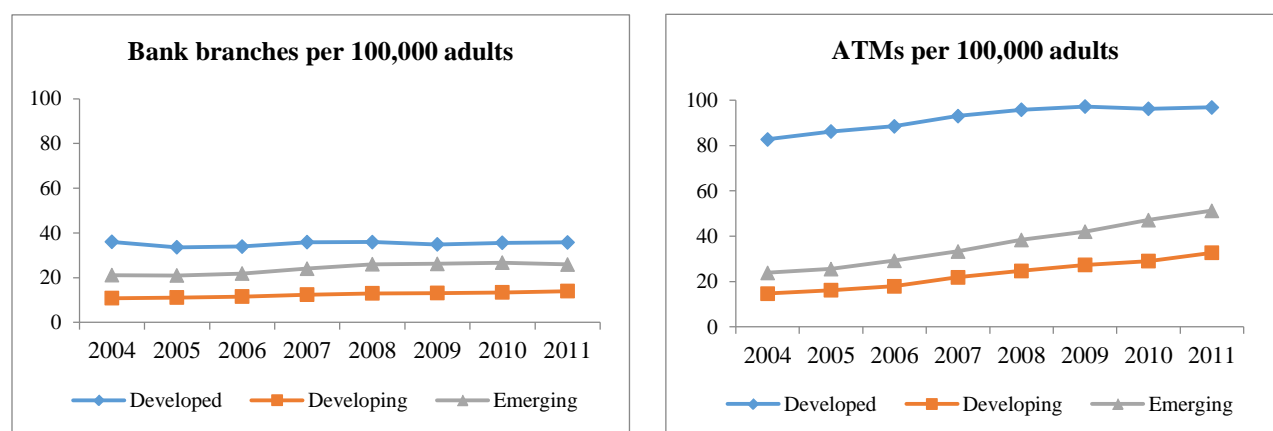
financial depth indicators, developed countries are ahead in terms of growth rates of these indicators. For instance, bank private credit to GDP ratio of developed countries increased 32 percentage points over 8 years between 2004-2011. In developing and emerging countries this number was 12 and 10 percentage point respectively. Similar growth pattern was observed in other financial depth indicators as well: the growth rate of bank deposits to GDP was 18, 10 and 8 percentage points in developed, emerging and developing countries respectively (the growth rate of banking system assets to GDP was 20, 14 and 3 percentage points respectively). As a result the gap between developed and developing countries did not shrink over the 8 years.

3.2. Access to finance

Financial sector does not only depend on the size of the financial institutions, but also on the ability of individuals and firms access to financial services. The main advantage of extensive access to financial services is reduction of inequality. Wider access to financial services brings more benefits to lower income people (Beck, Demirguc-Kunt and Levine 2007, Beck, Levine and Levkov 2010). Moreover, financial access stimulates economic development, strengthens competitiveness and demand for labor (World Bank, 2013). Financial access can be measured by branches per 100 000 adults and ATMs per 100000 adults etc.

Looking at Figure 2 we observe that developed countries are well positioned with regard to access to finance, whereas developing countries are lagging behind. In

Figure 2. Access to finance indicators



contrary to financial depth indicators, access to finance had substantial upward trend in developing and emerging countries with access to ATMs³ doubling since 2004. The data shows that access to bank branches⁴ increased in developing and emerging countries by 30% and 23% respectively. Although there has been considerable improvement in access to finance in the emerging and developing countries (rather than developed countries), the gap between developing/emerging countries and developed countries remains substantial. In developed countries, ATM coverage increased by 17%, while access to bank branches fell by 0.7%. Figure 2 implies that substantial progress in access to ATM in all three groups of countries was due to banks rendering their services outside their office buildings, via ATMs since 2004.

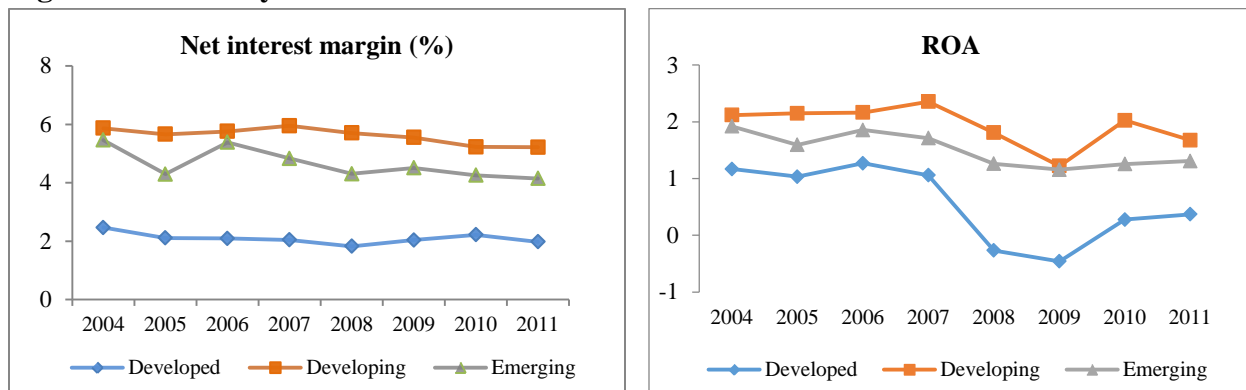
³ In this paper access to ATM means ATMs per 100,000 adults

⁴ Access to bank branch means bank branch per 100,000 adults

3.3. Efficiency

It should be mentioned that financial access should be accompanied with high efficiency (for example, reliable payment services, competitive interest rates etc.) in order to deliver expected benefits. Financial institutions should provide their intermediary functions in cost efficient way. Low *net interest margins and ROA reflect the efficiency of financial intermediaries.*

Figure 3. Efficiency indicators



On the other hand, excessively low profitability may also indicate inefficiency of financial intermediaries' management or financial stress period. Indeed, substantial decrease in ROA in 2008 and 2009 was result of global financial crises. In other words, net interest margin, ROA and other profitability indicators are expected to be low in efficient financial markets. It means that financial instruments should provide cost efficient intermediary services in order to add value to production. Figure 3 shows high level of efficiency in developed countries, while developing countries have the least efficient financial intermediaries. Emerging countries stand between developed and developing countries in terms of efficiency.

3.4. Financial stability

Financial systems with satisfactory levels of aforementioned three parameters may still lack the ability to support the economic growth because they do not reflect the interconnectedness, volatility, liquidity and other constrains. As recent financial crisis has shown that the deepest and most efficient (in terms of profitability) financial systems have not only failed to support long term sustainable growth but also were one of the main catalysts of the economic crisis. *Financial stability indicators include capital adequacy ratio, liquid assets to deposits, and short term funding.*

Figure 4. Financial stability indicators

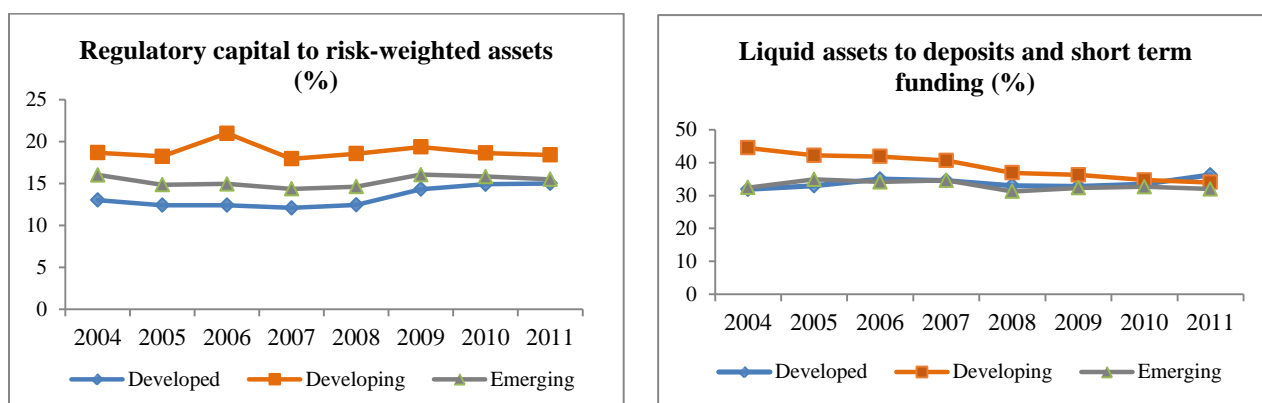


Figure 5 shows that countries are similar regarding stability indicators. In developing countries capital adequacy ratio is approximately 2 times higher than required by international standards. As a result of higher risk aversion and more stringent capital requirements after the global financial crisis capital adequacy ratio has been increasing in developed countries since 2008. In developed countries capital adequacy ratio rose by 2 percentage points, whereas in developing and emerging countries it has dropped by 0.3 and 0.5 percentage points respectively during 2004-2011. Moreover, in contrast to developing and emerging countries, developed countries have had higher liquidity due to Central Banks' quantitative easing (QE) and low interest rates policy aftermath the financial crises. In addition, banks in developed countries preferred to hold liquid assets rather than lending because of unfavorable economic conditions.

Summarizing the four groups of financial development indicators, we can say that developed countries are ahead in terms of depth, access and efficiency. Furthermore, higher capital adequacy and liquidity indicators in developing and emerging countries might not only ensure financial stability but also be a sign of asset underutilization. On one hand as global financial crisis has shown financial stability is essential for sustainable economic growth, on the other hand capital accumulation and liquidity hoarding which improves financial stability may hinder the economic growth.

It should be mentioned that each of the four financial development parameters should be developed in tandem for financial intermediation to support the economic growth. As Table 1 shows, financial depth and financial access indicators have positive correlation, while these indicators are negatively correlated with efficiency and stability indicators. It means that, financial development strategies should not focus only on one parameter of financial system as growth of access and depth, as well as improvements in efficiency may damage the stability. The case of India can be a

classic example where government's financial inclusion program in 1970-ies failed as bank profitability was sacrificed in favor of financial access and as a result lead to foreclosure of rural branches.

Table 1. Correlation between indicators

	<i>ATM</i>	<i>Bank branch</i>	<i>Credit to GDP</i>	<i>Deposit to GDP</i>	<i>Asset to GDP</i>	<i>Capital adequacy</i>	<i>Liquid liabilities</i>	<i>Interest margin</i>	<i>ROA</i>
<i>ATM</i>	1								
<i>Bank branch</i>	0.51	1							
<i>Credit to GDP</i>	0.49	0.60	1						
<i>Deposit to GDP</i>	0.64	0.65	0.72	1					
<i>Asset to GDP</i>	0.63	0.65	0.78	0.96	1				
<i>Capital adequacy</i>	-0.34	-0.22	-0.17	-0.34	-0.31	1			
<i>Liquid liabilities</i>	-0.19	-0.08	0.00	-0.11	-0.11	0.60	1		
<i>Interest margin</i>	-0.53	-0.45	-0.57	-0.69	-0.69	0.40	0.06	1	
<i>ROA</i>	-0.28	-0.41	-0.25	-0.47	-0.46	0.26	0.05	0.39	1

3.5. Financial sector development index

In the next step we incorporate all the information of above mentioned indicators and estimate four indices for financial depth, access to finance, efficiency and stability. The calculation of the indices is based on “Principal Component Analysis” (PCA) of 118 country sample (Appendix 1). Indices are constructed for each year between 2004 -2011.

Table 2. Inputs for financial sector development indices

Financial depth index	<ul style="list-style-type: none"> • Private sector credit to GDP • Assets to GDP • Deposits to GDP
Access index	<ul style="list-style-type: none"> • Branches per 100 000 adults • ATMs per 100 000 adults
Efficiency index	<ul style="list-style-type: none"> • Net interest margin • Return on assets (ROA)
Stability index	<ul style="list-style-type: none"> • Capital adequacy ratios • Z-score

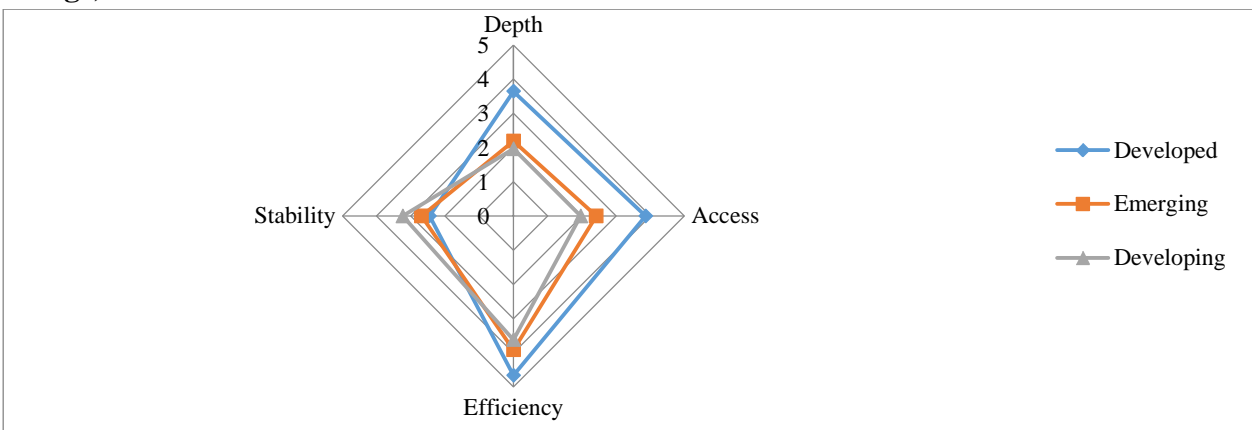
We normalize financial depth, access to finance and stability indices to a one-to-seven scale⁵, with one indicating the worst and seven the best outcome. Because a higher values of efficiency indicators corresponds to worse outcome we use the

⁵ Formula for normalization of depth, access and stability indices: $6 * (\text{country score} - \text{sample minimum}) / (\text{sample maximum} - \text{sample minimum}) + 1$

transformation formula⁶ to ensure that the worst and the best outcomes correspond to one and seven respectively (World Economic Forum, 2014).

Indices show clear differences across developed and developing countries as well as emerging economies. Developed countries are ahead in financial depth, access to finance and efficiency, while their stability index is low. In contrast, developing countries have highest values of stability index whereas depth, access and efficiency indices are poor. The four indices for emerging countries stand between the developed and developing countries (figure 5).

Figure 5. Financial sector development indexes comparison in country groups (2004-2011 average)



4. Methodology

The literature considering relationship between finance and growth mainly uses financial depth indicators such as deposits to GDP, loans to GDP, gross national savings to GDP, monetary aggregates to GDP and market capitalization to GDP ratios as the main indicators of financial development. Economic performance indicators that are considered to be influenced by financial development are GDP, per capita GDP, GDP growth rate, investments, and population growth rate. Researchers mainly use Granger causality, Vector auto regression (VAR), OLS, instrumental variables and generalized method-of-moments (GMM) methodologies to measure the relationship between these two groups of indicators.

The model contains a lagged dependent variable and a set of explanatory regressors x :

$$y_{i,t} = \alpha y_{i,t-1} + x_{i,t} \beta + u_{i,t} \quad i = 1, \dots, N, \quad t = 1, \dots, T$$

y_i is real per capita GDP in country i at time t .

⁶ Formula for normalization of efficiency index: $-6 * (\text{country score} - \text{sample minimum}) / (\text{sample maximum} - \text{sample minimum}) + 7$

$x_{i,t}$ represents explanatory variables, including indexes characterizing four parameters of financial system and other control variables. We use financial depth, access to finance, efficiency and financial stability indices presented in the previous section as financial system variables and government final consumption expenditure to GDP, trade to GDP, lagged real per capita GDP growth and average duration of secondary education as control variables.

$u_{i,t}$ is error component⁷.

$$u_{i,t} = \mu_i + v_{it}$$

μ_i is unobservable individual-specific effect and v_{it} denotes the remaining disturbance. Problems such as causality in both directions (Greenwood and Jovanovic, 1990), autocorrelation due to a lagged dependent variable, and difference between time (short) and country (larger) dimensions in the dataset complicate the estimation of links between economic growth and financial development. OLS estimation in this case turns to be biased and inconsistent. GMM is one of the most appropriate model to overcome these problems. Instruments solve the causality problem and lagged explanatory variables can be used as instruments. Anderson and Hsiao (1981) suggested applying an instrumental variable (IV) estimator using $y_{i,t-2}$ or $\Delta y_{i,t-2}$ as instruments for $\Delta y_{i,t-1}$.

Arellano and Bond (1991) develop a two-step difference GMM. The first difference transformation removes both the constant term and the individual effect.

$$y_{i,t} - y_{i,t-1} = \alpha(y_{i,t-1} - y_{i,t-2}) + (x'_{i,1} - x'_{i,2})\beta + (v_{i,t} - v_{i,t-1})$$

$u_{i,t} = \Delta v_{i,t} = v_{i,t} - v_{i,t-1}$ and μ_i drops out. In this case $y_{i,t-2}$ is a valid instrument because it is not correlated with $\Delta v_{i,t}$. This estimator is based on the following two moment conditions:

$$E[y_{i,t-s}(v_{i,t} - v_{i,t-1})] = 0, \text{ for } s \geq 2; t = 3, \dots, 12$$

$$E[x_{i,t-s}(v_{i,t} - v_{i,t-1})] = 0, \text{ for } s \geq 2; t = 3, \dots, 12$$

The main problem in this estimator is elimination of the cross-country effect by differencing. To overcome these problems, Blundell and Bond (1998) developed the system GMM estimator. They added two additional conditions:

$$E[(y_{i,t-s} - y_{i,t-s-1})(\mu_i + v_{i,t})] = 0, \text{ for } s = 1;$$

⁷ Also our regression includes time dummy (2009)

$$E \left[(x_{i,t-s} - x_{i,t-s-1}) (\mu_i + v_{i,t}) \right] = 0, \text{ for } s = 1$$

There is also assumption that the instruments are valid and the error term has no serial correlation. The efficiency of instrument can be checked using 2 tests: J-test and 2-nd difference serial correlation. Null hypothesis for J-test is that instruments are efficient, and for 2-nd difference serial correlation the null hypothesis is that the error terms are not serially correlated.

5. Results

We estimate the relationship between financial development and economic growth with panel data covering 118 countries and the period from 2004 to 2011. We split the sample of 118 countries into 3 country groups of developed, emerging and developing countries using IMF's country classification⁸. Complete list of countries is presented in the table 4 of the appendix. The main data source is Word Bank's database (for more detailed information on data sources look at table 2 in Appendix). In addition to the lag of the explanatory variables we use legal origin, which is widely recognized as exogenous factor for financial development (Levine, 1997, 2002), as instrumental variable.

Table 3. Financial depth and economic growth

Dependent variable: Real per capita GDP growth

Explanatory variables:	Developed countries	Emerging countries	Developing countries	World
Depth	-0.072***	0.119*	-0.149***	-0.178*
Depth*Depth	0.008***	-0.021*	0.023***	0.014*
Real GDP per capita (-1) ^a	0.656***	0.932***	0.886***	0.685***
Government expenditure ^b	-0.008***	-0.014***	-0.0009***	-0.016***
Trade ^c	0.0006***	0.0002*	0.0001**	-0.002**
Secondary education ^d	0.026***	0.057***	-0.103*	-0.305**
Dummy 2009	-0.041***	-0.049***	-0.035***	-0.035***
<i>Prob (J-statistics)^e</i>	<i>0.22</i>	<i>0.20</i>	<i>0.47</i>	<i>0.20</i>
<i>AR (2)^f</i>	<i>0.96</i>	<i>0.99</i>	<i>0.96</i>	<i>0.26</i>

^aThis variable is included in log form

^bGeneral government final consumption expenditure measured as a share of GDP

^cTrade is the sum of exports and imports of goods and services measured as a share of GDP

^dAverage duration of secondary education, duration (years) is the number of grades (years) in secondary school.

^eThe null hypothesis is that the instrumental variables are not correlated with the error term (H0=instruments are valid)

⁸ 35 developed, 20 emerging, and 63 developing countries

^f The null hypothesis is that the errors have no second-order serial correlation.

As instrumental variables: legal origin, lag of the secondary education, depth, depth² and real per capita GDP growth

*** 1%, ** 5%, * 10% significance level

Table 3 shows the results of dynamic panel GMM estimations. First of all, in line with Favara (2003), Rioja and Valev (2004), Shen and Lee (2006), Cechetti and Kharroubi (2012) our estimations show that relationship between economic development and finance is not linear. According to regression results presented in table 3 economic development-financial depth relationship is significant in developing and developed countries but weakly significant in emerging countries. Financial depth has negative impact in levels and positive impact in squared form in developing and developed countries.

Table 4. Access to finance and economic growth

Dependent variable: Real per capita GDP growth

Explanatory variables:	Developed countries	Emerging countries	Developing countries	World
Access	0.060***	0.068***	-0.027***	-0.042*
Access*Access	-0.005***	-0.007***	0.003***	0.001*
Real GDP per capita (-1)	0.610***	0.812***	0.851***	0.879***
Government expenditure^b	-0.007***	-0.001*	0.0008*	-0.007***
Trade	0.0005***	0.001***	0.001***	0.001**
Secondary education	0.026***	-0.031*	-0.045***	-0.249***
Dummy 2009	-0.044***	-0.042***	-0.031***	-0.027***
<i>Prob (J-statistics)^a</i>	<i>0.24</i>	<i>0.21</i>	<i>0.33</i>	<i>0.05</i>
<i>AR (2)^b</i>	<i>0.98</i>	<i>0.66</i>	<i>0.96</i>	<i>0.82</i>

^a The null hypothesis is that the instrumental variables are not correlated with the error term

(H0=instruments are valid)

^b The null hypothesis is that the errors have no second-order serial correlation

As instrumental variables: : legal origin, lag of the secondary education, access², trade, and real per capita GDP growth

*** 1%, ** 5%, * 10% significance level

Relationship between access to finance and growth is not linear either, as the coefficients change the sign when indexes are raised to the power of two. In emerging and developed countries access is growth promoting up to some threshold level beyond which additional increase in access to finance undermines economic development. In contrast, developing countries have negative relationship between access to finance and economic development up to the threshold and positive relationship beyond. Beyond this threshold an incremental increase in access to finance has a negative impact for economic growth of developing countries. Thus,

the relationship between finance and growth can be best explained by Favara's (2003) inverted S shape function. According to inverted S shape function the least and the most developed financial systems are having negative impact on economic growth. Financial system is growth promoting when the access to finance is medium.

The negative coefficient for access index for developing countries captures the negative slope. Positive coefficient for squared access index for developing countries and positive coefficient for access index in levels for developed and emerging countries capture positive slope of inverted S function. Finally, the negative coefficient for squared access index for developed and emerging countries captures the negatively sloped tail of the inverted S function. It seems that positive sign for access index in levels is mainly driven by intermediate size of the financial sector.

Table 5. Efficiency index and economic growth

Dependent variable: Real per capita GDP growth

Explanatory variables:	Developed countries	Emerging countries	Developing countries	World
Efficiency	0.011***	0.023***	0.007***	-0.006*
Efficiency*Efficiency	-0.0007***	-0.003***	-0.001***	0.002**
Real GDP per capita (-1)	0.828***	0.965***	0.893***	0.822***
Government expenditure	-0.008***	-0.009**	-0.004***	-0.0003*
Trade	0.0006***	0.0003*	0.0006***	0.003***
Secondary education	0.076***	0.066***	0.017***	-0.108**
Dummy 2009	-0.033***	-0.053***	-0.03***	-0.011**
<i>Prob (J-statistics)^a</i>	<i>0.48</i>	<i>0.20</i>	<i>0.42</i>	<i>0.06</i>
<i>AR (2)^b</i>	<i>0.99</i>	<i>0.99</i>	<i>0.78</i>	<i>0.20</i>

^a The null hypothesis is that the instrumental variables are not correlated with the error term (H0=instruments are valid)

^b The null hypothesis is that the errors have no second-order serial correlation

As instrumental variables: : legal origin, lag of the secondary education, efficiency, efficiency², and real per capita GDP growth

*** 1%, ** 5%, * 10% significance level

To sum up, access to finance can stimulate growth in medium range interval, above and below which access to finance is damaging for economic development. The factors that determine the negative slope may differ in developed and developing countries. Application of information technologies to banking services decreases demand for brick and mortar branches in developed countries. At the same time, a rapid and excessive increase of bank branches and ATM networks might deteriorate the profitability of banks and decrease the efficiency in developing countries (e.g. the case of India).

Furthermore, for all three groups of countries coefficients for efficiency in levels are positive and negative in squared form. Efficient financial intermediaries are crucial for economic development. High net interest margin and profitability ratios, which are the inputs for calculation of efficiency index, may indicate limited competition in the financial sector, which in turn, increases the cost of financial intermediation and undermines the positive impact of finance on economic growth (Harrison 1999). In other words, high efficiency index implies lower interest margins and profitability, therefore increases economic growth.

On the other hand, excessively high efficiency will deteriorate banks' profitability. As implied by Santomero and Seater's model (2000), the financial system supports economic growth to the extent that efficiency gains in production are higher than monitoring costs. However, as the financial institutions in search for higher profit margins engage in non-traditional lending activities, rather than channeling funds to real economy, their screening and monitoring function is compromised, thus the economic growth is undermined. Indeed, Beck et al. (2012) demonstrate that only traditional intermediation activities are growth promoting. Negative sign for squared efficiency index may reflect the divergence of financial institutions from their traditional intermediation functions to synthetic financial products which have lost the link with the real economy (Demirguc-Kunt & Huizinga, 2010).

To sum up, higher efficiency may discourage monitoring function of financial intermediaries and lead to economic downturn. As countries reach high efficiency level, further increase in efficiency of financial intermediaries seems ineffective for economic development. Moreover, high efficiency, thus low profitability may cause decline in GDP of financial sector, which is one of the components of total GDP.

Table 6. Financial stability index and economic growth

Dependent variable: Real per capita GDP growth

	Developed countries	Emerging countries	Developing countries	World
Stability	-0.021***	-0.018**	0.006***	0.001*
Stability*Stability	0.002***	0.0002**	-0.001***	-0.0006***
Real GDP per capita (-1)^a	0.564***	0.875***	0.893***	0.814***
Government expenditure^b	-0.006***	-0.021***	-0.004***	-0.004***
Trade^c	0.0005***	-0.0003*	0.001***	0.0008***
Secondary education^d	-0.0007*	0.039***	0.043***	0.024***
Dummy 2009	-0.039***	-0.035***	-0.027***	0.036***

<i>Prob (J-statistics)^e</i>	0.30	0.43	0.33	0.07
<i>AR (2)^f</i>	0.98	0.42	0.59	0.003 ⁹

^a The null hypothesis is that the instrumental variables are not correlated with the error term (H0=instruments are valid)

^b The null hypothesis is that the errors have no second-order serial correlation

As instrumental variables: : legal origin, lag of the secondary education, stability, stability², government expenditure and real per capita GDP growth

*** 1%, ** 5%, * 10% significance level

In addition, economic development appears also to be an inverted S shape function of financial stability. Emerging and developed countries seem to be in a negative slope zone of the inverted S function. Their financial stability index should reach a threshold level in order to have positive impact on economic growth. On the other hand, developing countries have the best performance in financial stability index and the relationship between financial stability and economic development is positive up to some point. However, as negative coefficient for squared stability index suggests, extreme increase in financial stability index will move these countries to the negative sloped tail of the function, in other words will compromise the economic performance in emerging and developed countries.

It means that at low levels of financial stability financial market participants might be too risk averse and hoard liquidity rather than extend loans to real sector. In this case, improvements in financial stability will have negative impact on economic growth. As financial stability reaches some intermediate level it starts to ensure economic development. However, economic development reverses if financial system is excessively stable and financial intermediaries keep more capital and liquidity than what is needed.

6. Conclusion

Analysis of financial sector development indexes indicate clear differences across developed and developing countries as well as emerging economies. Developed countries are ahead in financial depth, access to finance and efficiency, while their stability index is low. The four indices for emerging countries stand between the developed and developing countries.

Econometric estimations show that relationship between economic development and finance is not linear. Our results suggest that the relationship between finance and growth can be best explained by Favara's (2003) inverted S shape function.

⁹ Numerous instrument sets were employed, but all of them failed to correct the misspecification.

According to the inverted S shape function the least and the best developed financial systems are having negative impact on economic growth. Financial system is growth promoting when the size of financial market is medium. Growth of financial sector decreases per capita GDP when financial intermediaries are poorly or excessively developed.

In emerging and developed countries access to finance is growth promoting up to some threshold level beyond which additional increase in access to finance undermines economic development. In contrast, developing countries have negative relationship between access to finance and economic development up to the threshold and positive relationship beyond. Efficiency coefficients in all three groups of countries in levels are positive and negative in a squared form. Higher efficiency may discourage monitoring function of financial intermediaries and lead to economic downturn. As countries reach high efficiency level further increase in efficiency of financial intermediaries seems ineffective for economic development.

At low levels of financial stability financial market participants might be too risk averse and hoard liquidity rather than extend loans to the real sector. In this case, improvements in financial stability will have a negative impact on economic growth. As financial stability reaches some intermediate level it starts to ensure economic development. However, economic development reverses if financial system is excessively stable and financial intermediaries keep more capital and liquidity than what is needed.

Bibliography

- Acemoglu, D., & Zilibotti, F. (1997). Was Prometheus unbound by chance? risk, diversification and growth. *The Journal of Political Economy*, 105(4), 709-751.
- Adamopoulos, A., & Dritsakis, N. (2000). Financial Development and Economic Growth in Greece: An Empirical Investigation with Granger Causality Analysis. *Working paper*, 1-24.
- Arcand, J. L., Berkes, E., & Panizza, U. (2012, june). Too much finance? *IMF Working Paper*, WP/12/161.
- Ayadi, R., Emrah, A., Sami, B., & Willem, P. G. (2013). Financial Development, Bank Efficiency and Economic Growth across the Mediterranean. *MEDPRO Technical Report No. 30*, 1-15.
- Bagehot, W. (1873). *Lombard Street: A Description of the Money Market* (1962 Edition ed.). Homewood, IL: Richard D. Irwin.
- Baltagi, B. H. (2009). *Econometric Analysis of panel data*. England, Third edition: John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex PO19 8SQ.
- Barajas, A., Çami, R., & Yousefi, S. R. (2012). The finance and growth nexus re-examined: do all countries benefit equally? *IMF Working Paper*, WP/13/130.
- Beck, L., Levine, R., & Loayza, N. (2000). Finance and the sources of growth. *Journal of Financial Economics*, 58, 261-300.
- Beck, T. (2013, October 27). *Finance and growth: Too much of good thing?* Retrieved September 5, 2014, from VOX: Research-based policy analysis and commentary from leading economists: http://www.voxeu.org/article/finance-and-growth?quicktabs_tabbed_recent_articles_block=0
- Beck, T., Degryse, H., & Kneer, C. (2012). Is more finance better? Disentangling intermediation and size effect of financial systems. *Journal of Financial Stability*, 10.
- Benchivenga, V., Smith, B., & Starr, R. (1995). Transactions costs, technological choice, and endogenous growth. *Economic theory*, 67, 153-177.
- Benhabib, J., & Spiegel, M. M. (2001). The Role of Financial Development in Growth and Investment. *Economic Growth*, 5(4), 341-360.
- Bernanke, B. (1980). Nonmonetary effects of the financial crises in the propagation of the great depression. *The American Economic Review*, 73(3), 257-276.

- Bernanke, B., & Gertler, M. (1989). Agency Costs, Net Worth, and Business Fluctuations. *The American Economic Review*, 79(1), 14-31.
- Caporale G. M., R. C. (2009). Financial Development and Economic Growth: Evidence from Ten New EU Members. *Working Paper, No. 09-37*, 1-39.
- Cecchetti, S. G., & Kharroubi, E. (2012). Reassessing the impact of finance on growth. *BIS Working Papers*, 381.
- Cihak, M., Demirgüç-Kunt, A., Feyen, E., & Levine, R. (2012). Benchmarking Financial Systems around the World. *Policy Research Working Paper 6175*.
- Diamond, D. W. (1984). Financial intermediation and delegated monitoring. *The Review of Economic Studies*, 51(3), 393-414.
- Favara, G. (2003). An empirical reassessment of the relationship between finance and growth. *IMF Working Paper, WP/03/123*.
- Goldsmith, R. (1969). Financial Structure and Development. *The Economic Journal*, 80(318), 365-367.
- Greenwood, J., & Smith, B. (1997). Financial markets in development, and the development of financial markets. *Journal of Economic Dynamics and Control*, 21, 145-181.
- Hasan, I., Koetter, M., & Wedow, M. (2009). Regional growth and finance in Europe: Is there a quality effect of bank efficiency? *Bank of Finland Research Discussion Paper*, 13.
- Hasan, I., Koetter, M., Lensink, R., & Meesters, A. (2008). Bank Efficiency, Financial Depth, and Economic Growth. *Working paper*.
- Hasan, I., Renzis, T. D., & Schmiedel, H. (2013). Retail payments and the real economy. *ECB Working Paper Series*.
- Hurlin, C., & Venet, B. (2008). Financial Development and Growth: A Re-Examination using a Panel Granger Causality Test. 1-30.
- King, R., & Levine, R. (1993). Finance, entrepreneurship, and growth. *Journal of Monetary Economics* 32 (1993) 513-542. North-Holland.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1997). Legal determinants of external finance. *Journal of Finance*, LII(3).
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1998). Law and finance. *Journal of Political Economy*, 106(6), 1113-1151.
- Laeven, L., Ratnovski, L., & Tong, H. (2014). Bank Size and Systemic Risk. *IMF Staff Discussion Note, SDN/14/04*.
- Levine, R. (1997). Financial development and economic growth: views and agenda. *Journal of Economic Literature*, XXXV, 688-726.
- Levine, R. (2002). Bank-based or market-based financial systems: which is better? *Working Paper*, 9138.

- Levine, R., & Demirgüç-Kunt, A. (2008). Finance, Financial Sector Policies, and Long-Run Growth. *Policy Research Working Paper, 4469* .
- Levine, R., Loayza, N., & Beck, T. (1999). Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics* 46 (2000) 31-77.
- McKinnon, R. I. (1973). *Money and Capital in Economic Development*. Washington.
- Michael, T. (2001). *Finance and economic growth - review of theory and the available evidence*.
- Montiel, P. J. (1995). Financial policies and economic growth: Theory, evidence and country-specific experience from sub-Saharan Africa. *African Economic Research Consortium, Special Paper No 18*.
- Obstfeld, M. (1994). Risk-Taking, Global Diversification, and Growth. *The American Economic Review*, 84(5), 1310-1329.
- Odeniran, O. S., & Udejaja, A. E. (2010). Financial Sector Development and Economic Growth: Empirical Evidence from Nigeria. *Central Bank of Nigeria Economic and Financial Review*, 91-124.
- Pagano, M. (1993). Financial markets and growth. *European economic review*, 37, 613-622.
- Perera, N., & Paudel, R. (2009). Financial development and economic growth in Sri Lanka. *Sydney Business School - Papers*, 157-164.
- Pinar, A., & Damar, E. (2006). Financial Sector Deepening and Economic Growth. *Working Paper*, 1-17.
- Ray, S. (2013). Does Financial Development Promote Economic Growth in India? *International Journal of Economic Practices and Theories*, 140-151.
- Riaja, F., & Valev, N. (2004). Does One Size Fit All?: A Reexamination of the Finance and Growth. *Journal of Development Economics*, 429-447.
- Saint-Paul, G. (1992). Technological choice, financial markets and economic development. *European economic Review*.
- Santomero, A. N., & Seater, J. J. (2000). Is there an optimal size for the financial sector? *Journal of Banking and Finance*, 945-965.
- Schumpeter, J. A. (1912). *The theory of economic development THEORY OF ECONOMIC DEVELOPMENT*. Cambridge: Harvard University Press.
- Shan, J., & Jianhong, Q. (2006). Does Financial Development 'Lead' Economic Growth? The Case of China. *Annals of Economic and Finance*, 197-216.
- Shaw, E. S. (1973). *Financial Deepening in Economic Development*. London.
- Shen, C.-H., & Lee, C.-C. (2006). Same Financial Development yet Different Economic Growth-Why? *Money, Credit and Banking*.

Werkhoven, D., & Schoenmaker, D. (2012). What is the Appropriate Size of the Banking System? *DSF Policy Paper Series*, 5.

World Bank. (2013). *Global Financial development report: rethinking the role of the state in finance*.

World Economic Forum. (2014). *The Global Competitiveness Index 2014-2015*.

Appendix

Table 1. Literature review

Authors	Country examples	Methodology	Impact of finance	Economic performance indicators	Results
(Pinar & Damar, 2006)	Turkey	GMM and OLS methods	Deposits to GDP	Population growth, education, health care openness index	Financial sector development has a negative impact to economic growth in 1996-2001
(Shan & Jianhong, 2006)	China	Granger causality, Vector autoregression (VAR),	Credit to GDP	Investment and GDP growth, openness and labor force	Researches have shown that, there is a relationship between financial development and economic growth in China
(Ray, 2013)	India	Granger causality 1990-91 to 2010-11.	Gross domestic savings to GDP ratio and the debt-to-GDP ratio		There is a strong impact of financial development to economic growth in India

(Perera & Paudel, 2009)	Shri Lanka	(1955- 2005) Johansen cointegration and Error Correction Model Granger causality test	M1, M2, M3 and M4 to nominal GDP per capita, credit to GDP, private sector credit to total domestic credit		Results show that broad money impacts to economic growth and there is mutual relation between broad money and economic growth. Private sector credits positively influence economic growth and in this case causality is from private sector credit to economic growth.
(Ayadi, Emrah, Sami, & Willem, 2013)	Mediterranean countries	1984-2010 GMM model, fixed effect panel regression	Private sector credit to GDP, deposits to GDP, market capitalization, stock market liquidity and financial openness	GDP per capita	There is negative impact between private sector credit and banking sector deposits. Nevertheless, stock market development has significant impact to GDP.
(Hurlin & Venet, 2008)	63 industrial and developing countries	(1960-1995,1960-2000) Panel Granger Casualty test	Private credit issued by deposit money banks to GDP , financial sector liquidity liabilities to GDP, private credit issued by deposit money banks and other financial institutions to GDP	Real per capita GDP	The results show that economic growth cause financial development. The opposite side, causality from financial development indicators to economic growth cannot be denied. However, these findings imply that, if there is such connection it cannot be easily detected by testing Granger bi-variate casualty.

(Adamo poulos & Dritsakis , 2000)	Greece	(1960-2000) Cohansen cointegration test, Granger Casualty test	M2 (money supply) to GDP, total value of import and export	GDP	The results show that there is a mutual relation between financial development and economic growth, as well as mutual relation between openness and economic growth.
	10 new EU countries (Bulgaria, Czech, Estonia, Hungary, Latvia, Lithuania , Poland, Romania, Slovakia, Slovenia)	(1994-2007) Granger causality	Private sector credits to GDP for financial depth calculation; stock market indicators to GDP for market capitalization calculation; broad money to GDP for financial sector size calculation; difference between credit and deposit interest rate for calculation of competitiveness and efficiency of financial sector		Granger causality test show that, causality is from financial development (private sector credit and net interest margin) to economic growth

(Odeniran & Udejaja, 2010)	Nigeria	Granger casualty 1960-2009	Broad money to GDP, net domestic credit growth to GDP, growth in private sector credit to GDP, growth in banks deposit liability to GDP		Empirical results show that there is interaction between financial development and economic growth in Nigeria. Specifically, they find that the various measures of financial development granger cause output even at 1 percent level of significance with the exception of ratio of broad money to GDP. Additionally, they find that net domestic credit is equally driven by growth in output, thus indicating bidirectional causality. The variance decomposition shows that the share of deposit liability in the total variations of net domestic credit is negligible, indicating that shock to deposit does not significantly affect net domestic credit.
(Barajas, Çami, & Yousefi, 2012)	130 countries: Middle East and North Africa (MENA), oil export countries, low income countries	1975-2005 Dynamic GMM model	Private sector credits (issued by deposit money banks) to GDP, value of the traded stocks to real market capitalization	Oil and non-oil GDP growth	In most MENA countries stock market and banking sector developed significantly. Though there are some places where financial indicators are lower. The main problem in MENA countries is to lend deposits as credits for population. In low income countries as financial sector developed poorly, this level of development doesn't impact economic growth, substantially.

Table 2. Data sources

<i>Variable</i>	<i>Source</i>
Bank private credit to GDP (%)	Global Financial Development Database, and National Supervision Authority Databases
Deposit money bank assets to GDP (%)	Global Financial Development Database, and National Supervision Authority Databases
Financial system deposits to GDP (%)	Global Financial Development Database, and National Supervision Authority Databases
ATMs per 100,000 adults	Global Financial Development Database, and National Supervision Authority Databases
Bank branches per 100,000 adults	Global Financial Development Database, and National Supervision Authority Databases
Net interest margin	Global Financial Development Database, and National Supervision Authority Databases
ROA	Global Financial Development Database, and National Supervision Authority Databases
Regulatory capital to risk-weighted assets (%)	Global Financial Development Database, and National Supervision Authority Databases
Liquid assets to deposits and short term funding (%)	Global Financial Development Database, and National Supervision Authority Databases
Legal origin	http://www.cepii.fr/CEPII/en/bdd_modele/bdd.asp
Average years of secondary education	UNESCO Institute for Statistics
Trade as a share of GDP	World Bank national accounts data, and OECD National Accounts data files
Government expenditure to GDP	World Bank national accounts data, and OECD National Accounts data files
Real per capita GDP	World Bank national accounts data, and OECD National Accounts data files

Table 3. Descriptive statistics

	Access to finance index	Financial depth index	Stability index	Efficiency index
Minimum	1.0	1.0	1.4	1.7
Maximum	6.6	6.7	5.8	5.2
Mean	2.6	2.5	2.9	4.0
Standard deviation	1.2	1.1	0.9	0.7
Observations	118	118	118	118

Table 4. Country list

Developed countries	Emerging countries	Developing countries
Czech Republic	Argentina	Albania
Estonia	Brazil	Algeria
Finland	Bulgaria	Angola
France	China	Armenia
Germany	Colombia	Bahamas, The
Greece	India	Bangladesh
United States	Indonesia	Belarus
United Kingdom	Latvia	Belize
Hungary	Malaysia	Bosnia and Herzegovina
Italy	Mexico	Botswana
Japan	Morocco	Brunei Darussalam
Korea, Rep.	Pakistan	Burundi
Singapore	Panama	Cambodia
Slovenia	Peru	Central African Republic
Spain	Philippines	Chad
Australia	Romania	Costa Rica
Austria	Russian Federation	Croatia
Belgium	Thailand	Djibouti
Canada	Turkey	Dominica
Cyprus	Venezuela, RB	Dominican Republic
Denmark		Ecuador
Iceland		Egypt, Arab Rep.
Ireland		El Salvador
Israel		Ethiopia
Latvia		Gabon
Lithuania		Georgia
Luxembourg		Ghana
Netherlands		Guatemala
New Zealand		Jordan
Norway		Kazakhstan
Poland		Kenya

Slovak Republic		Kuwait
Sweden		Kyrgyz Republic
Switzerland		Lebanon
South Africa		Lesotho
		Macedonia, FYR
		Malta
		Mauritius
		Moldova
		Mozambique
		Namibia
		Nicaragua
		Niger
		Nigeria
		Oman
		Qatar
		Saudi Arabia
		Seychelles
		Sierra Leone
		Slovenia
		Swaziland
		Tanzania
		Tonga
		Tunisia
		Uganda
		Ukraine
		United Arab Emirates
		Uruguay
		Vanuatu

DAVIDSON INSTITUTE WORKING PAPER SERIES - Most Recent Papers

The entire Working Paper Series may be downloaded free of charge at: www.wdi.umich.edu

CURRENT AS OF 4/24/15

Publication	Authors	Date
<i>No. 1091: Financial intermediation and economic growth</i>	Leyla Yusifzada, and Aytan Mammadova	Apr 2015
<i>No. 1090: Sources Of Exchange Rate Fluctuation In Vietnam: An Application Of The Svar Model</i>	Nguyen Van Phuong	Apr 2015
<i>No. 1089: Banking Sector Development and Household Saving in Emerging Eastern Europe</i>	Ramiz Rahmanov	Mar 2015
<i>No. 1088: Do Borders Really Slash Trade? A Meta-Analysis</i>	Tomas Havranek and Zuzana Irsova	Jan 2015
<i>No. 1087: Bank Competition and Financial Stability: Much Ado About Nothing?</i>	Diana Zigraiova and Tomas Havranek	Jan 2015
<i>No. 1086: What incentives are being used by International Business Researchers in Their Surveys? A Review.</i>	Agnieszka Chidlow and Pervez N. Ghauri	Dec 2014
<i>No. 1085: Capital Account Policies, IMF Programs and Growth in Developing Regions</i>	Zorobabel Bicaba, Zuzana Brixiova and Mthuli Ncube	Nov 2014
<i>No. 1084: Testing the causality between electricity consumption, energy use and education in Africa</i>	Oussama BEN ABDELKARIM, Adel BEN YOUSSEF, Hatem M'HENNI and Christophe RAULT	Sept 2014
<i>No. 1083: Measuring and analyzing the non-monetary approach of multidimensional poverty by the basic needs in Togo</i>	Yawo Agbényégan NOGLO	Aug 2014
<i>No. 1082: Liquidity Constraints, Loss Aversion, and Myopia: Evidence from Central and Eastern European Countries</i>	Ramiz Rahmanov	Aug 2014
<i>No. 1081: The Real Exchange Rate and Growth in Zimbabwe: Does the Currency Regime Matter?</i>	Zuzana Brixiova and Mthuli Ncube	Aug 2014
<i>No. 1080: Recent Estimates of Exchange Rate Pass-Through to Import Prices in the Euro Area</i>	Nidhaleddine Ben Cheikh and Christophe Rault	Aug 2014
<i>No. 1079: How smooth is the stock market integration of CEE-3?</i>	Eduard Baumöhl and Štefan Lyócsa	June 2014
<i>No. 1078: The Role of the Business Cycle in Exchange Rate Pass-Through: The Case of Finland</i>	Nidhaleddine Ben Cheikh and Christophe Rault	June 2014
<i>No. 1077: Skills and youth entrepreneurship in Africa: Analysis with evidence from Swaziland</i>	Zuzana Brixiova, Mthuli Ncube & Zorobabel Bicaba	May 2014
<i>No. 1076: Can Dreams Come True? Eliminating Extreme Poverty In Africa By 2030</i>	Mthuli Ncube, Zuzana Brixiova & Zorobabel Bicaba	April 2014
<i>No. 1074: Bridging the Gender Gap in Entrepreneurship: Evidence from Europe</i>	Elvin Afandi & Majid Kermani	Feb 2014
<i>No. 1073: Can Intra-Regional Trade Act as a Global Shock Absorber in Africa?</i>	Mthuli Ncube, Zuzana Brixiova & Qingwei Meng	Feb 2014
<i>No. 1072: The Dynamics of Firm Lobbying</i>	William R. Kerr, William F. Lincoln and Prachi Mishra	Jan 2014