Financial Development-Economic Growth Nexus: The Case of Eastern European Countries

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Abstract
Whether financial development is conducive to economic growth is one of the fundamental problems that has been investigated by economists for decades. While majority of the studies find a positive effect of financial development on economic growth there are also some analyses which suggest that financial development has a negative impact on economic growth. In this study, we investigate the effect of financial development on economic growth in 12 Eastern European countries over the period 1990-2011 by taking into account the possible endogeneity between these variables and by using three different financial development indicators. We also consider the impact of governance and enterprise restructuring together with the effects of the Enlargement of the European Union in 2004 and 2008 global economic crisis in our empirical analysis. Our results suggest that while none of the financial development indicators has an effect on economic growth by itself the interaction term between domestic credit to private sector and governance and enterprise restructuring negatively affects economic growth.

Keywords: financial development, economic growth, Eastern European countries
JEL codes: E44, G20, G28, P48

1. Introduction

The financial development-economic growth nexus has long been debated both by researchers and policy makers. Although most of the theoretical and empirical studies come to the conclusion that financial development has a positive impact on economic growth since the onset of the 2008 global economic crisis some researchers assert that financial development may negatively influence economic growth if the necessary surveillance mechanism does not function adequately.

Eastern European countries put into effect many reforms in order to construct an efficient market mechanism since they gained their independence. During this transition process, these countries also tried to develop their financial system. Hence, whether financial development has a positive effect on economic growth in Eastern European countries is an important question that needs to be answered in order to determine the success of previous policies. However, the number of empirical analyses which examine this issue in Eastern European countries is very low. In this study, we try to fill in this gap in the existing literature. Thus, the main aim of our analysis is to examine the effect of financial development on economic growth in Eastern European countries over the period 1990 – 2011. By doing this, we also try to empirically determine whether the reform process influenced the relationship between financial development and economic growth in these countries.

In order to empirically investigate the effect of financial development on economic growth in Eastern European countries we use a panel data set from 1990 to 2011 and analyze the impact of three different financial development indicators. In addition to this, we take into account the progress of the reform process by drawing on governance and enterprise restructuring indicator which is calculated by the EBRD in our empirical estimations.

The paper is organized as follows: the next section briefly reviews previous theoretical and empirical studies which investigate the financial development-economic growth nexus. Section 3 discusses our data and methodology. Section 4 presents the results of our empirical analysis. Section 5 concludes the paper.

2. Literature Review

Economists have different opinions with regard to the financial system-economic growth nexus (Levine, 1997) and theoretical views about this issue can be classified into three main categories (Xu, 2000). The origin of the first view is based on the work of Schumpeter (1911) who argues that an efficient financial system promotes economic growth by determining and funding productive investments. In line with this view, McKinnon (1973) and Shaw (1973) suggest that government interventions to financial sector hinder efficient functioning of the financial institutions and hence have a negative effect on economic growth. McKinnon (1973) and Shaw (1973) states that by liberalizing financial sector savings are allocated to the productive investments and this leads to higher economic growth rates. Thereby, similar to Schumpeter (1911) McKinnon (1973) and Shaw (1973) assert that finance causes economic growth.

In contrast to the first view, the second view doubts about the significance of the financial system in supporting economic growth (Robinson, 1952; Lucas, 1988). Especially, Lucas (1988) argues that "the importance of financial matters is very badly overstressed*"*. According to this view financial development comes after economic growth and barely influences it (Xu, 2000).

The third view about the relationship between financial development and economic growth emphasizes the likely negative effects of finance on growth (Xu, 2000 by citing Van Wijnbergen (1983) and Buffie (1984)). Although the origin of this view dates back to 1980s it comes into prominence in particular after the 2008 Global Economic Crisis. As it is well-known during the 1980s and 1990s most of the theoretical and empirical studies in economics literature conclude that financial development leads to economic growth (Cecchetti and Kharroubi, 2012). However, since the onset of the 2008 Global Economic Crisis, economists and policy makers have questioned this conclusion. By developing a simple model Cecchetti and Kharroubi (2015) argue that high financial development disproportionately supports the sectors (such as construction) where projects are easily used as collateral but their productivity growth is low. Thus, directing the limited resources from the real economy to the financial system becomes an obstacle on growth.

As it is clear from the above explanations existing theoretical models about the financial development-economic growth nexus reach different conclusions depending on their assumptions and the economic conditions which are taken into account in these models. Therefore, the effect of financial development on economic growth is an open empirical question.

Since the begining of 1980s numerous studies have been carried out with regard to the relationship between financial development and economic growth. However, only few of them focused on trasition or Eastern European countries. Here, we briefly summarize the main empirical analyses which examine financial development-economic growth nexus in transition or Eastern European countries[1].

One of the first analyses which empirically assess the relationship between financial development and economic growth is the study of Koivu (2002) who examines this issue for 25 transition countries over the 1993–2000 period. Koivu (2002) uses interest rate margin and the amount of bank credit given to the private sector as financial development variables. According to the results, there is a negative relationship between interest rate margin and economic growth. Since interest rate margin decreases as the efficiency in the financial sector increases this result indicates that qualitative financial sector development has a positive effect on economic growth. In contrast to this result, Koivu (2002) also finds a negative link between the lagged value of bank credit given to the private sector and economic growth. Although this result is not consistent with the general conclusion of the literature it compromises with the characteristics of transition economies.

Kenourgios and Samitas (2007) investigate the link between finance and growth in Poland by drawing on quarterly data over the period 1994q1 and 2004q4. By using Johansen Cointegration methodology, Kemourgios and Samitas (2007) conclude that while credits by financial intermediaries to the private sector has a significant and positive effect on economic growth stock market liquidity measured by the value of shares traded on the country's stock exchange as a percentage of GDP does not influence economic growth.

[1] For a comprehensive review see Levine (2005), Trew (2006) and Ang (2008).

Fink et al. (2009) analyze the impact of different financial sector segments on economic development in nine EU-accession countries (Bulgaria, The Czech Republic, Slovakia, Hungary, Slovenia, Poland, Romania, Malta and Turkey) by using annual data from 1996 to 2000. The authors draw on two different measures of total financial intermediation: While the first one is the sum of domestic credit, stock market capitalization and bonds outstanding the second one is the sum of private credit, stock market capitalization and bonds outstanding. According to the results of the empirical analysis, Fink et al. (2009) suggest that financial sector promotes stability and economic growth in transition countries and the funds which are allocated to both public and private sectors have a stronger effect on economic growth than the funds only transferred to the private sector.

Dudian and Popa (2013) examine the financial development-economic growth nexus in eight Central and Eastern European countries (Bulgaria, Estonia, The Czech Republic, Hungary, Latvia, Lithuania, Poland and Romania) between 1996-2011 by taking into account a number of financial development indicators such as broad money growth, domestic credit to private sector as a percentage of GDP, domestic credit to private sector growth, interest rate spread, nonperforming loans as a percentage of total loans and nonperforming loans as apercentage of GDP. By estimating four different regressions the authors argue that whilst bad loans, interest rate spread and domestic credit to the private sector have a negative impact on economic growth the growth rate of domestic credit to private sector has a positive impact on economic growth.

Petkovski and Kjosevski (2014) assess the impact of banking sector on economic growth in 16 transition countries between 1990 and 2011. By using the ratio of quasi money (M2-M1), interest margin and private credit as financial development variables the authors come to the conclusion that only ratio of quasi money has a small positive effect on economic growth.

In a recent study, Cojocaru et al. (2015) investigate the relationship between financial development and economic growth for 10 Commonwealth of Independent States and 15 Central and Eastern European countries over the period 1990-2008. In the empirical analysis, while interest rate spread, overhead costs and bank concentration are drew on as indicators of financial efficiency private credit and liquid liabilities are used for the size and hence the development of the financial sector. According to the results of the empirical analysis the authors conclude that financial sector efficiency is more significant than the size of the sector with regard to economic growth.

In summary, based on existing theoretical models economists have not reached a consensus in relation to the financial development-economic growth nexus yet and there are very few empirical studies which examine this issue in Eastern European countries. In this study, we try to fill in this gap by focusing on these countries. Unlike previous studies, we draw on the most comprehensive data set available and take into account the possible endogeneity of financial development variables in our estimations. Furthermore, we use governance and enterprise restructuring as an independent variable since in Eastern European countries the reform process is especially important in terms of economic growth.

3. Data and Methodology

In our empirical study, we use panel data from 12 Eastern European countries[2] over the period 1990-2011. We estimate a standard version of Solow growth model augmented with financial development and governance variables. The model that we estimate is as follows:

$$\Delta y_{it} = \beta_{1t} c_{it} + \beta_{2t}(g_{it} + n_{it} + \delta_{it}) + \beta_{3t} fd_{it} + \beta_{4t} gov_{it} + \beta_{5t} fd_{it}.gov_{it} + \beta_{6t} en + \beta_{7t} crisis + \mu_i + \varepsilon_{it} \quad (1)$$

In this equation y is GDP per capita, c is gross fixed capital formation as a ratio of GDP, g is population growth, n and δ technological progress and technological depreciation respectively (we

[2] Our definition of Eastern Europe follows the definition of European Bank for Reconstruction and Development (EBRD) and contains the following countries: Albania, Bulgaria, Bosnia and Herzogovina, Croatia, The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, Serbia, The Slovak Republic and Slovenia. However, due to data limitations we excluded Bosnia and Herzogovina, The Czech Republic and Lithuania from our data set.

substitute the sum of them with a constant term which equals to 0.05), *fd* is the financial development indicator as a ratio of GDP, *gov* is the governance and enterprise restructuring index, *en* and *crisis* are dummy variables which stand for 2004 European Union enlargement and 2008 global economic crisis respectively, μ is the country fixed effects and ε is the error term.

We draw on three financial development indicators which are commonly used in the existing empirical literature: 1- Deposit money bank assets as a ratio of the sum of deposit money bank assets and central bank assets, 2- Domestic credit to private sector as a ratio of GDP and 3- Liquid liabilities as a ratio of GDP. Since performing the reforms which are required to switch to market economy may affect GDP growth we also take into account governance and enterprise restructuring index which takes the value from 1 to 4 in our estimations. This transition indicator is taken from the European Bank for Restructuring and Development (EBRD, 2015). GDP per capita, gross fixed capital formation, population growth and financial development indicators data is taken from the World Bank-World Development Indicators (2015) and World Bank-Global Financial Development (2015) data bases. All variables are in the logarithm form.

We first estimate the above equation by using fixed effect OLS estimator. However, because of the potenial endogeneity of financial development indicators the results of fixed effect OLS estimations can be biased. In order to take into account this issue we repeat our empirical analysis by using two stage least squares estimator (2SLS or IV estimator).

4. Results

Table 1 shows fixed effect OLS estimation results. While column 1 presents the coefficient estimates of the standard Solow growth model column 2, 3 and 4 present the results of the regressions in which we use the ratio of deposit money bank assets to the sum of deposit money bank assets and central bank assets, domestic credit to private sector as a ratio of GDP and liquid liabilities as a ratio of GDP respectively. According to column 1, both the gross fixed capital formation and the sum of population growth, technological progress and technological depreciation is statistically significant and has the expected sign (positive and negative respectively). In addition to this, whilst 2004 EU enlargement has statistically significant and positive effect 2008 global economic crisis is statistically significant and has a negative effect on economic growth.

When financial development indicators are added to our estimations we find that none of the financial development indicators has statistically significant effect on economic growth. Furthermore, although governance and enterprise restructuring index is statistically significant and has a positive effect on economic growth the interaction terms between financial development indicators and governance and enterprise restructuring index do not have a statistically significant effect on it. Thus, according to these results, it can be stated that financial development does not influence economic growth regardless of the reform process.

Table 1: The Effects of Financial Development on Economic Growth (FE Model)

Dependent Variable: GDP per capita growth	(1) Baseline Model	(2) Deposit Money Bank Assets	(3) Domestic Credit to Pri. Sector	(4) Liquid Liabilities
Gross Fixed Capital Formation	0.0873**	0.0368**	0.0446*	0.0471**
	(0.0291)	(0.0159)	(0.0220)	(0.0197)
(g+n+δ)	-0.0712*	-0.0728***	-0.0680***	-0.0629***
	(0.0373)	(0.0140)	(0.0179)	(0.0122)
EU Enlargement	0.0193**	-0.0020	0.0140	0.0085**
	(0.0085)	(0.0065)	(0.0081)	(0.0038)
Crisis	-0.0532***	-0.0532***	-0.0525***	-0.0506***
	(0.0075)	(0.0067)	(0.0119)	(0.0107)
Governance and enterprise restructuring		0.0989***	0.0687**	0.0953***
		(0.0214)	(0.0305)	(0.0187)
Deposit money bank assets		0.0247		
		(0.0233)		
Dep.mon.bank assetsxgovernance		-0.0217	-0.0103	
		(0.0622)	(0.0152)	
Domestic credit to private sector			-0.0107	
			(0.0099)	
Dom.creditxgovernance				
Liquid liabilities				-0.0244
				(0.0188)
Liq.liabilitiesxgovernance				0.0074
				(0.0147)
Constant	-0.0402	-0.1192***	-0.0961	-0.0772
	(0.0740)	(0.0343)	(0.0565)	(0.0473)
F Test (Probability)	32.82 (0.0000)	15.96 (0.0001)	57.54 (0.0000)	17.20 (0.0001)
R^2- Within	0.2461	0.3558	0.3166	0.3563
R^2-Between	0.3793	0.1646	0.2341	0.0043
R^2-Overall	0.2435	0.2329	0.2708	0.2220

Note: ***, **, * indicates p≤0.01, p≤0.05 and p≤0.10 respectively. Standard errors are in parenthesis. All regressions include individual effects and are estimated by using robust standard errors.

Source: authors's estimations

As it is stated earlier due to the potential endogeneity of financial development variables the reuslts of the FE OLS estimations can be biased. In order to tackle with this problem we draw on two stage least squares (2SLS) estimator by using the first and second lag of our financial development, governance and enterprise restructuring and the interaction terms between financial development and governance and enterprise restructuring variables as instruments. Table 2 shows the results of these regressions. Similar to previous results, both the gross fixed capital formation and the sum of population growth, technological progress and depreciation are statistically significant and have the expected sign. Moreover, 2008 global economic crisis is statistically significant and has a negative effect on economic growth in all of our models. When we look at the coefficient estimates of our financial development variables we find that none of our financial development variables has an effect on economic growth. However, in contrast to the previous findings, the interaction term between the ratio of domestic money bank assets to the sum of domestic money bank assets and central bank assets and governance and enterprise restructuring index is statistically significant and has a negative impact on economic growth. Recall that governance and enterprise restructuring index is statistically significant and positively affects economic growth according to the results of the models which we estimate by using FE OLS estimator. When we estimate our models by drawing on 2SLS estimator this variable still has a positive sign but it is statistically insignificant. Thus, we can state that countries in which the reform process is carried out properly domestic credit to private sector has a negative effect on economic growth. This result indicates that although the reform process helps the expansion of domestic credit to private sector this expansion

negatively affects economic growth. It may be argued that the negative effect stems from the inadequate monitoring mechanism in the financial system or the problems which hinder the efficient functioning of the market mechanism in the financial sector. As it is well-known if financial sector does not function efficiently allocating the funds to the most productive investment opportunities may not take place.

Table 2: The Effects of Financial Development on Economic Growth (2SLS Estimations)

Dependent Variable: GDP per capita growth	(1) Deposit Money Bank Assets	(2) Domestic Credit to Pri. Sector	(3) Liquid Liabilities
Gross Fixed Capital Formation	0.0593**	0.0525***	0.0501***
	(0.0256)	(0.0181)	(0.0185)
(g+n+δ)	-0.0798***	-0.0673***	-0.0813***
	(0.0262)	(0.0255)	(0.0247)
EU Enlargement	0.0042	0.0229**	0.0049
	(0.0095)	(0.0115)	(0.0136)
Crisis	-0.0487***	-0.0466***	-0.0574***
	(0.0091)	(0.0098)	(0.0097)
Governance and enterprise restructuring	0.0498	0.0404	0.0384
	(0.0454)	(0.0395)	(0.0891)
Deposit money bank assets	-0.0423		
	(0.0697)		
Dep.mon.bank assetsxgovernance	0.2013		
	(0.2729)		
Domestic credit to private sector		-0.0120	
		(0.0102)	
Dom.creditxgovernance		-0.0653**	
		(0.0295)	
Liquid liabilities			0.0074
			(0.0171)
Liq.liabilitiesxgovernance			0.0570
			(0.0518)
Constant	-0.1040	-0.0792	-0.1185
	(0.0791)	(0.0777)	(0.0759)
F Stat Deposit Money Bank Assets	162.87		
F Stat Domestic Credit to Private Sector		137.96	
F Stat Liquid Liabilities			251.96
F Stat Governance and Enterprise Restructuring	40.37	50.21	39.29
F Stat Dep.Mon.xGovernance	88.25		
F Stat Dom.CreditxGovernance		46.66	
F Stat Liquid Lib.xGovernance			38.02
Sargen Hansen Statistic (p value)	1.964 (0.5798)	1.093 (0.7787)	1.148 (0.7655)
R^2 Overall	0.2430	0.3243	0.2100

Note: ***, **, * indicates p≤0.01, p≤0.05 and p≤0.10 respectively. Standard errors are in parenthesis. All regressions include individual effects. The results of first stage regressions are available upon request.

Source: authors's estimations

Recall that although existing studies in the literature have not reached a decisive conclusion about the financial development-economic growth nexus most of these studies find that financial development and especially financial sector efficieny has a positive influence on economic growth in Eastern European countries (Koivu, 2002; Kenourgios and Samitas, 2007; Fink et al., 2009; Kjosevski, 2014; Cojocaru et al., 2015; Dudian and Popa, 2013). Thus, in general our results are in contrast with the previous findings. Although the results that we obtain look surprising at first sight they are consistent with the economic characteristics of the Eastern European countries. As it is stated by Koivu (2002) soft budget constraints which prevailed in many Eastern European countries during the 1990s caused to inefficient investments. Therefore, credit expansion in these countries did not have a positive effect on

economic growth. Our results confirm these facts and indicate that the improvement in financial sector efficieny might be a more significant factor than credit growth in Eastern European countries.

5. Conclusion

The relationship between financial development and economic growth is one of the main economic issues that is intensively investigated both by economists and policy makers. Although there are quite a few empirical studies which analyze this issue the number of studies that focus on Eastern European countries is low. In this study we try to fill in this gap in the existing literature by focusing on these countries.

In our empirical analysis, we investigate the financial development-economic growth nexus in 12 Eastern European countries over the period 1990-2011. We use three different financial development indicators: 1- The ratio of domestic money bank assets to the sum of domestic money bank assets and central bank assets, 2- Domestic credit to private sector as a ratio of GDP and 3- Liquid liabilities as a ratio of GDP. In addition to these financial development indicators, we also use governance and enterprise restructuring index which stands for the progress of the reform process during transition. This is especially important for Eastern European countries as these countries started to apply many reforms which have significant effects on all of the sectors in the economy and thus on macroeconomic variables since the begining of 1990s.

We estimate a standard Solow growth model augmented with financial development indicators, governance and enterprise restructuring index and the interaction terms between financial development variables and governance and enterprise restructuring index. Because of the potential endogeneity of the financial development indicators we use both FE OLS estimator and 2SLS estimator in order to deal with this problem.

According to FE OLS estimations, none of the financial development indicators has a significant effect on economic growth. However, when we estimate our models by using 2SLS estimator we find that the interaction term between domestic credit to private sector and governance and enterprise restructuring index negatively affects economic growth. This result indicates that although financial development starts to influence economic growth in countries where the reforms are applied properly it has a negative impact on it. It may be asserted that this result emanates from insufficient monitoring mechanism in the financial sector and/or the problems which hinder the efficient functioning of the market mechanism in the financial sector. Thus, policy makers in Eastern European countries should perform the necessary policy changes which remove inefficiencies in their financial systems.

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