An empirical investigation of banking sector development and economic growth in a panel of selected SAARC countries

Javed AHMED
COMSATS Institute of Information Technology, Abbottabad, Pakistan
javedahmedjan@gmail.com
Malik Fahim BASHIR
COMSATS Institute of Information Technology, Abbottabad, Pakistan
malik.fah@gmail.com

Abstract. *This study examine the relationship between banking sector development and economic growth in South Asian Association for Regional Cooperation (SAARC) over the period of 1980-2013 by entailing ordinary least square (OLS), two stages least square (TSLS), and panel TSLS fixed-effect model. Key banking sector development variables include money and quasi money (RQM) and domestic credit to private sector by banks (PC) have a positive and statistically robust effect on economic growth in all models. The study concludes that no economy can develop without a substantial growth in the banking sector and it is important to have a sound and rigorous banking system for building a sustained economic growth. Therefore, the SAARC economies are suggested to focus on the development of the banking sector for their long run growth.*

Keywords: Banking Sector Development, Economic Growth, SAARC.

JEL Classification: B23, C36, E44, E51.

Introduction

Numerous potential growth determinants have been identified over the years, but mapping reliable channels of growth has been a major problem for analysis. There is an extensive debate on role of financial sector development in the growth of an economy. The financial sector is the set of institutions, instruments, and the regulatory framework that permit transactions to be made by incurring and settling debts. The financial sector is the interaction of markets and all therein, within a regulatory framework. This interaction usually entails lending and borrowing both long and short term. This is accomplished through financial intermediaries (banks and other financial institutions) providing a link between households, firms and governments in transferring funds from savers to borrowers, for consumption and investment purposes. Therefore, a healthy financial sector is a key element in maintaining a stable economy. According to Oluyemi (1995) financial sector of any economy can be treated as an engine of the growth that could greatly contribute in the promotion of rapid economic transformation.

The financial sector is composed of two sub sectors, which include banking sector and other financial institutions which provides financial services to the community. But the focus of current study is on banking sector only. Previous studies used different econometric methodologies to analyze the impact of banking sector development on economic growth. Some studies suggest that economic growth leads to financial development Chisunga (2015), Sibindi and Bimha (2014), Odhiambo (2004),Liang and Teng (2006) while others suggest that financial development leads to economic growth Kilimani (2009), Awdeh (2012). Acaravei et al. (2009) found that there is bidirectional relationship between both variables while they find no long run relationship. A study on Bangladesh determined that the despite the extensive financial development in the post-reform period, financial and monetary variables are not contributing fully to growth Kabir and Hoque, (2007).According to Hesse (2007) financial development indirectly influence economic growth through the channel of capital accumulation and productivity while Levine (1998) found that banking development positively related with per capita growth, productivity growth and physical capital accumulation.

By employing ARDL method Kiprop et al. (2015) revealed that financial development exerts a significant positive effect on economic growth. In another study Ho and Odhiambo, (2013) for Hong Kong found that this relationship is sensitive to the proxy used to measure the banking sector development. Saad (2014) explores positive relationship between financial development and economic growth in short term the efficiency of the banking sector can play an important role in the Lebanese economy for the long run. Memon et al. (2011) found that the financial development effects economic growth significantly through the channel of liberalization in SAARC countries. In a comparative study on China and Pakistan during the period of 1960 to 2005 Jalil and Ma (2008) establish a long run relationship between financial development and economic growth.

In a recent study Petkovski and Kjosevski (2014) examined the relationship between banking sector and economic growth among 16 transition economies from Central and South Eastern Europe. The result showed that the ratio of quasi money (RQM) having the

positive relationship with the economic growth while credit to the private sector and interest margin (IM) is negatively related to the economic growth. Peter E. and Lyndon M. (2014) study revealed that banking sector development, domestic credit and interest rate have positive relationship with economic growth while credit to private sector and deposit liability have negative relationship with economic growth. Liquid liabilities of commercial banks and trade openness have significantly positive influence on economic growth while credit to the private sector, interest rate spread and government expenditure exert significant negative influence Olusegun et al. (2013), Abubakar and Gani (2013). Ayadi et al. (2015) study indicated that credit provided to the private sector and bank deposits are negatively associated with growth. Some researcher found that the relationship between growth and bank development is better described as a weak inverse u-shape Shen and Lee (2006). According to Hung (2009) initial level of financial development play an important role in determining the relationship magnitudes of two channels yields non-linear relationships between financial development and economic growth.

Literature surveyed indicate that there is very less research conducted on the SAARC region and the studies are few in number so for this purpose, the current study explore the relationship between banking sector development and economic growth in the panel of selected six SAARC countries including Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka over the period of 1980-2013. Empirically, there have been different approaches to examine the relationship between banking sector development and economic growth. This study uses the ordinary least square (OLS), two stages least square (TSLS), and panel TSLS fixed-effect model and explore positive relationship between banking sector development and economic growth. This study is significant to the policy makers in term of using the financial deepening that needs to be undertaken to ensure that the maximum growth of economy can be achieved through the banking sector development.

Data and Methodology

The purpose of the study is to check the impact of banking sector development on economic growth in the SAARC region. This study used growth rate of GDP per capita as a dependent variable and the independent variables includes; banking indicators and control variables. The banking indicator includes money and quasi money (M2) as percent of GDP (RQM) and domestic credit to private sectors by banks as percent of GDP (PC). Control variables are exports of goods and services (EXP), gross fixed capital formation as percent of GDP (INV), general government final consumption expenditures as percent of GDP (GVE), and inflation, consumer price index annual percentage change (INF).

Previous studies of (Beck and Levine, 2004; Koivu, 2002) used the domestic credit to private sector by banks (PC) as a main proxy for financial development because it is used as a measure of banking development and the ratio of bank credit to Private sector is related to GDP. Another key variable is money and quasi money (RQM) is also taken as the adequate measure of the size of financial sector development especially in emerging countries Hemming and Manson, (1988) and Liu and Woo,(1994). The control variables are used for controlling the other factors affecting the dependent variable. The regression

includes Inflation to account for monetary discipline (Petkovski and Kjosevski, 2014). Export is also another control variable which can facilitate economic growth. General government final consumption expenditures have a negative relationship with the economic growth and it is used as a control variable when depicting the economic growth King and Levine (1993) and Levine et al. (2000). Initial GDP included in the regression model in logarithm to capture the growth convergence effect.

The model specification is as follows.

$$(GDPPCG)_{it} = \beta_{it} + \beta_1(GDPPC_{t-1})_{it} + \beta_2(RQM)_{it} + \beta_3(PC)_{it} + \beta_4(EXP)_{it} + \beta_5(INV)_{it} + \beta_6(GVE)_{it} + \beta_7(INF)_{it} + u_{it} ,$$

Where, "i" represents countries, "t" represents time period and "β" represents the coefficients of parameters.

Methodology and Estimation Technique

In current study we applied ordinary least square (OLS), two stages least square (TSLS), and panel TSLS fixed effect to find the link using a panel data set consisting of six countries in South Asian Association for Regional Cooperation (SAARC) over the period of 1980-2013. The data is taken from the world development indicators (WDI) on annually basis. Previous studies used ordinary least square (OLS) estimation method to confirm the relationship between finance and economic growth (Samargandi et al., 2013; Levin and Zervos, 1998). So this study also used OLS estimation method to examine the relationship between banking sector development and economic growth. OLS regression method may be unbiased but not necessarily efficient because the error term cannot be homoscedastic in the cross-section model. Due to endogeneity issue in our model OLS results are not reliable.

We treat investment and GDPPC as endogenous because of the reverse causation and correlation with country fixed effect respectively. To get rid of endogeneity we use two stages least square (TSLS) method. In TSLS we used a proxy variable as instrument in place of endogenous variable. Instrumental variable is closely correlated with endogenous variable but it has no association with dependent variable. We used the 1st lag value of investment and log $PGDP_{t-1}$ as instruments because it is hard to find the proxy variable for investment and lag PGDP.

According to Wawro (2002) inclusion of lag dependent variable accounts for partial adjustment of behavior our time. Another reason to include lag dependent variable is belief that lags would be account for partial factors, including exogenous shocks that have continual effects over time. But still there exist the problem of heterogeneity due to country's specific factors which are different for each individual country and for this purpose we use fixed effect model in which we keep these changes constant. We cannot apply random effect because for application of random effect number of cross section should be greater than number of coefficients for between estimators for estimate of random effect innovation variance. Panel data models are usually estimated using either

fixed or random effect techniques. However, if the correlation is present the random effect model is not consistent, so the fixed effect model is a better option to avail for analyzing the panel data. The fixed effect estimator is used if the individual specific component is not independent with respect to the explanatory variables.

Results and Discussion

The table 1 indicates the descriptive statistics, in the second column of the table it can be seen that the maximum observation value is 204 for the given time period and the minimum observation value is 159.

Table 1. *Descriptive Statistics*

Variables	Obs.	Mean	Std. Dev.	Min	Max
GDPPCG	203	3.626	3.020	-5.206	24.381
GDPPC	204	627.161	396.518	185.131	2060.672
RQM	201	42.277	15.147	14.196	80.663
PC	201	24.016	12.236	2.508	58.774
EXP	159	2.53e+10	5.88e+10	1.53e+10	3.25e+10
INV	204	25.000	9.931	12.514	63.048
GVE	204	11.204	4.734	4.136	23.733
INF	196	8.632	4.104	1.481	26.145

Source: Authors own calculations.

Table 2 represent the empirical results of the regression models. We used pooled ordinary least square (OLS), two stages least square (TSLS) and panel two stages least square fixed effect. In Model 1, 3, and 5 we include RQM as independent variable and we exclude PC while in Model 2, 4 and 6 we exclude RQM and used PC as independent variable. The constant value of the model is negative and statistically significant in all six regression models. The lag dependent variable has a positive and statistically robust effect on economic growth in all six regression models.

Table 2. *Impact of Banking Sector Development on Economic Growth*

Variables	Pooled OLS		TSLS		Panel TSLS FC	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-8.477*** (2.885)	-7.593** (2.748)	-9.111*** (2.870)	-8.216*** (2.715)	-13.719** (5.276)	-10.907** (5.308)
LOG(GDPPC (-1))	1.571*** (0.557)	1.337** (0.539)	1.691*** (0.555)	1.462*** (0.533)	2.337** (0.967)	1.956** (0.949)
RQM	0.025*** (0.009)		0.028** (0.010)		0.045** (0.019)	
PC		0.053** (0.011)		0.055*** (0.011)		0.067** (0.019)
EXP	2.65E-12 (3.18E)	1.79E-12 (3.01E)	2.48E-12 (3.22E)	1.72E-12 (3.06E)	-5.21E-12 (6.12E)	-4.80E-12 (6.01E)
INV	0.092*** (0.028)	0.095*** (0.024)	0.085*** (0.032)	0.089*** (0.028)	0.028 (0.089)	0.039 (0.078)
GVE	-0.108* (0.063)	-0.074 (0.062)	-0.108* (0.061)	-0.073 (0.061)	0.015 (0.129)	-0.009 (0.128)
INF	-0.026 (0.0172)	-0.042 (0.044)	-0.040 (0.042)	-0.057 (0.043)	-0.051 (0.044)	-0.070* (0.041)

Variables	Pooled OLS		TSLS		Panel TSLS FC	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Test Statistics						
R square	0.355	0.383	0.365	0.395	0.428	0.445
Adj. R square	0.328	0.358	0.338	0.369	0.381	0.400
F-Statistic	13.150	14.854	12.580	14.262	9.062	9.686
Prob(F-Stats)	0.000	0.000	0.000	0.000	0.000	0.000

Standard error in parenthesis ***, ** and * represents the significance level at 1%, 5% and 10% respectively.

In our study of banking sector development and economic growth nexus, we observed that our two main key variables (RQM & PC) exert positive and significant effect on economic growth in all regression models with alternative estimation methods. It shows the robustness of our result because even when we used different estimation methods we observed no change in the nature of the relationship between PC, RQM and economic growth. As well as the magnitude of coefficient of the both PC and RQM in all regression models are almost same. Our study results are consistent with the study of Petkovski and Kjosevski (2014) who examined the banking sector development and economic growth relationship and found that RQM have a positive relationship with economic growth. On the other hand, our study results are contradicted with the study of Petkovski and Kjosevski (2014), Ayadi et al. (2013) and Koivu (2002) while current study finding that PC has positive relationship with economic growth consistent with Caporale et al. (2009).We used four control variables in our study. The investment has a positive and significant relationship with the GDP in model 1 to 4 and it has a positive and insignificant effect on economic growth in model 5 and 6. The export exert a positive and statistically insignificant effect on economic growth in first four regression models while it has a negative and non-robust effect in regression model 5 and 6 respectively. This means that export is not a key determinant of economic growth in none of the six SAARC countries.

The GVE has a negative impact on economic growth in all six regression models. These results are consistent with Olusegun et al. (2013), King and Levine (1993), Levine et al., (2000) and Abubakar and Gani (2013). While our study results are contradicted with the study of Petkovski and Kjosevski (2014) who found a positive relationship between GVE and economic growth. This may be due to the fact that the state of domestic capital markets development and role of banking in economic growth is still in its infancy. Inflation has negative and statistically insignificant effect on economic growth in all regression models from 1 to 5, while in model 6 it has negative and statistically significant effect on economic growth. This result is similar to Petkovski and Kjosevski (2014) who examined the negative relationship between inflation and economic growth. However, there exist some contradictory study which found positive relationship between inflation and economic growth Olusegun et al. (2013).The probability value of F-Test is less than 5% in all six regressions model which means that the model is significant in all cases of the OLS, TSLS and panel TSLS fixed effect model regressions. On the basis of the results we found that our key variables are positively and significantly related with the economic growth. Hence, it is proved that the relationship between banking sector development and economic growth is positive and significant.

Conclusions

The purpose of this research study was to examine the relationship between banking sector development and economic growth in six SAARC countries for period of 1980-2013. The study employed different statistical tools for analyzing banking sector development and economic growth in the presence of some key variables as measures of banking indicators and other control variables. Our two key banking variables RQM and PC have a positive and statistically robust effect on economic growth. Hence, it is proved that the relationship between banking sector development and economic growth is positive and statistically significant. Finding of the study suggest that financial deepening should be undertaken to ensure the maximum economic growth in SAARC member countries. It can be concluded that no economy can be develop without a substantial growth in the banking sector and it is important to have a sound and rigorous banking system for building a sustained economic growth.

From the above discussions, it is recommended that the policy makers and governing body should make and implement such rules and regulations which are beneficial for the banking sector that can boost the economy of SAARC countries. They need to implement those polices which are directly relate to the improvement of institution in term of increasing efficiency in product development and in risk management of the banks. On the basis of estimated results the study concludes that our two key variables including money and quasi money (RQM) and credit to private sector by banks (PC) have significant impact on economic growth. Therefore priority should be given to private sector in credit disbursement decisions to further enhance the pace of sustainable economic growth. The future research on this topic can also consider some other variables like interest rate, deposit liabilities and liquid liabilities and further find the link.

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