Journal of Environmental Science and Economics ISSN:2832-6032
https://doi.org/10.56556/jescae.v1i1.1

RESEARCH ARTICLE

# The effect of Financial Development on Economic Growth: Evidence from South Asian Developing Countries

**Robeena Bibi[1], Sumaira[2]***

[1]School of Public Administration, Hohai University, Nanjing China
[2]College of Economics and Management, Zhejiang Normal University, Zhejiang, China

Corresponding Author: Sumaira, Sumairakhan321321@gmail.com
Received: 05 November, 2021, Accepted: 02 January, 2022, Published: 06 January, 2022

**Abstract**

The debate on financial development and economic growth has been comprehensively growing for a long time in the theoretical and empirical literature but there are still conflicting views on this association. Several studies have been conducted on different regions and countries whether banks or stock market finance have any influence on economic growth but the results are still far from a significant conclusion. The empirical findings inclined the view that both banks and stock markets have positive impact on economic growth however some studies support the negative association which may varies on different sample of countries, methodology of the study, proxies for financial development and over time. Based on the ongoing debate, the current study examines the impact of both stock markets and bank based financial development on economic growth in four developing countries of south Asia for the period of 1980-2017. The study use static, dynamic and long run estimators to efficiently investigate this association. The outcomes specifies that both market based and bank based financial development indices affect economic growth significantly and positively which indicates that the development of banking system and stock markets perform a very propounding role in strengthening economic growth in the sample countries. The long run estimators also confirm the presence of long run association between variables. The robustness tests confirm the results of all models that both banks and stock markets development are important and contribute to economic growth in the same way in the sample countries and can't be differentiated. The findings of this study have important policy suggestions to the sample countries government's channels, regulatory and supervisory efforts on further improvement of both stock markets and bank-based development in order to attain higher economic growth.

**Keywords:** Bank based financial development; Market based financial development, Economic growth; Dynamic Models; South Asian countries

## Introduction

The nexus between financial development and economic growth is much debated issue in the preceding literature. The importance of financial development is considered to be an important driver of economic growth of a country. The growing empirical and theoretical studies demonstrates that financial development of a country accelerate economic growth such as (Asteriou & Spanos, 2019); (Hoi, Lan Ho, & Duong Vu, 2019); and (Adusei, 2019). The theoretical association of financial development and economic growth can be traced back to the work of Schumpeter (1912) argue that a well-developed financial system accelerate economic growth. Well-structured financial system is considered as a key for industrialization Gerschenkron (1962). This statement is also endorsed by McKinnon (1973) and Shaw (1973). They statues that liberal financial markets enhance economic growth while repressive financial markets hinder it. (T Beck & Levine, 2002) examines banks development and market-based financial structure and found that both indicators play the same role in finance growth nexus. Nevertheless (Stiglitz, 1985) claims that bank based financial structure endorse more to growth than stock markets, while (Boyd & Smith, 1998) and (A. J. Levine, 1997); have opposing arguments to this. Empirical findings of different researchers have obtained mixed results regarding financial development and economic growth such as the study of (King & Levine, 1993), (Odedokun, 1996) and also the study of (Schumpeter, 1911), (Shaw, 1973); (Fishkin, Keniston, & McKinnon,

1973) and (Goldsmith, 1969) evidenced the positive association of financial development and economic growth while (Van Wijnbergen, 1983) and (Buffie, 1984) supports negative association. Considering stock market indicators, some studies have found casual association while some studies have used both the stock market and banks development indicators and have found the same results (Marques et al., 2013), (R. Levine & Zervos, 1999) (Nurudeen, 2009).

Some studies shows that banks perform better than stock markets in explaining economic growth. (Hoshi, Kashyap, & Scharfstein, 1990) statutes that there may be sensitivity to stock market prices in the market-based system where involved short term investments (Hoshi et al., 1990). Variation in results could be heterogeneity in the level of financial development in income countries Rioja & Valev, 2014) or it could be due to the nonlinear relationship between financial development and growth. Demirguc-Kunt, Feyen, and Levine (2013) illustrates that the contribution of banks becomes smaller when countries developed while an increase in output and an increase in stock market becomes larger. This discussion regarding the linkage of finance and growth is still under debate and it's important to reexamine this issue to provide better suggestion to policy makers of the sample countries of this study through which they can build financial structure in their different stages of development. The current study contributes to the existing literature in several ways on the impact of financial development on economic growth. Hsu, Tian, and Xu (2014) argued that capital markets are superior in contribution to economic growth than banking sector development by greater productivity gain and faster technological innovation.

Some authors argue that when economy developed, the contribution of banks to economic growth declines and the capital markets increase. The market-based finance is considered advantageous than banking sector in promoting productivity enhancement and technological innovations but it might be applicable in developed countries. It's been also debated that financial development effect economic growth only in high income or developed countries. Based on the above statements, this study examines the impact of both market based and bank based financial development on economic growth whether it's also significant in the developing countries of south Asia. The previous studies conducted on south Asian countries have used only single proxies, variables and mixed components with traditional models. We employed both static and dynamic models to the panel data for the time of 1980- 2017 to more efficiently estimate this association.

The rest of the study is structured as follows; section 2 present review of relevant literature on finance growth nexus, section 3 is composed on methodology, section 4 shows results and discussion while section 5 conclude the study.

**Literature Review**

The finance growth nexus has been studied by several researchers for different sample of countries and regions by using different proxies and methods but have got mixed results. Recently a study conducted by Haque (2020) who have studied finance growth relationship and attempts to assess the role of financial development towards the growth of the private sector. They have found positive impact of financial development on economic growth, trade openness and government expenditure while the private sector's gross domestic product has been found to be negative related with money supply, positive associated with bank credit to private sector while not significant for share market capitalization. Similarly, Bist (2018) have studied financial development and economic growth in low-income countries by employing FMOLS and DOLS models. Their results evidence the existence of long run cointegrating association. The author further statues that financial development has positive and significant impact on economic growth in the long run. Likewise, Rahman et al (2020) studied finance growth nexus in Pakistan for the period of 1980 to 2017. They have confirmed the Schumpeter view that financial development enhances economic growth. They give strong evidence of positive association between financial development and economic growth. Dritsakis, Kacho and Dahmardeh (2017) have also studied the impact of financial development and institutional quality on economic growth by using dynamic panel data generalized method in Cooperation Organization Countries for the time 2002 to 2014. They have used the mean of opinion and response, political stability and lack of violence, administrative efficiency, quality of provisions and legality and corruption control as six institutional indicators as well as the ratio of available credits for private sector in banks to gross product as finance indicators. Their results indicate that financial development and institutional quality have significant and positive impact on economic growth in selected countries. They have concluded that financial development may cause economic growth in developed countries due to good institutional structure. Similarly, Jauch and Watzka (2016) analyzed this association in developed and developing countries for the period of 1960 to 2008. They have used private sector credit as a proxy for financial development and have applied two stage least square estimation. They have found positive impact of financial development on income. Elkhuizen et al (2018) have studied the relationship between financial development, financial liberalization and social capital by using panel data of 82 countries for the time period 1973–2008. They have found that social capital may substitute for formal institutions as a prerequisite for effective financial liberalization policies. Their result shows that during the post Washington-consensus period countries with a high prevailing level of social capital can ensure that financial

liberalization positively influences financial development, despite the poor quality of their formal institutions. De Haan and Sturm (2017) examined financial development, banking crises and liberalization. They have found that financial development conditions the impact of financial liberalization on income inequality. More recently, Opoku, Ibrahim, and Sare (2019) have used frequency domain approach to study the linkage between financial development and economic growth in African countries over the period 1980–2016. They found that even though there is some evidence of demand-following, supply-leading and feedback hypotheses, to a large extent, financial development and economic growth evolve independently, irrespective of the time period. Law, Lee, and Singh (2018) examined the nonlinear nexus between financial development and innovation using GMM estimators. Although the authors found an inverted U-shaped relationship between finance and innovation, further results from their study show that the finance–innovation link varies with the level of institutional quality. In particular, for countries with sound institutions, the finance–innovation relationships followed an inverted U-shaped relationship, suggesting that sound institutional quality is a prerequisite for beneficial effects of financial development. Moreover, Arayssi and Fakih (2017) examined the causal link between financial development and economic growth in Kenya over the period 1960–2013. Results from their study reveal that although financial development is a by-product of growth, the interaction between foreign direct investment and financial development causes growth. However, in the case of South Africa. Sohag, Shams, Omar, and Chandrarin (2019) studied finance growth nexus in Malaysia and Indonesia. Their findings show an inverted U-shaped relationship between finance and growth in Malaysia. A U-shaped link was found for Indonesia. However, a positive change in institutional quality was found to have a much greater impact on growth rather than playing a mediating role in Malaysia. Interestingly, in Indonesia, the institutional quality was found to hinder economic growth, but it played a positive and significant mediating role in the finance–growth relationship. Law, Kutan et al. (2018) states the positive role in presence of institutions of financial development in economic growth. Relying on data from 87 countries spanning 1984–2014 while employing the dynamic panel GMM estimators, empirical results of Law, Kutan et al. (2018) show that the finance measured by private sector credit, liquid liabilities, and domestic credit drags overall growth when institutions are weak. Thus, institutions play a crucial role in the financial development–growth nexus, with economies having better institutional quality gaining significantly from banking sector development.

## Methodology

### Empirical model specification and variables

The current study explores the impact of banks based financial development and market based financial development on economic growth in four south Asian developing countries namely Sri Lanka, Bangladesh, India and Pakistan for the period of 1980 to 2017. Data for all variables were downloaded from the World Bank world Development Indicator. Bank based proxies' variables used in the study are credit to private credit, broad money (M2) and domestic credit by banks (DCB). On the other hand, market-based variables used to proxy financial development (MBFD) are; the total stocks traded value, stock turnover ratio and market capitalization while economic growth is proxy by per capita GDP. Other control variables were added are inflation, trade openness and capital formation. The econometric model can be written as follows;

$$GDPPC_{it} = \beta_0 + \beta_1 GDPPC_{it-1} + \beta_2 FD_{it} + \beta_3 TO_{it} + \beta_4 INF_{it} + \beta_5 INV_{it} + \epsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots 1$$

Where, GDPPC is GDP per capita used as a proxy of economic growth, $GDPPC_{i,t-1}$ is the first lag of all left-hand side variables given in the equation is utilized as an explanatory variable to quantify the effect of the anterior years on the current year. FD represent both markets based financial development and bank based financial development, TO is Trade openness, INF represent Inflation, INV is investment calculated as capital formation while ε is the error term. The summary statistics of the study variables is presented in table 1.

**Table 1.** Summary of Statistics and variables description

| Variable | Description | Mean | Median | Std. Dev. | Min | Max |
|---|---|---|---|---|---|---|
| GDP | Per capita gross domestic product | 3.472 | 3.324 | 2.143 | -2.227 | 8.556 |
| STRD | Value of stocks traded | 7.258 | 28.507 | 100.198 | 0.000 | 467.949 |
| MKT | Sock market capitalization | 30.371 | 23.348 | 27.243 | 1.399 | 149.506 |
| FDPVT | Credit to private sector | 28.172 | 25.740 | 10.461 | 8.821 | 52.385 |
| BM | Broad money | 46.141 | 44.144 | 14.461 | 19.592 | 79.075 |
| LB | Liquid liabilities | 39.460 | 37.785 | 13.663 | 15.390 | 74.926 |

| | | | | | | |
|---|---|---|---|---|---|---|
| TO | Trade openness %GDP | 40.582 | 35.612 | 18.627 | 12.219 | 88.636 |
| CFOR/INV | Fixed capital formation | 22.776 | 23.633 | 5.548 | 12.520 | 35.812 |
| INF | Inflation %GDP | 7.975 | 7.453 | 4.485 | 0.155 | 24.891 |
| STR | Stock turnover ratio | 19.943 | 3.555 | 30.895 | 0.0000 | 143.188 |

**Econometric techniques**

Three econometric techniques were employed to reenter the different econometric techniques used in previous studies to examine the linkage of finance and growth. These techniques are OLS, fixed effect and GMM which is proposed by (Arellano & Bond, 1991), system GMM (RW Blundell & Bond, 1995). System GMM is the recent application concerning the theme; therefore, the current study is focusing on the object and result are mostly concern on this. The first phase, the study has made the OLS and FE method estimation which is used for inspecting the issues of heterogeneity of countries.

The GMM techniques is in the first difference and its permit taking to deal with endogeneity problem concerned with variables of the study. This issue intermingled especially in the situation where the study deals the association of finance and economic growth in case of existing the causality with dual implication between finance and growth. System GMM has the ability to deal with the grouping of both difference and equations in level. The Instruments which specified for the difference equations are variables delayed values in levels. Furthermore, the variables of the study are instruments by the level equation and first differences. The system of the equations has been estimated by generalized method of moments simultaneously. The simulation about this of Monte Carlo made by (Richard Blundell & Bond, 1998) stated that SGMM model is efficient the most to estimate this dilemma. The over documentation test is Sargan test replaced as Hansen test and also the serial correlation test of Arellano and Bond are used. Most of the results regarding these tests confirmed our study expectations. Hansen test value gives the acceptance and shows the validity of the instruments. The serial correction tests shows whether the hypothesis is validated of second serial correlation of residuals. In the results of regression, the SD of coefficients are validated and heteroscedasticity problem have been checked. Our findings are consistent with results of King & Levine (1993), Levine (1997), Demetriades & Hussein (1996) and Giuliano & Ruiz-Arranz (2009).

A well-functioning financial sector can positively and strongly contribute to economic growth in both developing and developed countries. Secondly, the study employs panel co-integration techniques. The panel co-integration techniques used in the study is (FMOLS) (Pedroni, 2004) and (Phillips & Hansen, 1990) to explore bank based and market based financial development relation with growth. Dependent and independent variables are used and estimated the relationship of economic growth with financial indexes. The dependent variables in the models is economic growth and the financial development variables have constructed two indexes FDB and FDM where both indexes are proxied with three variables each as explained above.

**Results and discussions**

**Panel Unit root test**

Before doing analysis of the models, the data stationary properties have been checked by using different tests of unit root for panel data. Different scholars such as Breitung (2000), (Im, Pesaran, & Shin, 2003) and (Levin, Lin, & Chu, 2002) have established some tests for checking the stationary in panel data similar to other tests of unit root which have been conceded out in previous literature mostly for single series. The panel unit root tests power and ability is higher than other unit root tests which have been employed for individual time series since its bring evidence together in the series along with the evidence in the data which is cross section data. Following tests are tested for all the study variables. The results of Breitung panel unit root test as well Persaran and shin and LLC tests indicates that when the variables of the study are tested in levels can't reject the null hypothesis of unit root while only two variables such as GDPPC and inflation reject the null hypothesis in level. However, most of in the first differences, the non-stationary hypothesis is rejected at 1 percent level of differences. These results indicates that our data series are pigeonholed as an I (1) process for all variables while GDPPC and inflation are considered in 1(0) processes.

In the table, column 1 indicates variables names, column 2, 3, and 4 present the different unit root tests and t-statistics both in levels and in first differences such as LLC, Persaran and shin, and Breitung unit root tests respectively. In the present study, the null hypotheses are rejected based

on the outcomes of panel unit root tests. However, the unit root test indicates the acceptance of alternative hypothesis. The unit root tests results indicates that there is at least one of the unit root test which shows the non-stationary of the data in panel level of series where all the test of unit root indicates the panel series stationary. In the present study, the results of all tests of panel unit root tests provide strong support that the series of the data is stationary and therefore the null hypotheses have been rejected of the given p- value of the unit root tests. The results of panel unit root test are given in table 2.

**Results of Panel co-integration**

The results of panel unit root tests allow us further to test the panel co integration. Therefore, the current study employed the panel cointegration test of Pedroni (2004) where this test is composed of seven tests of statistics. The test for panel co integration has been tested to determine that if there exist long run equilibrium association between variables. Seven tests of cointegration have been employed to examine the hull hypothesis of no cointegration. The results of co integration indicate that most of the results reject the no co integration null hypothesis mostly in all models. Table 3 represent the panel cointegration results for bank-based variables while table 4 shows the results of panel cointegration for market-based variables. Since, the variables are cointegrated for both banks based and market-based variables, therefore the results allow us for long run estimations. After the establishment of unit root and cointegration, the next step is to estimate the associated long-run cointegration parameters. The estimated results of Fully Modified OLS and the Dynamic OLS are reported in the table below. The findings show that most of the results of FMOLS and DOLS are the same for each variable.

**Table 2.** Panel Unit Root test results

| Variables | Levin, Lin &Chu | | Pesaran and Shin | | Breitung | |
|---|---|---|---|---|---|---|
| | Level | 1st Difference | Level | 1st Difference | Level | 1st Difference |
| GDPPC | -4.594*** | -10.199*** | -5.409*** | -9.659*** | -5.034*** | -6.737*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| FDPVT | -0.519 | -6.057*** | 0.296 | -4.707*** | 0.422 | -3.527*** |
| | (0.301) | (0.000) | (0.616) | (0.000) | (0.663) | (0.000) |
| BM | 0.206 | -7.836*** | -0.256 | -6.226*** | 0.993 | -6.220*** |
| | (0.581) | (0.000) | (0.398) | (0.000) | (0.839) | (0.0031) |
| M3 | 0.968*** | -2.639*** | 1.002 | -2.722** | 0.680 | 0.095*** |
| | (0.000) | (0.000) | (0.841) | (0.003) | (0.752) | (0.000) |
| STRD | -2.736*** | -4.076*** | -1.484 | -3.282*** | -1.602 | -3.324*** |
| | (0.003) | (0.000) | (0.068) | (0.000) | (0.054) | (0.000) |
| STOR | -0.715 | -5.440*** | -0.398 | 3.843*** | -1.936 | -4.985*** |
| | (0.237) | (0.000) | (0.345) | (0.000) | (0.026) | (0.000) |
| MKT | -2.560** | -7.796*** | -1.601 | -6.218*** | -1.645 | -6.206*** |
| | (0.005) | (0.000) | (0.054) | (0.000) | (0.049) | (0.000) |
| TO | 1.749 | -8.999*** | 1.402 | -8.275*** | 1.305 | -6.528*** |
| | (0.959) | (0.000) | (0.919) | (0.000) | (0.904) | (0.000) |
| INV | -2.204 | -6.562*** | -1.974 | 6.685*** | -2.842** | -4.338*** |
| | (0.013) | (0.000) | (0.024) | (0.000) | (0.002) | (0.000) |
| INF | -3.699*** | -14.82*** | 3.950*** | -15.343*** | -2.350*** | -7.755*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.009) | (0.000) |

**Table 3**. Result of Panel Co-integration for bank based financial development

| Bank Based Financial Development | | | | | | |
|---|---|---|---|---|---|---|
| FDPVT | | | BM | | L.Laib | |
| | Statistic | Weighted statistics | Statistic | Weighted statistics | Statistic | Weighted statistics |
| Panel V | 5.185*** | 4.828*** | -3.131*** | 4.607*** | 4.406*** | 3.644** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) |
| Panel rho | -6.943*** | -7.350*** | -3.131*** | -7.810*** | -5.769*** | -5.450*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Panel PP | -7.695*** | -7.691*** | -3.131*** | -7.793*** | -6.547*** | -5.264*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Panel ADF | -2.894*** | -3.131*** | -3.131** | -2.344** | -2.088** | -1.507*** |
| | (0.000) | (0.000) | (0.001) | (0.009) | (0.001) | (0.006) |
| Group rho | -6.295*** | | -3.131*** | | -4.192*** | |
| | (0.000) | | (0.000) | | (0.000) | |
| Group PP | -9.681*** | | -3.131*** | | -6.735*** | |
| | (0.000) | | (0.000) | | (0.000) | |
| Group ADF | -1.33** | | -3.131 | | -1.424** | |
| | (0.009) | | (0.015) | | (0.007) | |

**Note:** FDPVT represent credit to private sector, BM is broad money, L.Laib is liquid liabilities, *** and ** represent significance level at 1% and 5 percent respectivel

**Results of Fully Modified Ordinary Least Square (FMOLS)**

Table 5 represent the results of bank based financial development (FDB) index and market based financial development (FDM) index where the FDB index is highly statistically significant at 1 percent level which indicates that FDB index effect economic growth positively in the sample countries in the long run. More specifically, if there is a percent increase in FDB will increase economic growth by 2.3 percent in the long run. The results indicate that FDB index constructed of three banks development indicators collectively important for economic growth of the sample countries. The finding of the current study is reinforced by the study of other researchers such as the study of (Guru & Yadav, 2019) who have also

**Table 4.** Result of Panel Co-integration for Market based financial development

| Market Based Financial Development | | | | | | |
|---|---|---|---|---|---|---|
| STOR | | | STRD | | MKT | |
| | Statistic | Weighted statistics | Statistic | Weighted statistics | Statistic | Weighted statistics |
| Panel V-St | 2.650** | 1.458** | 4.043*** | 0.108 | 5.672*** | 0.019 |
| | (0.004) | (0.007) | (0.000) | (0.456) | (0.000) | (0.045) |
| Panel rho-st | -2.650*** | -2.982*** | -3.726*** | -1.106** | -5.236*** | -2.916** |
| | (0.000) | (0.000) | (0.000) | (0.001) | (0.000) | (0.001) |
| Panel PP-st | -7.849*** | -5.673** | -3.930*** | -1.492** | -4.990*** | -3.010** |
| | (0.000) | (0.001) | (0.000) | (0.006) | (0.000) | (0.001) |
| Panel ADF-St | 1.243 | 1.315 | -2.178** | -1.030** | -0.896** | -1.513** |
| | (0.08) | (0.090) | (0.001) | (0.001) | (0.001) | (0.006) |
| Group rho | -1.52*** | | -1.761 | | -2.455** | |
| | (0.006) | | (0.003) ** | | (0.007) | |
| Group pp | -6.592*** | | -3.974*** | | -4.494*** | |
| | (0.000) | | (0.000) | | (0.000) | |
| Group ADF | 1.847 | | -2.668** | | -0.071** | |
| | (0.096) | | (0.003) | | (0.008) | |

**Note:** STOR is stock turnover ratio, STRD is the total value of stocks traded, MKT is stock market capitalization, *** and ** represent significance level at 1% and 5 percent respectively

studied the same association and found that banks exert positive impact on growth level in BRICS economies. Similarly, the study of (R. Levine & Zervos, 1998) is also similar to the findings of our study as they found that the growth of banking industry predict the level of economic growth positively. Banks plays a leading and appropriate role in promoting financial development by mobilizing financial resources of the public and makes them available

for investment in productive enterprises. Bank credit increases the speed of economic development progress of a country by providing loan to industries in time. Similarly, economic growth encourages credit expansion through its demand for financial services. The relationship between bank and economic growth is of practical significance in policymaking. The financial efficiency is the ability to perform as a major role of deposits transformation to credits (Asongu, 2012).

Investment, which is calculated as a gross capital formation is also highly significant and positive which also exert positive impact on economic growth in the long run while the other two control variables trade openness and inflation are insignificant. The results of gross capital formation indicate the importance of investment in public and private productive sectors because it enhances economic growth.

**Table 5.** FMOLS Model results

| FMOLS Regression | | |
|---|---|---|
| | FDB index | FDM index |
| FD | 2.362*** | 0.010** |
| | (0.000) | (0.003) |
| INV | 0.160*** | 0.0256** |
| | (0.000) | (0.005) |
| TO | -1.558 | 0.0273*** |
| | (0.036) | (0.000) |
| INF | -0.345* | -0.0380*** |
| | (0.078) | (0.000) |

**Note:** The tables present the results of FMOLS (fully modified ordinary least square) results. ***,** represent the level of significance at 1 and 5 percent respectively

In case of the current study findings, the investment variable is positive and highly significant in all the study models and this result is confirmed by the theory of growth which emphasized the necessity of investment in economic growth though capital accumulation in augmenting economic growth. Similar results to the present study findings have found by (Nyasha & Odhiambo, 2014), (Effiong, 2015) and (Bist, 2018).

The insignificant result of inflation infers that increase in inflation level cause to decrease economic growth insignificantly in four south Asians developing countries (Pakistan, Sri Lanka, India and Bangladesh). Inflation in the present study has been as a control variable which is the macroeconomic stability proxy and the result is consistently negative in all models of the present study. This negative result of inflation coefficient is consistent with the macroeconomic instability argument which indicates that inflation is poisonous to economic growth. Inflation lowers the long-term rate of investment and the level of higher inflation increase risks and also increases the uncertainty in an economy. The whole result of FDB indicates that all three bank-based variables collectively enhance economic growth in the long run which indicates that development in banking sector of the sample countries will spur economic growth.

Likewise, FDM index is also highly significant which shows that its impact on economic growth positively. Stock and bond markets works as a motivator and driving the economic activity through resource allocation and saving mobilization as well the managing of corporate side and risk management, that system of the economy is called a market-based financial system and financial market development is called the market-based financial development (Demirguc, Kunt and Levine, 2001). The positive impact of stock market development on economic growth in the model indicates that stock market development is very important for economic growth in the sample countries. For instance, if there is a percent increase in FDM will increase economic growth by 0.01 percent in the sample countries in the long run. Stocks markets offer various services to stock market participants and reached to the investors around the globe. Similarly, a stock traded volume is considered as an indicator of stock market development since stock prices need volume to move. The stock prices high volatility arises due to the volatility volume and the activities relating to trading. Therefore, the current study results suggest that increase in the performance of stock markets in the sample countries will lead to higher economic growth. The same results on the impact of stock market development on economic growth were found by (Carp, 2012), (Le, Ho, & Vu, 2019) (Azam, Haseeb, binti Samsi, & Raji, 2016), Masoud 2013, (Enisan & Olufisayo, 2009) and (Nyasha & Odhiambo, 2015).

Similarly, other control variables which are investment, trade openness and inflation are also significant determinant of economic growth in the FMOLS regression which indicates that trade openness and gross capital formation will positively impact economic growth in the long run. Results regarding capital formation empirically proved that gross capital formation (investments) are positively interrelated with economic growth which indicates that higher amounts of investments carried out by investors enhance goods and services and increase economic growth progress. The results confirm that investment is the main factor of economic growth and the same findings to the present study are also found by (Caporale, Rault, Sova, & Sova, 2009), Van de Laan et al.,

(2011) and Ahmed (2013). Moreover, (Romer, 2012) also statues that an increase in the level of investment bring increase in economic growth.

Regarding trade openness, the same result is found by (Murari, 2017) by using FMOL and DOLS. Furthermore, (Ahmed Abdullahi, 2011) have also used FMOLS and found the same result that market-based financial system is crucial for explaining output growth. The source of economic growth is openness of a country as its considered by numerous studies such as the study of (Thorsten Beck & Levine, 2004), (Salgado-Banda, 2005) and (R. Levine & Zervos, 1998). These researchers have confirmed that the economic growth and trade openness relationship is positive in developed as well in the developing countries.

**Dynamic Ordinary Least Square (DOLS) estimation**

As the current study used the FMOLS long run estimator, the study further employed DOLS estimators as a robust check which is recommended by Kao and Chiang (2000). DOLS method is a parametric method which take potential endogeneity into consideration of the variables as well as the presence of serial correlation by including the lags and leads of difference explanatory variables as additional regressors in the model (Fidrmuc, 2009;441). In this context, Kao and Chiang (2000) indicates that DOLS is better as compare to FMOLS and its outperform than FMOLS when estimating co integration of panel regressors. Therefore, we used DOLS method after using FMOLS to further confirm the results as a robust check.

Same as the FMOLS, table 6 shows the impact of FDB and FDM indices on economic growth by using dynamic OLS model. The estimated coefficient of FDB index which is constructed of three bank based financial development indicators is highly statistically significant and positive which indicates that increase in these three indicators collectively exert positive impact on economic growth in the long run. More specifically, if there is a percent increase in FDB index will enhance economic growth by 0.087 percent in the long run in the sample countries.

**Table 6**. DOLS model results

| DOLS Model Results | | |
|---|---|---|
| | FDB index | FDM index |
| FD | 0.087*** | -44.296*** |
| | (0.000) | (0.000) |
| INV | 0.193*** | 2.625*** |
| | (0.000) | (0.000) |
| TO | -0.017*** | 17.743*** |
| | (0.001) | (0.000) |
| INF | -0.2620 | 8.968*** |
| | (0.295) | (0.000) |
| $R^2$ | 0.395250 | -512.4 |

**Note:** The tables present the results of DOLS (Dynamic ordinary least square) results. FD is financial development, FDB is bank based financial development index, FDM is stock market based financial index, while ***,** represent the level of significance at 1 and 5 percent respectively

Similarly, investment which is a control variable also exert positive significant impact on economic growth which indicates that this variable also increases economic growth in the long run in the sample countries while trade openness will reduce growth rate in the long run. Inflation has been found to have insignificant impact on economic growth.

Likewise, FDM index which is constructed of three market-based indicators has a negatively significant impact on economic growth while this index was found positive significant in FMOLS model. This result indicates that FDM index is negatively significantly related to economic growth in the long run in the sample countries while investment, trade openness and inflation which are the control variables have been found to be positively significantly associated with economic growth in the long run. The negative impact of FDM index in the DOLS model is a robust check as this result is positive in the FMOLS model. This result indicates that the countries should focus on the importance of stock market development which will also in turn contribute to economic growth in the long run.

**Results of Static and Dynamic Models on the impact of Bank based financial development on Economic growth**

The results of OLS, FE, difference GMM and System GMM dynamic panel estimators with regard to financial development by banks (FDB) for four south Asian developing countries (Pakistan, Sari Lanka, India and Bangladesh) are given in Table 7. The results show that the lagged dependent variable is highly significant and finance growth results gives evidence of positive and significant association in the study sampled countries. Three proxies variables are used for bank based financial development index. These variables are Broad Money (BM) which has also known as M2, Liquid liabilities (M3) and private sector credit by Banks (FDPVT) are used to investigate the banks development role in economic

growth. The index of bank based (FDB) is highly statistically significant and the relationship is positive with economic growth which states that all these three bank proxies of financial development are quite fit to explain financial development and it's positively and significantly contribution to economic growth.

The estimated coefficient of FDB index in all models (OLS model, fixed effect method and system GMM regarding) is positive and highly significant at one percent significant level on economic growth. For instant, the results of system GMM indicate that if there is 1% rise in FDB index cause to increases economic growth in the sample countries by 0.46 percent. It is noted that the bank-based index coefficient distributed by financial institutions and banks to private sector is positive and significant. These observations can be associated directly to the south Asian countries predominant public sector in the process of credit allocation. Accordingly, to the credit allocation process improvement, these countries of south Asia further need the national banks privatization or the regulations reinforcement of credit and the banking sector competition.

Our result of this study is reinforced by the study of other researchers such as the study of (Guru & Yadav, 2019) who also have studied the same association and have found that banks exert positive impact on growth level in BRICS economies. Likewise, (R. Levine & Zervos, 1998) also support the study findings as they found that the growth of banking industry predict the level economic growth positively. The current study findings can be implemented in the sampled countries as the findings suggest that there is passionate need for financial development specifically the banking sector in order to super the study sampled countries economic growth.

**Table 7.** Bank Based Financial Development and Economic Growth

| Dependent variable | Model-1 | Model-2 | Model-3 | Model-4 |
|---|---|---|---|---|
| GDP Per Capita | OLS | FE | GMM | SGMM |
| FDB | 0.680*** | 0.670*** | 0.679** | 0.466*** |
| | (0.174) | (0.247) | (0.277) | (0.129) |
| Trade Openness | 0.365*** | 0.258 | 0.362 | 0.228** |
| | (0.110) | (0.203) | (0.324) | (0.0872) |
| Investment | 0.279*** | 0.205*** | 0.162*** | 0.156*** |
| | (0.0784) | (0.0772) | (0.0551) | (0.0564) |
| Inflation | 0.00229 | 0.00427 | 0.00695 | 0.00873 |
| | (0.0122) | (0.0118) | (0.0110) | (0.00867) |
| L.GDP Per Capita | | | 0.0283 | 0.290*** |
| | | | (0.100) | (0.0824) |
| Constant | -3.082*** | -2.524*** | | -1.922*** |
| | (0.727) | (0.717) | | (0.557) |
| Observations | 97 | 97 | 73 | 91 |
| R-squared | 0.338 | 0.274 | | |
| Number of id | | 4 | 4 | 4 |
| Sargan test | | | | 79.40 (0.651) |
| AR2 | | | | 0.48 (0.628) |

**Source:** Own calculation

**Notes:** FDM is market based financial development index. OLS is ordinary least square, FE is fixed effect model, and GMM and SGMM are difference and System Generalized method of Moments. *, **, *** represents significance level at 10, 5% and 1% respectively.

The development of institutions deals with microfinance as an accompaniment to the conservative commercial banks and it will perform vital part in saving mobilization and ease access to fund provision and then in turn it can increase the growth progress of the sampled countries. Similarly, the estimated coefficient of trade openness in OLS and System GMM models are highly statistically significant at 1 percent and five percent level which statues that the need of trade openness is important and it perform positive role in economic growth in the sampled countries of the present research. The trade openness of an economy has been considered as the important source of economic growth by several researchers such as (Salgado-Banda, 2005) (Thorsten Beck & Levine, 2004) and (R. Levine & Zervos, 1998). These scholars have conferment that the association of growth and openness in developing countries as well in developed countries is positive and significant.

According to the study of (Salgado-Banda, 2005) where he statutes that economic liberalization and the trade

freedom have an essential role to augment the efficient resource allocation in an economy which in turn facilitate and augment the level of economic growth. Additionally, some other researchers such as Helpman and Krugman (1969) and (Krueger, 1997) have portrayed the import substitution policies inefficiencies and further mentioned that trade openness move inefficient import substitutions activities resources to efficient and comparative advantage side. Similarly the study of (Deyshappriya, 2016) have also found positive and significant impact of trade openness on economic growth in a study conducted on developing and emerging markets which are similar to the present study findings. The result further proves that the trade of sampled four countries has been enhanced at high level and states about the financial system, governance and corruption. It can be positive and significant also due to high amount of FDI inflow which can be the result of high economic growth. Therefore, it is suggested that these four countries should focus to further stabilize their financial system and others factors such as good governance, corruption and political stability in order to promote trade openness which in turn can stimulate economic growth. Moreover, the results also suggest that these four countries should focus on industrial productions in the presence of good governance which can help increase export as a results economic growth magnificent. Likewise, the estimated coefficient of investment is significant highly at 1 percent level and positive in all models which indicate that investments are very important in enhancing economic growth in the sample countries of the current study. Investment variable is measured in the study by the fixed capital formation which exert significant and positive impact on economic growth which indicates the importance of investment in public and private productive sectors because it enhances economic growth. In case of the current study findings, the investment variable is positive and highly significant in all the study models and this result is confirmed by the theory of growth which emphasized the necessity of investment in economic growth though capital accumulation in augmenting economic growth. Similar results to the present study findings have found by (Nyasha & Odhiambo, 2014), (Effiong, 2015) and (Bist, 2018). Moreover, the estimated coefficient of inflation is highly statistically insignificant and the relationship is negative with per capita growth. This result infers that increase in inflation level cause to decrease economic growth insignificantly in south Asians four countries (Pakistan, Sri Lanka, India and Bangladesh). Inflation in the present study has been as a control variable which is the macroeconomic stability proxy and the result is consistently negative in all models of the present study. This negative result of inflation coefficient is consistent with the macroeconomic instability argument which indicates that inflation is poisonous to economic growth. Inflation lowers the long-term rate of investment and the level of higher inflation increase risks and also increases the uncertainty in an economy. Whenever explaining economic growth in a study, the important factor of explaining economic growth is inflation and shouldn't be ignored. Moreover, the study of other researchers namely (Ireland, 1994) and (Deyshappriya, 2016) have got the insignificant values for inflation which strained that the inflation influence on economic growth is low extensively and this impact may completely perish in the long run. Similarly, (Tripathy, 2019) have also obtained that there is negative association of inflation and economic growth in a study conducted for India. Similarly, an another study of (Effiong, 2015) have also found negative role of inflation in economic growth.

The whole results designate that banks development have a positive and significant influence on economic growth in the present study sampled countries which further suggest that if there is an increase in banking sector performance will leads to higher economic growth in four south Asian developing countries. The results of the current study are reinforced by different researchers such as (Andersen & Tarp, 2003).

**The effects of Market-Based Financial Development on Economic Growth**

Table 8 provides the results of all models OLS method, fixed effect estimator, difference GMM and system GMM estimators. The first column of table presents the variables, OLS and fixed effect model results are given in column 2 and column 3 respectively, while the difference GMM and system GMM results are given in column 4th and column 5th respectively with regard to financial development by stock market in four South Asians countries (Pakistan, Sri Lanka, India and Bangladesh) are given.

The table 6 below results shows the positive and significant coefficient of lagged dependent variable. The study findings of stock market and economic growth are significant and the relationship is positive in all the study employed models which indicates that the three proxies used for stock market growth collectively exert positive and significant role in economic growth.

The results of FE, difference GMM and system GMM dynamic panel estimators for South Asians four countries

(Pakistan, India, Bangladesh and Sri Lanka) are given in table. The system GMM result of stock market development index is highly statistically significant at 1 percent level, OLS and fixed effect model at 5 percent level while difference GMM at 10 percent level confirming that market based financial development stimulates economic growth of sampled south Asian's countries. After the potential endogeneity control of explanatory variables, the results concludes that the index of stock market (FDM) exert positive influence on economic growth in the study sample. The finding of current study re-enforced by the studies of (Carp, 2012), (Azam et al., 2016), Masoud 2013, (Enisan & Olufisayo, 2009), (Nyasha & Odhiambo, 2015). Moreover, similar results to the current study findings were also found by (Le et al., 2019) in three Asian countries regarding stock market and economic growth. These findings indicates that there is an important role of stock markets growth in financial development proxies by market based financial indicators with liquidity, capital adequacy and investments as well economic resources mobilization in an inefficient way. Furthermore (Thorsten Beck & Levine, 2004), (Deyshappriya, 2016), (Rousseau & Wachtel, 2000) have also found the positive role of stock markets in economic growth. Moreover, stock market advancement also assists in capital accumulation which can allow small investors which invest financial assets in the capital markets such as investment in bonds, stocks and debenture. According to the results of this study, well preforming and developed stock markets are key indicators of macroeconomic development because it can motivate domestic and foreign investors for investment into the country which is an energizer for industrialization (Coskun, Seven, Ertugrul, & Ulussever, 2017), (Petros, 2012) and (Cooray, 2010)

**Table 8.** Results of Market-Based financial development and Economic Growth

| Dependent variable | Model-1 | Model-2 | Model-3 | Model-4 |
|---|---|---|---|---|
| GDP Per Capita | OLS | FE | GMM | SGMM |
| FDM | 0.148** | 0.355** | 0.0989* | 0.105*** |
| | (0.0691) | (0.133) | (0.0766) | (0.0307) |
| Trade Openness | 0.725*** | 0.622 | 0.135 | 0.390*** |
| | (0.222) | (0.395) | (0.256) | (0.114) |
| Investment | 0.396*** | 0.231* | 0.199*** | 0.188*** |
| | (0.115) | (0.122) | (0.0549) | (0.0524) |
| Inflation | -0.117 | -0.112 | -0.0767* | -0.0395 |
| | (0.0904) | (0.0906) | (0.0440) | (0.0396) |
| L.GDP Per capita | | | 0.107 | 0.358*** |
| | | | (0.0874) | (0.0698) |
| Constant | -2.374*** | -2.150 | | -1.105*** |
| | (0.809) | (1.490) | | (0.391) |
| Observations | 58 | 58 | 43 | 56 |
| R-squared | 0.380 | 0.252 | | |
| Number of id | | 4 | 4 | 4 |

**Source:** Own calculation

**Notes:** FDM is market based financial development index. OLS is ordinary least square, FE is fixed effect model, and GMM and SGMM are difference and System Generalized method of Moments. *, **, *** represents significance level at 10, 5% and 1% respectively

Moreover, income per capita is also the growth regression common factors where the present study has got that the stock market and per capita GDP have positive association. The current study findings are consistent with other studies results such as the study of (Thorsten Beck & Levine, 2004; Deyshappriya, 2016), (Salgado-Banda, 2005) and (Seetanah, Ramessur, & Rojid, 2009) and (R. Levine & Zervos, 1993) and (Osinubi, 2002). Additionally, the

present study findings are in line with the previous arguments which are that sound financial sectors of a country contribute to economic growth significantly. More specifically, if there is 1% increase in the financial development will implies 0.1 percent increase in economic growth level as obtained by the results of system GMM. Similar findings to the current study have found by several scholars on the relation of finance and economic growth which reinforce the findings of the present study such as (Nyasha & Odhiambo, 2015), (Alimi, 2015), (Sahoo, 2014), (Adu, Marbuah, & Mensah, 2013), (R. Levine, 2005), Levine and Zervos (1996) and Hassan *et al*., 2011. A well-established financial system of countries plays a crucial role to boost economic growth resulting good living standard and prosperous countries. Similarly, the result of openness in OLS and system GMM is significant highly and the relationship is positive which reveal that trade openness of trade among four countries is performing well. System GMM result indicates that if there is 1 percent increase in trade openness will raise the growth rate by 0.105 percent. In additions, the source of economic growth is openness of a country as its considered by numerous studies such as the study of (Thorsten Beck & Levine, 2004), (Salgado-Banda, 2005) and (R. Levine & Zervos, 1998). These researchers have confirmed that the economic growth and trade openness relationship is positive in developed as well in the developing countries. As the author (Salgado-Banda, 2005) states that liberalization and openness to trade of a country enhance the level of resource allocation efficiency and then its upsurge the growth level. Similarly, the current findings are also reinforced by other researchers such as Helpman and Krugman (1969) and (Krueger, 1997).

Investment coefficient is also highly significant in all models. The current results empirically proved that gross capital formation (investments) are positively interrelated with economic growth which indicates that higher amounts of investments carried out by investors enhance goods and services and increase economic growth progress. The results confirm that investment is the main factor of economic growth and the same findings to the present study are also found by (Caporale et al., 2009), Van de Laan et al., (2011) and Ahmed (2013). Moreover, (Romer, 2012) also statues that an increase in the level of investment bring increase in economic growth. Likewise, the estimated coefficient of inflation is statistically significant only in GMM model and the relationship is negative which implies that a 1% increase in inflation cause to decrease economic growth in south Asians four countries (Pakistan, Sri Lanka, India and Bangladesh). Nevertheless, the coefficient of inflation in other models is insignificant. However, inflation is became an insignificant factor for economic growth which means that inflation reduce the growth rate. (Ireland, 1994) and (Deyshappriya, 2016) have also got the same results to the current study findings. It can be concluded that financial sector gets worse when there is high inflation and it can cause reduce the economic performance.

**Robustness checks**

**Robustness check-I**

Table 9 present the results of robustness check. To check the validity of the above results, we have used system GMM where financial development-I is the banking sector and financial development-II is the stock market financial development. Each indicator in same regression model without constructing an index has been used where most of the indicators exert the same impact on economic growth as in the results of FDB and FDM index.

**Robustness check-II**

To further confirm the empirical results of the analysis and robustness purpose, they study have used system GMM and reexamine by using each individual indicators as a single proxy in the model rather than a composite index and have done analysis where all the indicators of both banks and stock market exactly has the same impact on economic growth as in the two-bank based and market based financial development indexes and other models. The results are given in below table 10 where financial development-I represent banks indicators while financial development-II illustrates the stock market indicators.

**Table 9.** Robustness check-I

| VARIABLES | Financial Development-I | VARIABLES | Financial Development-II |
|---|---|---|---|
| L.GDP per capita | 0.237*** | L.GDP per capita | 0.339*** |
| | (0.085) | | (0.074) |
| Private credit | 0.027*** | Mkt Capitalization | 60.66* |

| | | | |
|---|---|---|---|
| | (0.150) | | (30.22) |
| Broad money | 0.025** | Turnover ratio | 60.76* |
| | (0.012) | | (30.23) |
| Liquid liabilities | 1.445** | Value trade | -60.74* |
| | (0.549) | | (30.23) |
| Trade openness | 0.377*** | Trade openness | 0.383*** |
| | (0.107) | | (0.126) |
| Investment | 0.156*** | Investment | 0.218*** |
| | (0.056) | | (0.058) |
| Inflation | 0.002 | Inflation | -0.044 |
| | (0.052) | | (0.042) |
| Constant | -4.816*** | Constant | 278.6* |
| | (1.533) | | (139.2) |
| Observations | 91 | Observation | 56 |
| Number of id | 4 | Number of id | 4 |

**Note**: *, **, *** represents significance level at 10, 5% and 1% respectively

**Table 10.** Robustness check-II

| | Financial development-I | | | Financial development-II | | |
|---|---|---|---|---|---|---|
| Dep.var GDPPC | FDPVT | BM | LQ | MKT | STOR | STRD |
| Finance Indicator | 0.366*** | 0.450*** | 0.443*** | 0.103*** | 0.003*** | 0.050**' |
| | (0.103) | (0.125) | (0.118) | (0.033) | (0.001) | (0.025) |
| Trade Openness | 0.247*** | 0.272*** | 0.266*** | 0.349*** | 0.428*** | 0.434*** |
| | (0.088) | (0.089) | (0.088) | (0.116) | (0.109) | (0.121) |
| Investment | 0.163*** | 0.181*** | 0.159*** | 0.191*** | 0.154*** | 0.184*** |
| | (0.057) | (0.057) | (0.056) | (0.054) | (0.054) | (0.055) |
| Inflation | 0.021 | 0.032 | 0.008 | -0.021 | -0.030 | -0.028 |
| | (0.051) | (0.052) | (0.008) | (0.040) | (0.042) | (0.041) |
| L.GDPPC | 0.192** | 0.196*** | 0.287*** | 0.358*** | 0.352*** | 0.392*** |
| | (0.073) | (0.074) | (0.082) | (0.069) | (0.072) | (0.072) |
| Constant | -1.377*** | -2.041*** | -1.988*** | -1.049** | -1.001*** | -1.229*** |
| | (0.406) | (0.542) | (0.556) | (0.395) | (0.373) | (0.429) |
| Observations | 99 | 99 | 91 | 60 | 66 | 56 |
| R-squared | | | | | | |
| Number of id | 4 | 4 | 4 | 4 | 4 | 4 |

**Note:** *, **, *** represents significance level at 10, 5% and 1% respectively

## Conclusions and Policy Implications

This portion of the study illustrates the policy impaction of the study and conclusion. As mentioned earlier, the study explores banks and stock market financial development dynamic impact of south Asian four countries (Pakistan, India, Bangladesh and Sri Lanka) on economic growth. The time period for data of this study is 1980-2017.The majority of the previous conducted studies on finance growth association have focuses mainly or only the banks development on economic growth and have given a little focus to stock market contribution to economic growth and vice versa. Some of the empirical studies are inconclusive and only few studies have been conducted for these countries used in our study. However, there are some studies on these countries but inefficient and have used mixed or few proxies of financial development. The present study utilizes multiple models such as OLS panel estimator, Fixed effect, FMOLS, DOLS models as well newly developed dynamic models such as Generalized method of moments to examine this

relationship. All other models have been used for comparison while the main focus is system GMM because it's given efficient estimation for the panel data. Totally, in our findings the null hypothesis is strongly rejected which favors that there is no importance of financial development for growth. By using multiple models in the study, the null hypothesis which favor the unimportance of finance in growth have been rejected. The data of the study is consistent with theories after we control for potential endogeneity and country specific effects. The data with theories are consistent which emphasize that financial development is important for growth proxies by FDM and FDB indexes of stocks market and banks development.

This study further suggests that the promotion of financial development of an economy shouldn't be ignored in order for the augmenting high economic growth. Similarly, as FDM the banks development role in economic growth should also not be ignored and both FDM and FDB in the study counties should be considered with full attention to improve because the findings of this study indicates that both FDM and FDB are closely important in economic growth of these countries and no one of them should be ignored. Beside that its further recommend the study countries to focus on the improvement on the individual indicators of financial development that can even be a bank or stock market indicator used in this study has found in the result that each individual indictor is important and contribute to economic growth significantly. Future direction of this study recommends that institutional quality and governance should also be considered to find the role of financial development on economic growth. The limitation can be the follows, the first one is that the study sample size is small and it may suffer the result due to the problem of insufficient data. Although the use of dynamic models' difference and system GMM approach might have need more cross-sectional observations, it may also be argued that a minimum observations and short time period could influence the study findings. Moreover, the precision of parameter may have reduced due to the utilization of annual data. Quarterly data maybe more suitable for such kind of studies but most of the study variables quarterly data were not available. It will be really interesting if compare future findings of studies which have used quarterly data or more data points of different regions which large sample. Moreover, future direction of this study recommends that institutional quality and governance should also be considered to examine finance growth nexus. Other relevant variables should be considered by future studies such as institutional quality, governance and corruption as our study haven't concluded these variables here. If further study used these variables and will observe if the results are better and fundamentally different from the results we obtained for the present study. Furthermore, the present study has used FDB index for measuring financial development where it's been constructed by using three banks development indicators. Similarly, the study has utilized FDM index on stock market development which is also constructed by using three indicators of stock market development.Beside that this study has also found the individual indicators role in economic growth in the sample countries of the present study.

Studies of other researches to be conducted in the future can also benefit by using indexes of financial development by using various indicator rather than used in this study. The study used the panel data obtained from (WDI/WB) world development indicator issued by World Bank. Therefore, the findings and conclusion validity of this study is limited to the credibility of the data used. Study collected by different sources and reliable organization for coming studies are recommended here and suggests conducting a study on the sample countries by using firm level data. However, the empirical findings and evidence of this study could have affected by the study limitation but we assume that these are minimal influences and significantly and theoretically have not been affected our empirical results of the study.

**Acknowledgement**

The authors are thankful to the journal editor and unknown referees for their useful suggestions to improve the quality of this article.

**Conflict of Interests**

The authors declared no conflicts of interest with regard to publication of this article

**Funding**

No financial support for this research and publication are received.

**References**


Adu, G., Marbuah, G., & Mensah, J. T. (2013). Financial development and economic growth in Ghana: Does the measure of financial development matter? *Review of Development finance*, *3*(4), 192-203.

Adusei, M. (2019). The finance–growth nexus: Does risk premium matter? *International Journal of Finance & Economics*, *24*(1), 588-603.

Ahmed Abdullahi, D. (2011). Financial structure and economic growth link in African countries: a panel cointegration analysis. *Journal of Economic Studies*, *38*(3), 331-357. doi:10.1108/01443581111152436

Alimi, R. S. (2015). Financial deepening and economic growth: A System GMM Panel Analysis with application to 7 SSA countries.

Andersen, T. B., & Tarp, F. (2003). Financial liberalization, financial development and economic growth in LDCs. *Journal of International Development: The Journal of the Development Studies Association*, *15*(2), 189-209.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The review of economic studies*, *58*(2), 277-297.

Asongu, S. A. (2012). Government quality determinants of stock market performance in African countries. *Journal of African Business*, *13*(3), 183-199.

Asteriou, D., & Spanos, K. (2019). The relationship between financial development and economic growth during the recent crisis: Evidence from the EU. *Finance Research Letters*, *28*, 238-245.

Azam, M., Haseeb, M., binti Samsi, A., & Raji, J. O. (2016). Stock market development and economic growth: Evidences from Asia-4 Countries. *International Journal of Economics and Financial Issues*, *6*(3), 1200-1208.

Beck, T., & Levine, R. (2002). Stock Market, Banks, and Growth: Panel Evidence," NBER Working Paper no. 9082.

Beck, T., & Levine, R. (2004). Stock markets, banks, and growth: Panel evidence. *Journal of Banking & Finance*, *28*(3), 423-442.

Bist, J. P. (2018). Financial development and economic growth: Evidence from a panel of 16 African and non-African low-income countries. *Cogent Economics & Finance*, *6*(1), 1449780.

Blundell, R., & Bond, S. (1995). *On the use of initial conditions in dynamic panel data models*. Retrieved from

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of econometrics*, *87*(1), 115-143.

Boyd, J. H., & Smith, B. D. (1998). The evolution of debt and equity markets in economic development. *Economic Theory*, *12*(3), 519-560.

Buffie, E. F. (1984). Financial repression, the new structuralists, and stabilization policy in semi-industrialized economies. *Journal of Development Economics*, *14*(3), 305-322.

Caporale, G. M., Rault, C., Sova, R., & Sova, A. (2009). Financial development and economic growth: Evidence from ten new EU members.

Carp, L. (2012). Can stock market development boost economic growth? Empirical evidence from emerging markets in Central and Eastern Europe. *Procedia Economics and Finance*, *3*, 438-444.

Cooray, A. (2010). Do stock markets lead to economic growth? *Journal of Policy Modeling*, *32*(4), 448-460.

Coskun, Y., Seven, Ü., Ertugrul, H. M., & Ulussever, T. (2017). Capital market and economic growth nexus: Evidence from Turkey. *Coskun, Y., Seven, U., Ertoğrul, HM, and Ulussever*.

Deyshappriya, N. R. (2016). The Causality Direction of the Stock Market–Growth Nexus: Application of GMM Dynamic Panel Data and the Panel Ganger Non-causality Tests. *Margin: The Journal of Applied Economic Research*, *10*(4), 446-464.

Effiong, E. (2015). Financial development, institutions and economic growth: Evidence from Sub-Saharan Africa.

Enisan, A. A., & Olufisayo, A. O. (2009). Stock market development and economic growth: Evidence from seven sub-Sahara African countries. *Journal of economics and business*, *61*(2), 162-171.

Fishkin, J., Keniston, K., & McKinnon, C. (1973). Moral reasoning and political ideology. *Journal of Personality and social Psychology*, *27*(1), 109.

Goldsmith, R. W. (1969). *Financial structure and development*. Retrieved from

Guru, B. K., & Yadav, I. S. (2019). Financial development and economic growth: panel evidence from BRICS. *Journal of Economics, Finance and Administrative Science*, *24*(47), 113-126.

Hoi, L., Lan Ho, H., & Duong Vu, T. (2019). Financial depth and economic growth: Empirical evidence from ASEAN+3 countries. *Management Science Letters*, *9*, 851-864. doi:10.5267/j.msl.2019.3.003

Hoshi, T., Kashyap, A., & Scharfstein, D. (1990). The role of banks in reducing the costs of financial distress in Japan. *Journal of financial economics*, *27*(1), 67-88.

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of econometrics*, *115*(1), 53-74.

Ireland, P. N. (1994). Money and growth: an alternative approach. *The American Economic Review*, 47-65.

King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. *The quarterly journal of economics*, *108*(3), 717-737.

Krueger, A. O. (1997). *Trade policy and economic development: how we learn*. Retrieved from

Le, Q., Ho, H., & Vu, T. (2019). Financial depth and economic growth: Empirical evidence from ASEAN+ 3 countries. *Management Science Letters*, *9*(6), 851-864.

Levin, A., Lin, C.-F., & Chu, C.-S. J. (2002). Unit root tests in panel data: asymptotic and finite-sample properties. *Journal of econometrics*, *108*(1), 1-24.

Levine, A. J. (1997). p53, the cellular gatekeeper for growth and division. *cell*, *88*(3), 323-331.

Levine, R. (2005). Finance and growth: theory and evidence. *Handbook of economic growth*, *1*, 865-934.

Levine, R., & Zervos, S. (1998). Stock markets, banks, and economic growth. *American economic review*, 537-558.

Levine, R., & Zervos, S. (1999). *Stock market development and long-run growth*: The World Bank.

Levine, R., & Zervos, S. J. (1993). What we have learned about policy and growth from cross-country regressions? *The American Economic Review*, *83*(2), 426-430.

Marques, A., Banaei-Moghaddam, A. M., Klemme, S., Blattner, F., Niwa, K., Guerra, M., & Houben, A. (2013). *2013 Marques et al. Suppl. data*.

Murari, K. (2017). Financial development–economic growth nexus: Evidence from South Asian middle-income countries. *Global Business Review*, *18*(4), 924-935.

Nurudeen, A. (2009). Does stock market development raise economic growth? Evidence from Nigeria. *The review of Finance and Banking*, *1*(1).

Nyasha, S., & Odhiambo, N. M. (2014). The dynamics of stock market development in Kenya. *Journal of Applied Business Research (JABR)*, *30*(1), 73-82.

Nyasha, S., & Odhiambo, N. M. (2015). The impact of banks and stock market development on economic growth in South Africa: an ARDL-bounds testing approach. *Contemporary Economics*, *9*(1), 93-108.

Odedokun, M. O. (1996). Alternative econometric approaches for analysing the role of the financial sector in economic growth: Time-series evidence from LDCs. *Journal of Development Economics*, *50*(1), 119-146.

Osinubi, T. S. (2002). Does stock market promote economic growth in Nigeria. *The ICFAI Journal of Applied Finance, IJAF*, *10*(3), 17-35.

Pedroni, P. (2004). Panel cointegration: asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis. *Econometric theory*, *20*(3), 597-625.

Petros, J. (2012). The effect of the stock exchange on economic growth: a case of the Zimbabwe stock exchange. *Research in Business and Economics Journal*, *6*, 1.

Phillips, P. C., & Hansen, B. E. (1990). Statistical inference in instrumental variables regression with I (1) processes. *The review of economic studies*, *57*(1), 99-125.

Rousseau, P. L., & Wachtel, P. (2000). Equity markets and growth: cross-country evidence on timing and outcomes, 1980–1995. *Journal of Banking & Finance*, *24*(12), 1933-1957.

Sahoo, S. (2014). Financial intermediation and growth: Bank-based versus market-based systems. *Margin: The Journal of Applied Economic Research*, *8*(2), 93-114.

Salgado-Banda, H. (2005). Entrepreneurship and Economic Growth: An Empirical Analysis DEGIT Conference Papers. *Dirección General de Investigación Económica. Banco de México*.

Schumpeter, J. (1911). The theory of economic development. Harvard Economic Studies. Vol. XLVI. In: Cambridge, MA: Harvard University Press.

Seetanah, B., Ramessur, S. T., & Rojid, S. (2009). Financial development and economic growth: New evidence from a sample of island economies. *Journal of Economic Studies*, *36*(2), 124-134.

Shaw, E. S. (1973). Financial deepening in economic development.

Stiglitz, J. E. (1985). Credit markets and the control of capital. *Journal of Money, credit and Banking*, *17*(2), 133-152.

Tripathy, N. (2019). Does measure of financial development matter for economic growth in India? *Journal of Quantitative Finance and Economics*, *1*, 1.

Van Wijnbergen, S. (1983). Credit policy, inflation and growth in a financially repressed economy. *Journal of Development Economics*, *13*(1-2), 45-65.