

Financial Development, Financial Liberalization and Institutions Nexus in selected Sample of Middle Income Countries

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Abstract

The aim of current research is to examine the nexus between financial development, institutions and financial liberalization in Middle Income Countries (MICs) over the period 1995-2015. Financial development is a very vast concept and it is difficult to measure by utilizing single indicator. For this purpose, six indicators of financial development comprising three indicators of banking sector development (private sector credit, domestic credit and liquid liabilities) and three indicators of stock market development (value traded, turnover ratio and stock market capitalization) are used. De-facto and De-jure measures of financial liberalizations are utilized for empirical analysis. Corruption, rule of law, democratic accountability, and bureaucratic quality indicators are used to construct institutional quality index. Pedroni cointegration results indicate that a stable, long-run relationship exist between financial development, financial liberalization, institutional quality and auxiliary variables in MICs. Pooled Mean Group (PMG) results reveal that level of financial development in MICs is determined by its financial liberalization policies, institutional quality measures as well as the level of economic growth and trade openness strategies. Furthermore, our empirical findings demonstrate bidirectional causality between financial development and financial liberalization in MICs.

Keywords: Financial development; financial liberalization; institutions; Middle Income Countries (MICs).

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1. Introduction

The role of financial system is essential for the proper functioning of an economy. Economic theory postulates that a well-organized and systematic economy requires a well-developed financial system due to increased capital flows in the world. According to Goldsmith (1969) financial development is defined as the structural change in the financial system of a country which occurs during the process of development. Banks and stock markets are two main components of financial system. The efficiency and effectiveness of the financial system of a country are necessary to obtain the sustainable level of economic growth and the level of opportunities for capital accumulation, investment and saving. Thus literature puts a great stress that a country must have a well-organized and well-functioning financial system (McKinnon, 1973; Shaw, 1973; Levine, 1997 and more recently, Ang and McKibbin, 2007).

The finance - growth relationship was first explored by Schumpeter (1911) by analyzing the importance of finance in economic activities. Since the inception of Schumpeter's (1911) view on the finance-growth nexus, a few other views have emerged in both the theoretical and empirical literature. For example, Robinson (1952) noted that “when enterprise leads, finance follows” which implies that finance follows growth. In other words, economic growth provides incentives for the sound functioning of financial intermediaries. Lucas (1988) believed that this relationship is unimportant. These views have subsequently been examined, and the empirical manifestations generally supported the theoretical proposition of “more finance, more growth” (See, e.g. Rajan and Zingales, 1998; Levine et al., 2000; Levine, 2003; Beck and Levine, 2004).

During the past decade, economists had continued to argue for the existence of a causal relationship between financial development and economic growth. The first economist who empirically tested and documented their causal relationship was Goldsmith (1969). Economic

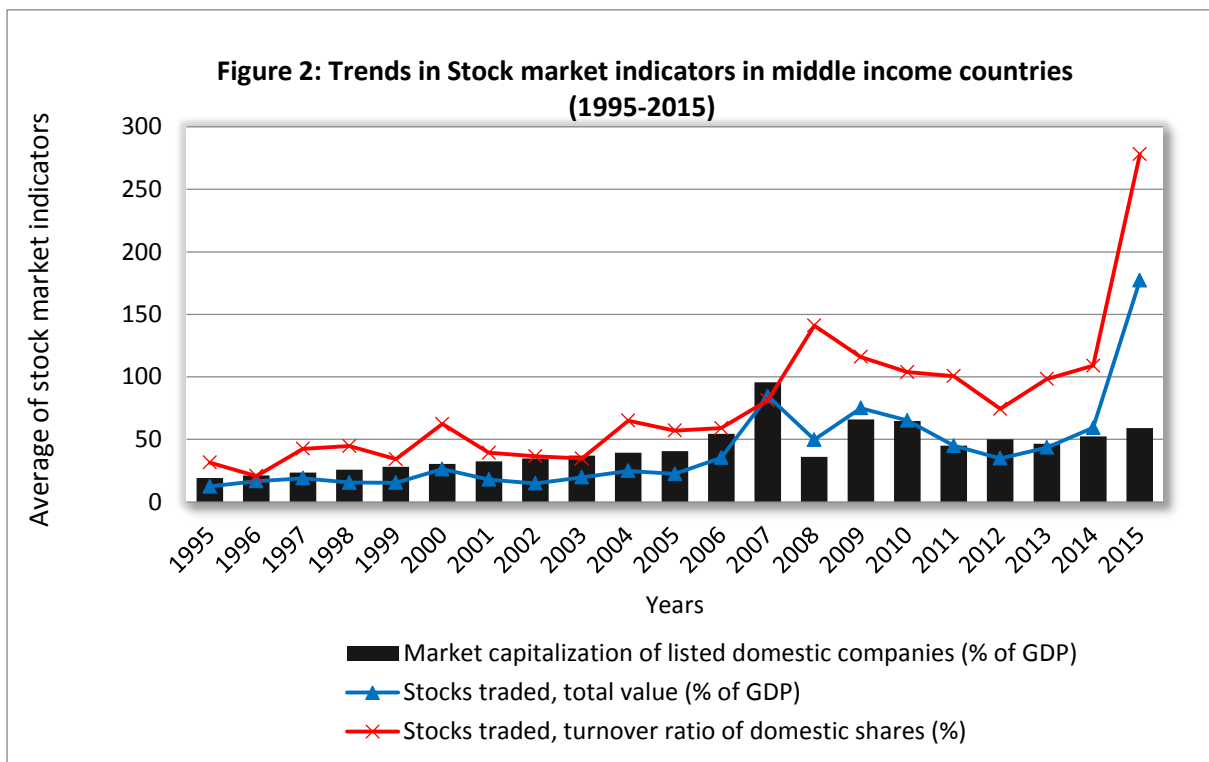
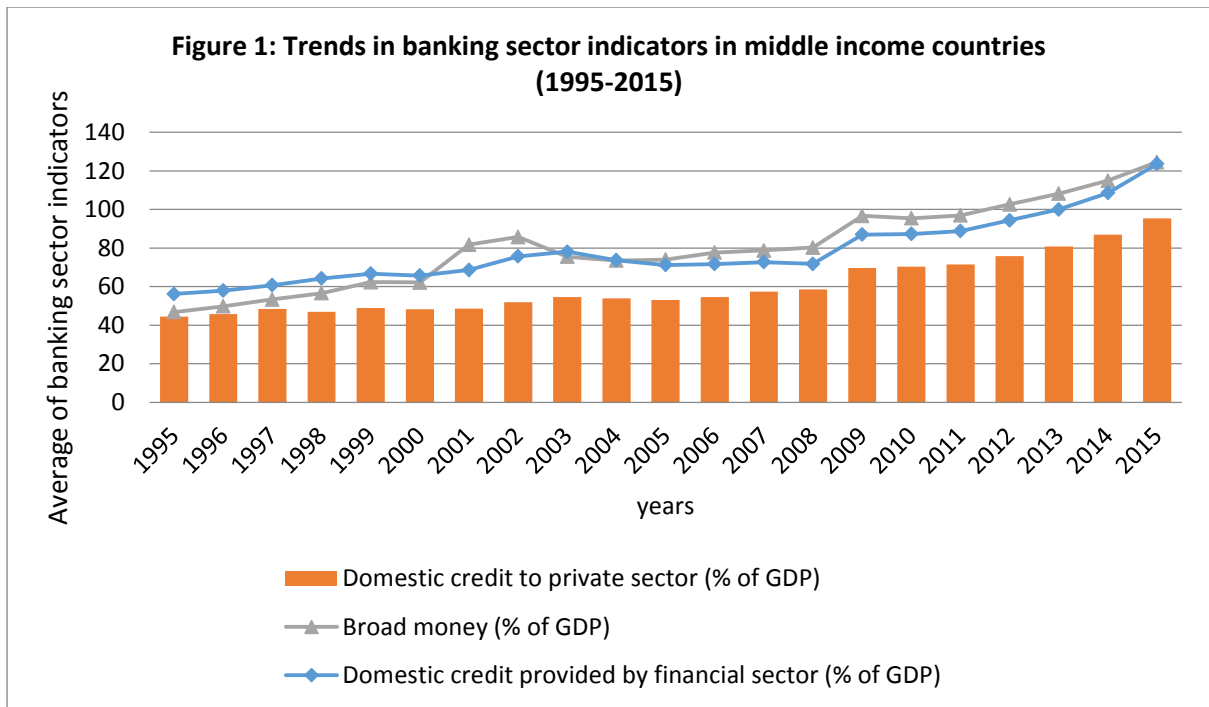
theory postulates that financial development leads to better allocation of resources and improved monitoring, leading to a higher level of economic growth. Many studies have documented that involvement in international finance also leads to financial development and enhance productivity of factors of production leading to economic growth. (Kose et al., 2006, Prasad and Rajan, 2008)

An increase in financial development may also hurt the process of economic growth. Enhanced resource allocation may result in an increase in interest rate and thus decrease saving rate. Financial development decreases the pace of growth if saving and investment are associated with adequately large externalities. Many studies present conflicting arguments about the importance of banks and stock market in the process of economic growth. Boyd and Prescott (1986) argued that banks play a critical role in providing appropriate information for resource allocation, whereas Stiglitz (1985) and Bhide (1993) stated that stock market can help in better allocation of resources as compared to banks.

The role of financial liberalization in promoting financial development has recently received some attention in empirical research, but this role is still not well researched in the literature. Mishkin (2009), for example, in his seminal paper emphasized the role of liberalization in promoting financial development through institutional quality, under the argument that financial liberalization amplifies access to capital by enabling foreign capital to flow in, and thereby lowering the borrowing costs of uplifting investment. Mishkin (2009) further argued that opening markets to foreign goods can also improve institutions, which thus leads to more financial sector development and economic growth. Garcia (2012) agreed with Mishkin,s (2009) view and argued that financial liberalization encourage financial development which in turn accelerate pace of economic growth.

In some studies integration into the world's economy is viewed as most beneficial way to boost economic growth. It causes betterment in financial structure and technological infrastructures of the economy, helps in movement of individuals, goods and services within countries, boost human and social capital and facilitate foreign direct investment inflows (Intriligator, 2003; O'Rourke, 2001; Agenor, 2003). Financial development, financial liberalization and institutions are mutually exclusive; this exclusiveness causes financial openness to boost economic growth (Mishkin, 2009). Moreover, opening up of domestic banks to foreign financial markets causes improvement in financial institutions, which also improves the quality and performance of social institutions. The increased efficiency and quality of institutions causes the domestic financial capital's cost to match the foreign competitive cost of investment, resulting in maintaining a single price, and enabling the firms and individuals to acquire capital for individual consumption and business investment from domestic banks and stock markets. This increase in consumption and investment helps in creating employment opportunities that further increases the demand of goods and services which leads to economic growth.

Figure 1 shows the trends in banking sector indicators while Figure 2 displays the trends in stock market indicators over the period 1995–2015 in the MICs. All indicators show improvement in selected period. It is also evident from graphs that stock market indicators are more volatile as compared to banking sector indicators, thus, demonstrating a high degree of unpredictability.



Limited empirical work has been done on the nexus between financial development, financial liberalization and institutions in MICs. The present work is an attempt to fill this gap by

examining the interaction between financial development, financial liberalization and institutions in MICs for the period of 1995-2015. This study contributes to the existing literature in four ways. (i) It bifurcates the standard indicators of financial development into banking sector development and stock market development indicators. (ii) It uses PCA to generate an index of financial sector development (as well as bank-based and stock market-based indices) to provide a robust empirical analysis of the relationships under consideration. (iii) It utilizes the Pooled Mean Group (PMG) to examine both the short-run and long-run relationships between financial liberalization, institutional quality and financial development (iv) Further, it investigates the causality between the variables by applying the Dumitrescu and Hurlin (DH, 2012) causality test.

The rest of the study is organized as follows: Section-2 reviews related empirical literature. Data sources and variables description are covered in Section-3. Empirical methodology is presented in Section-4. Empirical findings and their interpretation are discussed in Section-5. Section-6 presents concluding remarks and policy recommendations of the study.

2. Review of Literature

In this section, brief empirical review is presented on the nexus between finance and growth, finance and institutions, finance, institutions and financial liberalization.

2.1. Financial development and economic growth

Empirical literature provides mixed and conflicting results on the finance-growth relationship. For instance, King and Levine (1993) investigated the role played by financial sector in determining economic growth in 77 countries. They concluded that financial development help to stimulate economic growth. Beck et al., (2000) empirical findings based on cross-country analysis confirmed that improved functioning of financial intermediaries'

results in better allocation of resources and increase in factor productivity which in turn promote economic growth in selected 77 countries. Levine et al., (2000) investigated the factors of financial intermediation that affect economic growth. The study results demonstrated that exogenous factors of financial intermediation cause economic growth. Bassanini and Scarpetta (2001) concluded that financial sector is a driving force which lead to economic growth in 21 OECD countries. Claessens and Laeven (2003) found the same results by using the data of 19 developed and 25 developing countries. Beck and Levin (2004) investigated the effect of banking and stock market on GDP per capita using the data of 40 countries. Empirical findings indicated the positive and significant relationship between equity market, banking sector and real GDP. Similarly, Demirhan et al., (2011) examined the importance of financial sector for economic growth of Turkey. He found positive and significant association between growth and stock market and this relationship is more evident with banking sector.

Fung (2009) concluded that financial development positively impact GDP growth and it is more evident in the early stage of growth. He conducted his study using different number of industrial and developing countries from different regions of the world. In contrast to these studies, Samargandi et al., (2015) explored the nexus between financial sector development and GDP growth in 52 middle income countries. Empirical analyses showed that financial development is inversely related to output growth over a long period of time while for short term period, the study showed insignificant results. Using the panel data of 109 emerging and developed countries, Caldero'n and Liu (2003) explored the causal link between financial depth and GDP growth. Empirical findings documented the bidirectional-causal link between financial depth and GDP growth in selected countries. They found that effect of financial

deepening is more evident in emerging countries and financial deepening accelerates economic growth via productivity growth and capital accumulation.

Christopoulos and Tsionas (2004) found that in short run there does not exist any causal connection between financial sector development and GDP growth whereas in long run unidirectional causal relationship existed in 10 selected developing countries. Kenourgios and Samitas (2007) found that financial development through physical capital and credit promoted economic growth in Poland. Hassan et al., (2011) empirical finding reported that financial development is necessary for economic growth and without economic growth. Development of financial sector is not possible for developed countries but for the poorest countries, financial development enhances economic growth. Carby et al., (2012) explored the causal link between financial depth and growth for Barbados. He found that economic growth Granger cause financial development in the short run while bidirectional causal connection between economic growth and financial development exist in the long run.

2.2.2. Financial development and Institutions

Numerous studies have focused their attention to determining the relation of institutions for fostering financial development. For example, Levine (1999) found that the strength of legal system and regulatory environment helps in boosting financial sector development. Levine et al., (2000) found that strong legal and accounting institutions helps to improve financial enlargement and enhances GDP growth. Bordo and Rousseau (2006) found strong institutions are essential components for financial development which promotes growth. The lack of sound legal and political system may affect the sustainability of financial system and economic growth and these countries may not be able to tackle the disasters of financial crises.

Girma and Shortland (2008) documented that in those countries where politics are in the hands of few elite, performance of financial market remain slow because of lack of potential competitors. They suggested that only politically stable and democratic economy encourages development in financial markets. The influence of corrupted elite hampers the progress of financial markets in the selected sample countries. Ghardallou and Boudriga (2006) conducted their study in 112 emerged and emerging countries. Institutions showed positive and significant results explaining development in financial sector. The results also showed weakness in political and economic institutions lessen the impact of democracy on financial development. The study suggested that economic institutions should be made more efficient to get benefits from democracy. Nee and Opper (2009) revealed that bureaucratic performance is crucial for development of financial market. While political instability harms financial development via different channels (Roe and Siegel, 2011). Gries and Meierrieks (2010) noted that weak institutions are the main cause of underdeveloped financial system in Sub Saharan Africa. They found that political stability and sound property rights are most fundament components for financial development while democratic accountability and corruption have feeble influence on financial development. They also found uni-directional causality running from institutional quality to financial development.

Institutional quality is positively related to financial development. Improved performance of institutions and good governance accelerates financial development. However, the significant effect of institutions is only evident in banking sector development and it became insignificant in stock market development. These findings suggested that institutions and governance promote banking sector as well as stock markets but stock market development comes at a stage where a particular stage and height of institutional development has been achieved. The results of panel and cross country analysis are same for financial development

(Law and Azman-Saini, 2012). Yang (2011) also found positive relationship between democracy and private credit in cross sectional analysis but in panel regression analysis this relationship vanished, while stock market development showed negative relationship with democracy. Overall the findings concluded that democracy cultivates financial development.

Asongu (2014) examined the impact of political regimes on the financial development of Africa. The empirical results indicated that income levels, dominant religion and colonial legacies positively and significantly affect all the indicators of financial development. The findings show that autocracy promotes financial development more than democracy by effecting policies. Naceur et al., (2014) observed the factors that compel the financial development in MENA countries. The empirical results suggested that institutional quality promotes financial development, Openness promotes financial activity in support of more trade integration and financial liberalization increase inflows that contribute to further financial development.

2.2.3. Financial development, financial liberalization and institutions

Klein and Olivei (1999) empirically investigated the impact of capital account liberalization on financial depth for 93 countries. Results showed that countries which restricted their capital accounts lacked financial depth while those countries which liberalized their capital accounts benefited and showed increased financial depth. The general results of the study concluded that capital account liberalization is not beneficial to all economies. Only developed countries with sound and efficient institutional setup can take advantage of opening up their capital accounts to deepen their financial system. Chinn and Ito (2006) reported the impact of financial liberalization on financial development in 108 countries exclusively including 15 less developed Asian countries. They found that financial openness promoted trade openness leading to the development of equity market particularly when an

economy has a reasonably strong legal system. The study concluded that financial liberalization provides for financial development in the presence of a sound institutional system.

Ang and Mckibbin (2007) empirically examined the relationship between financial liberalization and financial development using the time series data of Malaysia. Empirical findings suggested that real interest rate and financial repression have negative impact on financial development, by removing the repressive policies financial liberalization promotes country's financial sector. Samouel (2007) argued that financial openness caused financial development in the presence of proper institutional setup. He concluded that for financial development it is necessary to prepare a strong legal and institutional framework before opening the gates for financial globalization. Bhetuwal (2007) analyzed the impact of financial liberalization on financial sector development in Nepal 1975 to 2006. By employing Granger causality test he found bidirectional causality between them. He found that financial liberalization increases funds and lowers risk thus increases investment.

Tressel and Detragiache (2008) examined whether financial reforms worked for financial development in presences of capital account liberalization and institutions in 91 countries. They found that financial reforms proved to be beneficial for financial development when institutions were strong. Moreover, financial reforms were most effective where political institutions were in place while financial liberalization does not show a significant impact on financial development in the sample countries. Baltagi et al., (2009) noted that banking development mainly depends upon financial liberalization and trade openness in 42 industrial and emerging economics. Hanh (2010) explored the link between financial development, trade openness and financial openness. The results showed that there is bidirectional causality between financial development, trade openness and financial openness. The empirical

analysis also shows evidence of heterogeneous relation between financial development and financial openness.

Abdelaziz et al., (2011) analyzed the impact of financial liberalization on bank profitability using data of 9 Tunisian banks. Results showed that liberalization negatively affects profitability of banks. The results also showed that lack of liquidity and using old traditional methods also resulted in decreasing the profitability of Tunisian banks. Falahaty and Law (2012) highlighted the impact of globalization on financial development for nine MENA countries. Results from the tests suggested that positive and significant long run relationship between globalization and financial development while they does not find evidence of relationship between institutions and financial development. Kandil et al., (2015) analyzed the link between financial depth and globalization in 32 emerged and emerging countries. Results suggested that economic growth helps financial development but globalization hinders the latter. Institutions do not influence financial development in the sample countries. Muye and Muye (2017) sheds light on the existence of causality between globalization, institutions and financial liberalization using data of BRICS, and ECOWAS³ over the period of 1984 to 2013. Results suggested positive relationship between globalization, institutions and financial development while causality flows from globalization to institutions and boosting financial development. Results also showed that impact of globalization is more evident on stock market development as compared to banking sector development in sample blocs.

In the above mention literature review, we have found that very sparse work has been done on investing the nexus of financial development, financial liberalization and institutions in the case of MICs. Therefore, my study is an attempt to fill this gap by examining the

³BRICS (Brazil, Russia, India and China), ECOWAS (Economic Community of West African States)

interaction between financial development, financial liberalization and institutions in MICs for the period of 1995-2015.

3. Variables selection and data sources

3.1. Measures of financial development

The selection of financial development indicators that represent the extent and efficiency of financial intermediaries is a difficult task. However, review of literature sheds light on the importance of different financial development indicators and guides us in selecting these indicators. ‘Ratio of liquid liabilities to GDP’ (LLY) is a widely used measure of financial deepening in traditional literature. King and Levine (1993), Rousseau and Sylla (2003), Caldero´n and Liu (2003), Hassan et al., (2011) used this indicator as a proxy for measuring financial depth. Other standard measure is ‘ratio of domestic credit provided by financial sector to GDP’ (DOC). This measure has been used by Hassan et al., (2011), Sehgal et al., (2012), Kandil et al., (2015), Samadi et al., (2011) in their studies. Another commonly used measure is ‘ratio of private credit provided by the banking sector to GDP’ (PRC) and used by Claessens and Laeven (2003), Fung (2009), Demirhan et al., (2011), Hassan et al., (2011), Samadi et al., (2011), Law and Azman-Saini (2012), Kandil et al., (2015). This measure is considered to be the most important banking sector indicator because private sector is more capable to utilize funds in productive investment projects as compared to public sector. On the other hand, Beck and Levin (2004) used three different measures of stock market capitalization. The first indicator is the ‘value of listed companies on the stock market as share of GDP in a given year’ (MCLC). The second one is ‘total value traded as share of GDP’ (TVT), which represent total value of domestic and foreign shares traded during the given period. The last indicator is ‘turnover ratio as share of GDP’ (TRR), which is the ratio of trades in domestic shares to market capitalization. The data of all these indicators are

collected from World Development Indicators by World Bank (online) database over the period 1995 to 2015 for 37 middle income countries⁴.

The selected indicators of financial development are highly correlated and empirical literature does not provide uniform argument about the importance of financial development indicators. This justifies the need to combine all selected indicators into a single measure that represent the overall development of financial sector. However, following the studies of Huang and Temple (2005), Ang and Mckibbin (2007) and Hanh (2010), we aggregate the above mentioned indicators into three new measures of financial development by using principal component analysis (PCA). The first one capture the overall level of financial development and is denoted as FDEV. This measure is based on complete set of six indicators, namely, LLY, DOC, PRC, MCLC, TVT and TRR. The second one, FDBK, is designed to captures the extent of bank based intermediations and is based on LLY, DOC and PRC. The third one, FDSM, based on MCLC, TVT and TRR and captures the equity market development. The empirical results of the principal component analysis are shown in Table 1, 2 and 3.

Table 1: PCA for Financial Development Index

Component	Eigen-value	Difference	Proportion	Cumulative
PC1	3.011	1.952	0.501	0.501
PC2	1.059	0.066	0.176	0.678
PC3	0.992	0.504	0.165	0.843
PC4	0.487	0.086	0.081	0.925
PC5	0.401	0.353	0.066	0.992
PC6	0.047	.	0.007	1.000

Principal components (Eigenvectors)						
Variables	PC1	PC2	PC3	PC4	PC5	PC6
LLY	0.544	-0.0532	0.016	-0.397	-0.085	-0.732

⁴ 37 countries are selected on the basis of data availability.

DOC	0.531	-0.047	-0.027	-0.502	-0.06	0.677
PRC	-0.016	-0.348	0.936	0.001	0.026	0.030
MCLC	0.458	-0.205	-0.090	0.452	0.731	0.023
TVT	0.454	0.184	0.090	0.616	-0.605	0.062
TRR	0.065	0.892	0.325	-0.073	0.295	-0.003

PCA results reported in Table 1 show that the first component, the eigenvalue of which is greater than 3, explains almost 50% of the variation in the dependent variable. The second and third components explain only 18% and 16% of the variation, respectively, while the rest of the components accounts for a minimal amount of the variation. We note that the first component has the dominant explanatory variable, as it explains the variation in the dependent variable better than any other linear combination of the explanatory variables and can be used as weight to generate the financial development index. Tables 2 and 3 show the banking sector development index and the stock market development index, respectively.

Table 2: PCA for Banking Sector Development Index

Component	Eigen-value	Difference	Proportion	Cumulative
PC1	1.949	0.948	0.649	0.649
PC2	1.000	0.949	0.333	0.983
PC3	0.050	.	0.016	1.000
Principal components (Eigenvectors)				
Variables	PC1	PC2	PC3	
LLY	0.707	0.036	-0.706	
DOC	0.707	-0.006	0.707	
PRC	-0.021	0.999	0.030	

Table 3: PCA for Stock Market Development Index

Component	Eigen-value	Difference	Proportion	Cumulative
PC1	1.556	0.515	0.518	0.518

PC2	1.040	0.637	0.346	0.865
PC3	0.403	.	0.134	1.000
Principal components (Eigenvectors)				
Variables	PC1	PC2	PC3	
MCLC	0.673	-0.341	0.656	
TVT	0.716	0.082	-0.692	
TRR	0.181	0.936	0.300	

In Table 2 and 3, the first component accounts for 65% and 52% of the variation respectively. The first component has the most explanatory power and is assigned as the major indicator for the bank-based and stock market-based indices of financial development.

3.2. Measures of financial liberalization

Financial liberalization (FL) measures with the name of ‘de facto’ and ‘de jure’ are mainly discussed in empirical literature. The de facto is a measure of financial globalization and is constructed by Lane and Milesi-Ferretti (2006). This measure is defined as the volume of foreign assets and liabilities of a country share of GDP. The de-jure measure is the Chinn and Ito (2006) index of capital account openness (KAOPEN). This measure is based on binary variables that explains restrictions on cross-border transactions. De jure gives us a better picture to decide the extent to which an economy should allow or open its gates for capital flows and is more preferable than de facto to measure financial liberalization because of its better theoretical ground. However, De facto is a broader measure of financial liberalization. The data of de jure measure of financial liberalization is taken from Chinn and Ito online dataset (latest version) while data of de facto measure of financial liberalization is collected from Lane and Milesi-Ferretti online dataset (latest version).

3.3. Institutions

Following Knack and Keefer (1995), Baltagi (2009) four indicators are used to construct institutional quality index (IQ), namely, corruption, rule of law, democratic accountability, and bureaucratic quality. The first three indicators range from 0 to 6 while last indicator range from 0 to 4, higher value indicate better institutional quality. The scale of these indicators is first converted '0 to 10'. Then we combine them into a single measure by summing them up. So, the theoretical range of this index is 0 to 40. The data of institutional quality indicators is taken from International Country Risk Guide, a publication of Political Risk Services (PRS).

3.4. Control variables

Following control variables are also used in empirical estimation:

Log of GDP per capita at constant 2010 \$US (LGD) is used as control variable. Rajan and Zingales (2003), Ang and Mckibbin (2007), Baltagi (2009), Kindil et al., (2015) and others have utilized this variable to represent the demand for finance.

Trade Openness (TO) measured by exports plus imports divided by GDP. This variable describe the extent of economic integration among countries and used by Chinn and Ito (2006), Ang and Mckibbin (2007) and Baltagi (2009). Data source of control variables is World Development Indicators by World Bank (online) database.

List of selected middle income countries and summary statistics of all selected variables is displayed in Appendix Table 1A and Table 1B respectively.

4. Empirical methodology and model specification

To investigate the nexus between financial development, financial liberalization and institutions, econometric model is specified as follows:

$$FDEV_{it} = \gamma_0 + \gamma_1 FL_{it} + \gamma_2 IQ_{it} + \gamma_3 LGD_{it} + \gamma_4 TO_{it} + \mu_{it} \quad (1)$$

Where $FDEV_{it}$ represent financial sector development, FL_{it} refers to financial liberalization measured by de facto and de jure measures, IQ_{it} measures the institutional quality, LGD_{it} is log of GDP per capita, TO represent trade openness, μ_{it} is independently and identically distributed error term, subscript i represent cross-sectional unit and t denote time period.

4.1. Cross-sectional dependence and unit root tests

Panel data is likely to be furnished with substantial cross-sectional dependence in the error terms, which may be caused by occurrence of unobserved factors and common shocks that influence the error terms. One reason of this phenomena is that over the last few decades the economic and financial integration has constantly increased among all the countries and thus caused a powerful interdependence between cross sectional units. To solve with this problem, we have used Pesaran's CD test.

Where,

H_0 : Cross sectional independence

H_1 : Cross sectional dependence

Pesaran (2004) proposed

$$CSD = \sqrt{2T / M(M-1)} \left(\sum_{k=1}^{M-1} \sum_{g=k+1}^M \hat{\lambda}_{kg} \right) \quad (2)$$

Where λ_{kg} is estimated from

$$\lambda_{kg} = \lambda_{gk} = \frac{\sum_{p=1}^P \eta_{kp} n_{kp}}{\left(\sum_{p=1}^P n_{kp}^2 \right)^{1/2} \left(\sum_{p=1}^P n_{gp}^2 \right)^{1/2}} \quad (3)$$

Here, $CSD \xrightarrow{d} M(0,1)$ for $M \rightarrow \infty$ and P is sufficiently large. For homogenous and heterogeneous models the estimated parameters from CSD test are still valid as the error terms are systematically distributed with zero mean, despite the small sample bias of the estimated parameters and even fixed P

Pesaran (2007) noted that the traditional panel unit root tests was unable to give reliable results when there exist the problem of cross-sectional dependence in the data. Therefore, Pesaran (2007) proposed Pesaran CADF test in which the estimates of a heterogeneous panel are assumed to be cross-sectional dependent. This test is parallel to IPS unit root test, proposed by Im, Pesaran and Shin (IPS, 2003) which is based on the mean of individual DF/ADF t-statistics of each unit involved in the panel.

According to Pesaran (2007) the standard regressions from DF/ADF are augmented with the first difference and lagged values from the cross section averages of the individual series i.e., CADF statistics are used to remove the problem of cross section dependence. This test also copes with size distortions in those models where the error terms are serial correlated and having linear trends.

4.2. Panel cointegration

When all the series in the panel are integrated at the same order, the next step is to apply cointegration test in order to check whether long run relationship exists between the variables or not. For this purpose, Pedroni (2001 and 2004) panel cointegration technique is applied. To estimate cointegration Pedroni's first step was to estimate the residual from the hypothesized long-run regression given below:

$$y_{i,t} = \delta_i + \beta_i t + \phi_{i1} x_{i,t} + \dots + \phi_{qi} x_{qi,t} + u_{it} \quad (4)$$

Here, y and x are presumed to be stationary at same level. The intercept “ δ_i ” and slope coefficients “ $\phi_1, \phi_2, \dots, \phi_{qi}$ ” differ across countries. Following regression equation is formulated to test Pedroni’s cointegration technique, Pedroni (2000):

$$FDEV_{it} = \alpha_{0Yi} + \alpha_{1Yi}t + \alpha_{2Yi}FL_{it} + \alpha_{3Yi}IQ_{it} + \alpha_{4Yi}LGD_{it} + \alpha_{4yi}TO_{it} + \varepsilon_{it} \quad (5)$$

Here, $\varepsilon_{it} = \delta_i \varepsilon_{it-1} + \zeta_{it}$, α_{0Yi} is intercept which is country specific, $\alpha_{1Yi}t$ is time trend which is also country specific in the panel and (α_{mYi} ; for $m = 1, \dots, 4$) are slope coefficients which may vary from individual to individual and allows the cointegration vectors to be heterogeneous across countries. The null hypothesis in Pedroni cointegration is $\delta_i = 1$. Seven different test statistics are used to test null hypothesis of no co-integration in a heterogeneous panel. The first group of statistics is termed as ‘within dimension’ and include “panel v-stat”, “panel rho-stat”, “panel pp-stat” and the “panel adf-stat”. The second group of statistics is called “between dimensions” and include three tests: group rho-stat; group pp-stat; and group adf-stat.

4.3. Estimation of panel cointegration regression

After the estimation of cointegration, the next step is to estimate the long-run elasticities. If we assume the selected panel is homogenous, then the above model Eq.(1) can be estimated by applying standard panel regression techniques like pooled OLS, fixed effect, random effect or generalized methods of moment (Samargandi et al.,2013). However, the assumption that the quality of institutions and the process of financial liberalization is homogenous across all thirty seven countries is unrealistic. Moreover, the selected panel comprises countries from different economic, cultural and social background. As a consequences, the selected model with heterogeneous slope coefficient can be estimated by employing pooled mean group (PMG) estimators (Pesaran et al., 1999) or mean group (MG) estimators (Pesaran and

Smith,1995). Apart from heterogenous slope coefficients across countries, these estimators also account for cross-sectional dependence.

4.4. Panel Causality test

To check causality between variables, we applied Dumitrescu and Hurlin (DH, 2012) causality test for panel data. It is a simplified form of a non-causality test presented by Granger (1969). It is for heterogeneous data and fixed coefficient models. It has two dimensions. The Following model is used for causality testing.

$$Q = \alpha + \sum_{n=1}^N \gamma^{(n)} + \sum_{m=1}^M \pi_i^{(m)} + \epsilon_{it} \quad (4)$$

Here $i=1,2,3,4,\dots$ and $t=1,2,3,4,5,\dots,T$

α and $\pi_i = (\pi_i^{(1)}, \dots, \pi_i^{(m)})'$ are intercept terms for fixing m time dimension. In panel data, M is a homogenous order with lag for each country. $\pi_i^{(m)}$ is regression coefficient and $\gamma_i^{(m)}$ (autoregressive parameter) both allow for change in cross-section in panel. Null hypothesis is taken as there is not any causal relationship between cross-sections. It is called Homogeneous Non-Causality. Heterogeneous Non-Causality is an alternative hypothesis. Null hypothesis representation is:

$$H_0 = \pi_i = 0$$

Here $i=1,2,3,\dots,N$

Average Statistics ($W_{N,T}^{HNC}$) linked with hypothesis Non-Causality. $W_{N,T}^{HNC}$ will be equal to

$$\frac{1}{N} \sum_{i=1}^N W_{i,T}$$

$W_{i,T}$ is statistics of individual Wald test individual statistics is shown by i^{th} .

$Z_{N,T}^{HNC}$ is statistics of standardized test. $Z_{N,T}^{HNC}$ is for time period T and $N \rightarrow \infty$. Dumitrescu and Hurlin (2012) has explained it.

5. Results and discussion

We have applied Pesaran (2004) cross-section dependence test (CSD)-based on pair wise correlation coefficients, to check cross-sectional correlation in the dataset because we think that there may be some interdependencies between middle income countries due to certain common shocks (e.g., 2008 global financial crisis). The results presented in Table 4 strongly reject the null hypothesis of cross-sectional dependence at 1% significance level for all variables which reveals a potentially common dynamics to the countries.

Table 4: Pesaran cross-section dependence test

Variables	$FDEV_{it}$	$FDBK_{it}$	$FDSM_{it}$	FL_{it} (de-facto)	FL_{it} (de-jure)	IQ_{it}	LGD_{it}	TO_{it}
CSD	21.95	16.63	16.37	10.60	3.368	23.68	82.65	6.270
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Pesaran CADF unit root test is employed to check stationarity of variables. Pesaran CADF test assumes that auto-regressive coefficients are heterogeneous with cross-section dependence. Table 5 shows the results obtained by applying Pesaran CADF test, at level and at first difference with constant as well as with constant and trend. The results showed that all the variables have a unit root at level and become stationary at 1st difference in the case of selected middle income countries. Thus, we conclude that all selected variables ($FDEV_{it}$, $FDBK_{it}$, $FDSM_{it}$, FL_{it} (de-facto), FL_{it} (de-jure), IQ_{it} , LGD_{it} and TO_{it}) have integrated of order one, I(1).

Table 5: Results of Pesaran CADF unit root test

Variables	At level				At first difference			
	\mathcal{G}_c	P-value	$\mathcal{G}_{c,t}$	P-value	\mathcal{G}_c	P-value	$\mathcal{G}_{c,t}$	P-value
$FDEV_{it}$	-1.737	0.507	-1.907	0.981	-3.765	0.000	-3.908	0.000
$FDBK_{it}$	-1.666	0.655	-2.214	0.661	-3.783	0.000	-3.846	0.000
$FDSM_{it}$	-1.907	0.184	-2.332	0.409	-2.751	0.000	-3.101	0.000

FL_{it} (de-jure)	-1.007	1.000	-1.380	1.000	-2.731	0.000	-3.045	0.000
FL_{it} (de-facto)	1.507	0.934	3.936	1.000	-10.021	0.000	-8.826	0.000
IQ_{it}	2.610	1.000	1.700	1.000	-2.891	0.000	-3.331	0.000
LGD_{it}	2.610	1.000	-2.186	0.714	-2.979	0.000	-3.335	0.000
TO_{it}	-0.993	1.000	-2.177	0.730	-3.888	0.000	-3.964	0.000

Note: \mathcal{G}_c represent constant $\mathcal{G}_{c,t}$ represent constant and trend.

Results of Pedroni cointegration test are displayed in Table 6. Results of Model 1 indicate that there are evidence of cointegration between selected variables in middle income countries over the period 1995-2015. More precisely, in model 1, more of the test statistics (4 out of 7) reject the null hypothesis of no cointegration at 1% level of significance. Similarly in model 2, 3, 4, 5 and 6, there are clear evidence of cointegration between selected variables in sample countries.

Table 6: Results of Pedroni cointegration test

Test	Panel v-statistic	Panel σ -statistic	Panel $\rho\rho$ -statistic	Panel adf-statistic	Group σ -statistic	Group $\rho\rho$ -statistic	Group adf-statistic
(Model-1: $FDEV_{it}, FL_{it}, IQ_{it}, LGD_{it}, TO_{it}$)							
FL_{it} = De-facto measure							
Statistics	0.063	3.132	-2.412	-2.432	4.882	-2.347	-3.169
P-value	0.475	0.999	0.008	0.007	1.000	0.009	0.000
(Model-2: $FDBK_{it}, FL_{it}, IQ_{it}, LGD_{it}, TO_{it}$)							
FL_{it} = De-facto measure							
Statistics	-0.436	1.842	-0.839	-1.672	3.558	-1.367	-3.791
P-value	0.668	0.967	0.200	0.047	0.999	0.085	0.000
(Model-3: $FDSM_{it}, FL_{it}, IQ_{it}, LGD_{it}, TO_{it}$)							
FL_{it} = De-facto measure							
Statistics	1.781	1.497	-3.043	-2.548	4.640	-3.459	-1.583
P-value	0.851	0.999	0.065	0.000	1.000	0.000	0.056
(Model-4: $FDEV_{it}, FL_{it}, IQ_{it}, LGD_{it}, TO_{it}$)							
FL_{it} = De-jure measure							
Statistics	0.081	3.105	-3.286	-3.138	5.588	-3.350	-1.753
P-value	0.948	0.999	0.011	0.001	1.000	0.000	0.039
(Model-5: $FDBK_{it}, FL_{it}, IQ_{it}, LGD_{it}, TO_{it}$)							
FL_{it} = De-jure measure							
Statistics	-2.127	4.456	1.337	-1.429	5.781	-3.347	-1.471
P-value	0.823	1.000	0.109	0.096	1.000	0.000	0.070
(Model-3: $FDSM_{it}, FL_{it}, IQ_{it}, LGD_{it}, TO_{it}$)							

<i>FL_{it}</i> = De-jure measure							
Statistics	0.239	0.915	-5.897	-5.232	3.248	-5.013	-1.715
P-value	0.889	0.988	0.000	0.000	0.999	0.000	0.043

Note: Intercept and trend is included in cointegrating equation.

After the application of cointegration, Pooled Mean Group (PMG) estimator is applied to estimate the long run and short-run coefficients and the results are reported in Table 7 and 8. In Table 7, the results reveal that when financial development is taken as dependent variable, institutional quality and financial liberalization (de facto) are positively correlated with financial development. These results are consistent with the findings of Ang (2008), Baltagi et al., (2009), Hassan et al., (2010), Naceur et al., (2014), Asongu (2014), Naceur et al., (2014). The estimated results point out the importance of removing constraints on external financing in order to strengthen the financial system of middle income countries. Likewise, developed institutional structure helps to attract financial inflows and decrease the scope of risk involved in investment. The foreign investors are also attracted to invest in safer environment thus financial development increases. Finally, we find that financial development also depends upon control variables, that is, economic growth and trade openness. The positive coefficient of economic growth indicates that economic growth allows financial development that is, growth lead finance which is in support of some studies like Demetriades and Hussein, (1996), Ang and McKibbin, (2007) and Baltagi et al., (2009). The positive sign of trade openness reveals that opening up of domestic market to the rest of the world, a nation can promote real economic activity through bilateral trade, transfer of goods and services, mobilization of human and physical capital and flows of ideas and as a consequences financial sectors develops (Hanh, 2010). The lagged coefficient of error correction term (ECT) coefficient is also significant at 1% level, showing 35 % convergence towards the equilibrium in the long run. Most of the coefficients showing insignificant results

during short-run. Results of Mean Group (MG) test are not discussed here because the insignificant value of the Hausman test i.e. 0.991 suggest that the results from the PMG are more consistent and reliable.

In column II, when banking sector development is taken as dependent variable, the results show positive and significant impact of financial liberalization (de facto) on banking sector in the long run. This result is in line with the studies of Chinn and Ito (2006), Ang and Mckibbin (2007), Muye and Muye (2017), Bhetuwal (2007). Financial liberalization increases funds and lowers risk thus increases investment and improves banking sector. The coefficient of institutions has positive sign which means that increase in institutional quality causes an increase in banking sector development in MICs. This result is in line with the studies of Girma and Shortland (2008), Law and Azman-Saini (2012). The coefficients of economic growth and trade openness are significant and positive which shows that increase in GDP per capita and trade openness results in development in banking sector. These results are consistent with the findings of Beck and Levin (2004), Girma and Shortland (2008) and Demirhan et al., (2011). The ECT's coefficient is significant at 1% significance level, showing 32 % convergence towards the equilibrium in the long run. Husman test is in favor of PMG estimates.

Similarly in Column III, all the explanatory variables are statistically significant having expected signs. This implies that financial liberalization, institutions, economic growth and trade openness improve the stock market development in long-run, which corroborates the findings of Beck and Levin (2004), Demirhan et al., (2011), Girma and Shortland (2008), Abdelaziz et al., (2011). Overall, the results of our study support the Rajan and Zingales hypothesis, which postulates that both types of liberalization (financial liberalization and

trade liberalization) are necessary for financial development. The negative coefficient of ECT signifying 38 % convergence towards the equilibrium in the long run.

Table 7: Results of PMG and MG Estimates

(FL_{it} = De-facto measure)

Variables	I		II		III	
	Dependent Variable= $FDEV_{it}$		Dependent Variable= $FDBK_{it}$		Dependent Variable= $FDSM_{it}$	
	Dynamic ARDL Specification: (2,2,2,2,2)		Dynamic ARDL Specification: (1,2,2,2,2)		Dynamic ARDL Specification: (1,2,2,2,2)	
	PMG	MG	PMG	MG	PMG	MG
Long-run Coefficient						
FL_{it}	4.183 (0.000)	1.542 (0.708)	4.023 (0.000)	1.970 (0.854)	2.581 (0.002)	1.550 (0.333)
IQ_{it}	2.513 (0.070)	1.899 (0.227)	1.168 (0.000)	3.838 (0.330)	3.759 (0.027)	1.029 (0.023)
LGD_{it}	4.622 (0.000)	3.445 (0.082)	6.446 (0.000)	3.043 (0.000)	6.788 (0.000)	3.214 (0.088)
TO_{it}	4.096 (0.008)	4.551 (0.004)	5.025 (0.000)	5.376 (0.043)	-1.293 (0.419)	-2.064 (0.502)
EC_{it-1}	-0.349 (0.000)	-0.543 (0.005)	0.317 (0.000)	-0.697 (0.000)	-0.378 (0.000)	-0.845 (0.000)
$\Delta FDEV_{it-1}$	0.045 (0.548)	0.543 (0.000)	-	-	-	-
ΔFL_{it}	2.060 (0.004)	0.083 (0.271)	3.783 (0.046)	-2.494 (0.443)	4.416 (0.018)	0.145 (0.150)
ΔFL_{it-1}	0.934 (0.623)	-0.035 (0.339)	1.362 (0.408)	1.669 (0.341)	2.495 (0.270)	-0.044 (0.363)
ΔIQ_{it}	0.194 (0.526)	0.552 (0.401)	0.639 (0.017)	1.728 (0.267)	-2.783 (0.744)	0.791 (0.150)
ΔIQ_{it-1}	0.518 (0.262)	-0.189 (0.608)	1.035 (0.030)	3.359 (0.023)	1.705 (0.195)	-0.733 (0.107)
ΔLGD_{it}	5.098 (0.048)	9.924 (0.743)	5.160 (0.016)	2.051 (0.245)	5.955 (0.003)	2.294 (0.130)
ΔLGD_{it-1}	-1.459 (0.887)	-1.921 (0.625)	3.970 (0.167)	2.673 (0.110)	4.152 (0.163)	5.028 (0.644)
ΔTO_{it}	3.150 (0.428)	4.108 (0.303)	5.926 (0.099)	5.366 (0.037)	-7.571 (0.023)	-2.918 (0.129)
ΔTO_{it-1}	-3.242 (0.327)	1.196 (0.831)	-4.285 (0.082)	2.498 (0.421)	-0.128 (0.983)	4.997 (0.236)
Constant	5.513 (0.681)	5.321 (0.288)	3.672 (0.765)	10.89 (0.015)	5.162 (0.095)	8.087 (0.102)
Hausman Test						
P-value	0.991		0.595		0.754	

In Column I, results indicate that Table-8 presents the results of PMG and MG estimates using de-jure measure of financial liberalization. The impact of financial liberalization and institutional quality variables on financial development, banking sector development and stock market development are found to be positive and significant. The results suggest that lowering capital account restrictions helped to attract foreign investment and thus improving financial sector of middle income countries. Naceur et al., (2014), Baltagi et al., (2009), Ito (2006), Klein and Olivei (1999) also found similar results. Similarly, countries with sound and efficient institutional setup can take advantage from opening up their capital accounts to deepen their financial system (Girma and Shortland, 2008; Law and Azman-Saini, 2012). These findings support the results reported in Table 7, however magnitude of coefficient is large when de-facto measure of financial liberalization is used. In other words, our results support the Baltagi et al., (2009) conclusion that de-facto is a better measure of financial liberalization. The effect of economic growth on financial development is found to be positive in all Columns. The coefficient of trade openness is positive in Column I and II while it is found to be negative and insignificant in column III. The lagged error correction term indicate that 30%, 35% and 48% convergence towards the equilibrium in the long run in Column I, II and III respectively. The probability value of Hausman test is in favor of PMG estimates. As a results, MG estimates are not discussed here.

Table 8: Results of PMG and MG Estimates

(FL_{it} = De-jure measure)

Variables	I		II		III	
	Dependent Variable= $FDEV_{it}$		Dependent Variable= $FDBK_{it}$		Dependent Variable= $FDSM_{it}$	
	Dynamic ARDL Specification: (1,1,1,1,1)		Dynamic ARDL Specification: (1,1,1,1,1)		Dynamic ARDL Specification: (2,1,1,1,1)	
	PMG	MG	PMG	MG	PMG	MG

Long-run Coefficients						
FL_{it}	1.578 (0.007)	5.203 (0.171)	2.750 (0.000)	1.063 (0.755)	1.009 (0.000)	-1.786 (0.227)
IQ_{it}	0.236 (0.016)	0.244 (0.976)	1.143 (0.000)	2.065 (0.072)	0.297 (0.000)	0.483 (0.019)
LGD_{it}	1.097 (0.000)	2.458 (0.019)	3.191 (0.025)	4.944 (0.785)	1.047 (0.091)	5.923 (0.462)
TO_{it}	5.236 (0.019)	-2.939 (0.808)	4.002 (0.000)	-5.245 (0.884)	-1.696 (0.245)	-1.342 (0.145)
Short-run Coefficients						
EC_{it-1}	-0.301 (0.000)	-0.715 (0.000)	-0.347 (0.005)	-0.744 (0.000)	-0.483 (0.000)	-0.750 (0.000)
$\Delta FDSM_{it-1}$					0.004 (0.940)	0.515 (0.000)
ΔFL_{it}	-0.240 (0.236)	0.034 (0.949)	-0.177 (0.590)	-0.287 (0.747)	-0.327 (0.673)	0.351 (0.458)
ΔIQ_{it}	0.562 (0.180)	2.259 (0.506)	0.438 (0.018)	-0.227 (0.603)	-0.053 (0.878)	-0.630 (0.888)
ΔLGD_{it}	8.099 (0.081)	4.826 (0.131)	-9.348 (0.226)	3.480 (0.505)	4.011 (0.009)	0.142 (0.047)
ΔTO_{it}	-9.314 (0.066)	-4.766 (0.391)	-0.720 (0.773)	-2.777 (0.059)	-8.921 (0.028)	-6.949 (0.367)
Constant	3.338 (0.099)	5.437 (0.872)	2.968 (0.113)	3.902 (0.547)	0.854 (0.772)	1.764 (0.706)
Hausman Test						
P-value	0.943		0.564		0.819	

In the above causality analysis, Model 1, 2, 3 and 5 support the bidirectional causal relationship between financial development and financial liberalization which indicate that financial development and financial liberalization are reinforcing each other in middle income countries. Demetriades and Hussein (1996), Hassan et al., (2010) and Demirhan (2011) found similar results in their studies. However, there are evidence of unidirectional causality running from financial development to financial liberalization in Model 4 and 6. The feedback hypothesis between institutional quality and financial development is accepted in Model 2, 5 and 6 while hypothesis supporting unidirectional causal relation from financial development to institutional quality in Model 1 and institutional quality to financial development in Model 4. The results support the evidence of bidirectional causality between economic growth and financial development in all Models which reveals that economic

growth is essential for financial development and financial development is conducive for economic growth. Moreover, the results show that financial development and trade openness encouraging each other in middle income countries.

Table 9: The Result of DH panel causality Test

Model 1: $FDEV_{it}, FL_{it}$ (De-facto) IQ_{it}, LGD_{it}, TO				Model 2: $FDBK_{it}, FL_{it}$ (De-facto) IQ_{it}, LGD_{it}, TO			
Hypothesis	W-Stat	Zbar-Stat	P-Value	Hypothesis	W-Stat	Zbar-Stat	P-Value
$(FDEV_{it} \rightarrow FL_{it})$	4.160	3.458	0.000	$(FDBK_{it} \rightarrow FL_{it})$	4.564	4.235	0.000
$(FL_{it} \rightarrow FDEV_{it})$	3.446	2.083	0.037	$(FL_{it} \rightarrow FDBK_{it})$	6.056	7.109	0.000
$(FDEV_{it} \rightarrow IQ_{it})$	3.730	2.635	0.008	$(FDBK_{it} \rightarrow IQ_{it})$	3.676	2.519	0.011
$(IQ_{it} \rightarrow FDEV_{it})$	2.977	1.184	0.236	$(IQ_{it} \rightarrow FDBK_{it})$	3.812	2.793	0.005
$(FDEV_{it} \rightarrow LGD_{it})$	7.438	9.785	0.000	$(FDBK_{it} \rightarrow LGD_{it})$	5.835	6.694	0.000
$(LGD_{it} \rightarrow FDEV_{it})$	6.989	8.918	0.000	$(LGD_{it} \rightarrow FDBK_{it})$	19.76	33.54	0.000
$(FDEV_{it} \rightarrow TO_{it})$	4.938	4.965	0.000	$(FDBK_{it} \rightarrow TO_{it})$	8.120	11.10	0.000
$(TO_{it} \rightarrow FDEV_{it})$	3.818	2.805	0.005	$(TO_{it} \rightarrow FDBK_{it})$	3.324	1.852	0.063
Model 3: $FDSM_{it}, FL_{it}$ (De-facto) IQ_{it}, LGD_{it}, TO				Model 4: $FDEV_{it}, FL_{it}$ (De-jure) IQ_{it}, LGD_{it}, TO			
Hypothesis	W-Stat	Zbar-Stat	P-Value	Hypothesis	W-Stat	Zbar-Stat	P-Value
$(FDSM_{it} \rightarrow FL_{it})$	5.124	5.314	0.000	$(FDEV_{it} \rightarrow FL_{it})$	2.949	5.475	0.000
$(FL_{it} \rightarrow FDSM_{it})$	4.252	3.634	0.000	$(FL_{it} \rightarrow FDEV_{it})$	1.446	0.920	0.357
$(FDSM_{it} \rightarrow IQ_{it})$	3.004	1.236	0.216	$(FDEV_{it} \rightarrow IQ_{it})$	1.339	0.597	0.550
$(IQ_{it} \rightarrow FDSM_{it})$	2.554	0.367	0.713	$(IQ_{it} \rightarrow FDEV_{it})$	2.056	2.769	0.005
$(FDSM_{it} \rightarrow LGD_{it})$	8.332	11.508	0.000	$(FDEV_{it} \rightarrow LGD_{it})$	2.545	4.252	0.000
$(LGD_{it} \rightarrow FDSM_{it})$	4.263	3.663	0.000	$(LGD_{it} \rightarrow FDEV_{it})$	3.785	8.010	0.000
$(FDSM_{it} \rightarrow TO_{it})$	4.175	3.493	0.000	$(FDEV_{it} \rightarrow TO_{it})$	2.672	4.635	0.000
$(TO_{it} \rightarrow FDSM_{it})$	4.290	3.714	0.000	$(TO_{it} \rightarrow FDEV_{it})$	1.671	1.600	0.109
Model 5: $FDBK_{it}, FL_{it}$ (De-jure) IQ_{it}, LGD_{it}, TO				Model 6: $FDSM_{it}, FL_{it}$ (De-jure) IQ_{it}, LGD_{it}, TO			
Hypothesis	W-Stat	Zbar-Stat	P-Value	Hypothesis	W-Stat	Zbar-Stat	P-Value
$(FDBK_{it} \rightarrow FL_{it})$	2.916	5.376	0.000	$(FDSM_{it} \rightarrow FL_{it})$	2.371	3.724	0.000
$(FL_{it} \rightarrow FDBK_{it})$	2.825	5.099	0.000	$(FL_{it} \rightarrow FDSM_{it})$	1.664	1.580	0.114
$(FDBK_{it} \rightarrow IQ_{it})$	1.789	1.960	0.049	$(FDSM_{it} \rightarrow IQ_{it})$	1.907	2.317	0.020

$(IQ_{it} \rightarrow FDBK_{it})$	2.960	5.508	0.000	$(IQ_{it} \rightarrow FDSM_{it})$	1.938	2.411	0.015
$(FDBK_{it} \rightarrow LGD_{it})$	2.615	4.462	0.000	$(FDSM_{it} \rightarrow LGD_{it})$	3.035	5.736	0.000
$(LGD_{it} \rightarrow FDBK_{it})$	4.712	10.81	0.000	$(LGD_{it} \rightarrow FDSM_{it})$	2.036	2.707	0.006
$(FDBK_{it} \rightarrow TO_{it})$	4.987	11.65	0.000	$(FDSM_{it} \rightarrow TO_{it})$	1.791	1.967	0.049
$(TO_{it} \rightarrow FDBK_{it})$	2.442	3.940	0.000	$(TO_{it} \rightarrow FDSM_{it})$	1.892	2.271	0.023

6. Conclusion and policy recommendations

This study examines the relationship between financial development, financial liberalization and institutional quality in middle income countries (MICs) over the period 1995-2015. Empirical results estimated by applying PMG estimators indicate that financial liberalization and institutional quality have a positive effect on financial development. The results imply that financial liberalization process provide incentives to foreign investors by relaxing constraints on external financing and increase the scope of financial sector development. A well-developed institutional structure help to attract financial inflows by offering more secure property rights and better law and order situation. Similarly, economic growth and trade openness are essential for the development of financial sector of MICs. Causality results demonstrate that financial development and financial liberalization, institutional quality and financial development are reinforcing each other in MICs.

In terms of policy recommendations, empirical findings suggest that financial policies that encourage the development of the financial sector, promote financial integration and minimize government intervention in the financial sector should be formulated. Further, the establishment of financial institutions should be encouraged because they facilitate credit delivery to the private sector, which helps strengthen prudential regulation systems and the operation of stock markets without major disruptions. All these factors promote financial development, encourage resource allocation to the most productive sectors and enable a

trusting environment that is favorable to both savers and investors. To reap the full benefits of financial development, countries need to introduce institutional reforms, especially developing countries, and minimize obstacles to further global integration. Moreover, a better institutional structure is essential to accelerate the process of financial development. So, government of middle income countries needs to introduce those policies that control corruption, strengthen their bureaucratic quality, control and enforce law and order conditions and ensure democratic accountability. After achieving a sustainable and institutional quality, financial liberalization can foster its true advantages and boost economic growth.

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APPENDIX

Table A1: List of Selected Middle Income Countries

Armenia	Macedonia, FYR
Bangladesh	Malaysia
Bolivia	Mauritius
Brazil	Mexico
Bulgaria	Namibia
China	Nigeria
Colombia	Pakistan
Costa Rica	Papua New Guinea
El Salvador	Philippines
Fiji	Panama
Georgia	Peru
Ghana	Romania
India	South Africa
Indonesia	Sri Lanka
Jamaica	Swaziland
Kazakhstan	Zambia
Kenya	Thailand
Kyrgyz Republic	Turkey
Mongolia	

Table A2: Summary Statistics

Variables	Mean	Std. Dev	Min.	Max.
FD_{it}	21.060	18.768	0	100
BK_{it}	25.647	21.874	0	100
SM_{it}	17.122	16.045	0	100
KAQ_{it}	0.242	1.390	-1.894	2.389
$LFCTO_{it}$	4.782	0.682	3.074	7.794
IQ_{it}	17.863	3.767	0	32.777
LGD_{it}	8.001	0.824	6.102	9.375
TO_{it}	0.699	0.3403	0.139	2.202