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**The Role of Globalization and Institutional
Quality on Finance- Growth Nexus:
Empirical Evidences from India**

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**The Role of Globalization and Institutional
Quality on Finance- Growth Nexus:
Empirical Evidences from India**

by

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Abstract: The present study explores the impact of globalization and institutional quality on finance-growth nexus within the multivariate framework using time series data over the period 1982-2014. The stationary properties of the variables are checked by employing Saikkonen and Lütkepohl (2002) unit root test. The long run relationship is investigated by applying the ARDL bounds testing approach to co-integration and error correction method (ECM) is used to examine the short run dynamics among the variables. The empirical results of long run estimates of ARDL suggest that financial development and Globalization contributes to economic growth. These findings are supported by short run estimates. It is also found that institutional Quality does affect economic growth positively; this is in support of sustainable growth. The findings of VECM based causality suggest that there is unidirectional causality running from financial development and globalization to economic growth. It is also found that the unidirectional causality is running from coefficient of institutional quality to economic growth .The results of variance decomposition suggest that the broad money supply plays the most important role to define economic growth in India.

Keywords: *Financial development, globalization index, economic growth, ARDL, Granger causality, India.*

JEL Classification: G2, O16

The role of Globalization and Institutional quality on Finance-Growth Nexus: Empirical Evidences from India

1. Introduction

The economic consequences of globalization have received much attention of academicians and policymakers in last two decades. The process of globalization enhances economic growth via financial development of an economy. Globalization also helps countries to discover new trade routes to reap the optimal openness to trade (David and Scott, 2005). The process of globalization also influences the domestic rate due to international competitive environment. This helps to reduce the cost of investment, boosting domestic production and hence economic growth.

Mishkin (2009) argues that globalization is one source of financial development. In his seminal paper, he suggested that globalization is among the most powerful tool that can elevate the quality of institutions. In turn, these institutions, which establish and maintain strong property rights, effective legal system and financial regulations, are essential in promoting financial development and economic growth in developing economies. Although globalization has been gaining popularity in emerging economies, there is still insufficient evidence that globalization actually promotes financial development and economic growth.

In an attempt to fill the gap and contribute to the current empirical literature, this paper examines the impact of globalization and institutional quality economic growth in one of the emerging south Asian economy, India. Specifically, we intend to explore the dynamic linkages among globalization, institutional quality, financial development and economic growth, a hypothesis put forward by Mishkin (2009). Indian economy is one of the successful economy in south East Asia liberalized their trade practices and capital account in early 1990s. One of the major contributors of the economic success of India is its open trade policies and close integration with rest of the world. Increased trade openness and financial openness has resulted in steep increase in trade volumes foreign institutional and foreign direct investments flows.

This study contributes to the literature by examining whether globalization and institutional qualities stimulates financial development, which in turn support economic growth. To our knowledge there is no single study in existence which adequately covers the dynamic linkages among these variables in the context of Indian economy. After liberalization, Indian economy

has adopted different measures to become more globalized economy, in this context the effect of globalization on finance-growth nexus becomes pivotal one to examine. Our empirical approach involved regressing per capita GDP with globalization index, institutional quality parameter along with different indicators of financial development to capture the role of specific financial development proxy in augmenting economic growth due to globalization. We employed structural break, Saikkonen and Lütkepohl (2002) unit root test to test the order of integration among the variables. The study used the Auto Regressive Distributed Lag (ARDL) bounds testing approach to co-integration and error correction method to examine the long run and short run dynamics. The dynamic causality is examined by employing VECM based causality method. Further, variable decomposition is employed to in order to examine the dynamic properties of the variables beyond the system.

The rest of the paper is organized as follows: review of literature is provided in Section 2. Section 3 explains model specification, variables and Data; methodological framework is presented in Section 4. The empirical results are discussed in Section 5. Section 6 presents conclusion and policy implications of the study.

2. Review of Literature

The aim of this study is to examine the impact of globalization on finance-growth nexus. This theory is pioneered by Mishkin, (2009) who explored how globalization affects financial development and economic growth via strengthening institutions in an economy. He suggested that globalization makes institutions sound which leads to financial development.

Rajan and Zingales (2003) suggested that capital inflows and trade openness at the same time encourage financial development. They investigated the importance of interest group politics in influencing financial market development and argued that politics driven by special interest groups explain the irregular development of capital markets. Rousseau and Sylla (2003) also supported the positive impact of globalization on financial development. He argued that globalization leads capital-market globalization which improves financial development via the channel of foreign capital inflows to recipient countries. Rioja and Valev (2004) examined a panel of 74 countries using generalized method of moments (GMM) dynamic panel techniques to capture the effects of financial development on economic growth. They found a strong positive effect of a country's financial development on economic growth. In addition to that this relationship depends on the level of financial development in a country. In case of the intermediate region, financial development has a large, positive effect on economic growth.

Law (2009) investigated the role of globalization on financial development for eight East Asian economies, by focusing on the importance of institutions in mediating this link. He also argued that Globalization is also found to have a favorable causal impact on stock market development without passing through institutional quality channel. Falahaty and Law (2012) empirically examined the nexus between globalization and finance for MENA countries over the period of 1991-2007 by using Panel-data Vector Auto regression and Fully Modified Ordinary Least Squares techniques. They suggested that globalization effects institutional quality which leads to financial development and economic growth. They also suggested that the government in the MENA region should play its role in designing suitable economic policy to get benefits from globalization.

García (2012) examined the impact of financial globalization on financial development in transition countries by employing Blundell and Bond (1998) a dynamic panel data. The empirical results suggested that financial globalization has a positive and significant relationship with the growth of the financial system, but not with the process of development, which implies it does not improve the performance of basic financial functions. Shahbaz and Rahman (2012) also argued that foreign direct investment and imports encourage economic growth that leads financial development. Beck et al (2012) investigated the association between financial innovation and economic growth for 32 developed economies during time period 1996 – 2006. The results indicate that financial innovation activities were associated with both increased levels of economic growth, and increased levels of economic volatility. This study also introduced the optimal level of financial development.

Kandil et al., (2015) investigated the impact of globalization on financial development in a panel of 32 developed and developing economies over the time period 1989-2012 by panel co-integration and panel VAR. They suggested that financial development affects economic growth and globalization positively. Globalization also encourages economic growth, but does not help financial development as it helps increase access to external financing.

In summary it can be concluded that globalization do affect the relationship between financial development and economic growth. The nexus between globalization, financial development and economic growth has received a lot of attention in the recent economic literature but the effect of globalization has not been examined in the case of Indian economy. Addition of this would provide new insights about the relationship between financial development and economic growth. Therefore, this study can add to literature in the context of Indian economy.

3. Modeling and Data Collection

In the present study, the impact of globalization on finance-growth nexus is investigated in the case of Indian economy over the period 1982-2014^[1]. The model for this study is represented in the equation (1).

$$LPGDP = \alpha_0 + \alpha_1LGI + \alpha_2LFD + \alpha_3INF + \alpha_4IQ + \varepsilon_t \quad \dots (1)$$

Where FD represents financial development, we have used six different proxy variables to represent financial development:

- (1) Broad money supply as a share of GDP (Bittencourt, 2012; Odhaimbo, 2009; Kar et al., 2011; Zaman et al. 2012) (BM)
- (2) Domestic credit provided by the banking sector (DCB) (Nik, 2013)
- (3) Domestic credit to the private sector (Kar et al. 2011; Colombage 2009; Khan and Senhadji 2003; Zaman et al. 2012) (DCP)
- (4) market capitalization as a share of GDP (Sahoo,2013) (MCAP)
- (5) Turnover ratio (Pradhan et al., 2014) (TURN) and
- (6) Traded stocks (Pradhan et al., 2014) (TRD).

To measure the globalization, we have used globalization index (GI). This index developed by Dreher (2006) and covers three dimensions: economic globalization, political globalization and social globalization Economic growth is represented by per capita GDP (PGDP). To include the effect of price change, INF variable is also included (Tiwari et al., 2013; Ang, 2009) (Composite CPI index). IQ represents institutional Quality^[2].

The following four equations (Panels I to VI) are used to assess economic growth, as a result of globalization and financial development in Indian economy.

$$\text{Panel I: } LPGDP = f(LGI, LBM, IQ, LINF) \quad \dots (2)$$

$$\text{Panel II: } LPGDP = f(LGI, LDCB, IQ, LINF) \quad \dots (3)$$

$$\text{Panel III: } LPGDP = f(LGI, LDCP, IQ, LINF) \quad \dots (4)$$

$$\text{Panel IV: } LPGDP = f(LGI, LMCAP, IQ, LINF) \quad \dots (5)$$

$$\text{Panel V: } LPGDP = f(LGI, LTRD, IQ, LINF) \quad \dots (6)$$

$$\text{Panel VI: } LPGDP = f(LGI, LTURN, IQ, LINF) \quad \dots (7)$$

The data were collected from Handbook of Statistics on Indian Economy published by the Reserve Bank of India (RBI), World Economic Outlook Database and IMF. Data for globalization is extracted from KOF index of globalization (2014).

4. Estimation Techniques

4.1. Saikkonen and Lütkepohl structural break unit root test

In the literature, there are many unit root tests i.e. ADF, P-P, DF-GLS, Ng-Perron etc. unit root tests to check the order of integration of the variables. In case, when shift prevails in time series data, these unit root tests may provide inefficient and biased results. Hence, shift in time series should be accounted in testing unit root problem. To overcome this problem, to carry out unit root analysis, we have used the model proposed by Saikkonen and Lütkepohl (2002) and Lanne et al. (2002). The empirical equation is given as equation (8).

$$y = \delta_0 + \delta_1(t) + f_t(\theta')\theta + x_t \quad \dots\dots (8)$$

Where $f_t(\theta')\theta$ presents the shift functions to be used while δ and θ are considered as unidentified vectors. x_t are the errors generated by an AR (p) process with possible unit root. A simple shift dummy variable with shift date T_B is used on the basis of exponential distribution function. This function is given by $f' = d_{1t} \begin{cases} 0; & t < T_B \\ 1; & t \geq T_B \end{cases}$ does not entail any extra parameter θ . In the shift term $f'1 \theta$, θ is a scalar parameter. To choose dates of structural breaks exogenously, the present study follows Lanne et al. (2002) which allows us to apply ADF-type test on the series to check stationarity properties.

4.2. The ARDL Bounds Testing approach to Co-integration

The study employs the autoregressive distributed (ARDL)^[3] bounds test proposed by Pesaran, Shin, and Smith (2001) to examine the co-integration relationship between stock market indices and economic growth of respective sectors. The ARDL bound testing approach involves estimating the unconditional error correction version (UECM) of the ARDL model which is modeled as follows:

$$\Delta \ln Y_t = \delta_0 + \delta_1 T + \delta_2 \ln X1_{t-1} + \delta_3 \ln X2_{t-1} + \delta_4 \ln X3_{t-1} + \delta_5 \ln X4_{t-1} + \delta_6 \ln X5_{t-1} + \sum_{i=1}^q \alpha_i \Delta \ln Y_{t-i} + \sum_{i=1}^q \beta_i \Delta \ln X1_{t-i} + \sum_{i=1}^q \mu_i \Delta \ln X2_{t-i} + \sum_{i=1}^q \sigma_i \Delta \ln X3_{t-i} + \varepsilon_t \quad \dots (9)$$

Where Δ is the difference operator, Y represents the independent variable, X 's are dependent variables, ε_t is white noise error term and T is time trend and \ln implies that the variables have been transformed in natural logs.

There are two steps in testing the co-integration relationship between economic growth and the explanatory variables. First, we estimate Eq. (1) by ordinary least squares (OLS) technique. Second, the presence of co-integration is traced by restricting all estimated coefficients of lagged level variables equal to zero. Therefore, the null hypothesis of no co-integration $H_0: \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = 0$ and the alternative hypothesis $H_1: \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq \delta_6 \neq 0$ implies co-integration among the series.

If the computed F-statistic is less than lower bound critical value, then we do not reject the null hypothesis of no integration. However, if the computed F-statistics is greater than upper bound critical value, then we reject the null hypothesis of no co-integration. However, if the computed value falls within lower and upper bound critical values, then the result is inclusive.

Once the co-integration is established the conditional ARDL long run model for Y_t can be estimated as:

$$\Delta \ln Y_t = \alpha_0 + \sum_{i=1}^q \delta_1 \ln Y_{t-i} + \sum_{i=1}^q \delta_2 \ln X1_{t-i} + \sum_{i=1}^q \delta_3 \ln X2_{t-i} + \sum_{i=1}^q \delta_4 \ln X3_{t-i} + \varepsilon_t \quad (10)$$

Where, all variables are as previously defined. This involves selecting the orders of ARDL (q_1, q_2, q_3, q_4) models using SIC. The third and final step, we obtain the short run dynamic parameters by estimating an error correction model with the long run estimates. This is specified as below:

$$\Delta \ln Y_t = \mu + \sum_{i=1}^{q_1} \alpha_i \Delta \ln Y_{t-i} + \sum_{i=1}^{q_2} \beta_i \Delta \ln X1_{t-i} + \sum_{i=1}^{q_3} \mu_i \Delta \ln X2_{t-i} + \sum_{i=1}^{q_3} \sigma_i \Delta \ln X3_{t-i} + \phi ECM_{t-1} + \varepsilon_t \quad \dots\dots\dots (11)$$

Where $\alpha, \beta, \mu, \sigma, \omega, \gamma$ are short run dynamic coefficient to equilibrium and ϕ is the speed adjustment coefficient.

4.3 Granger Causality Test

The co-integration relationship indicates the existence of causal relationship between variables but it does not indicate the direction of causal relationship between variables. Therefore, we conduct the Granger causality test in the vector error corrective model framework to examine the causality relationship between the stock market development and

economic growth. The VECM regresses the changes in the variables (both dependent and independent variables) on lagged deviations and in general can be express by the following equation:

$$\Delta Z_t = \Pi Z_{t-1} + \Gamma_1 \Delta Z_{t-1} + \Gamma_2 \Delta Z_{t-2} + \dots + \Gamma_{p-1} \Delta Z_{t-p+1} + e_t \quad \dots\dots (12)$$

$$\text{Where } \Delta Z_t = [\Delta \Gamma Y, \Delta X1, \Delta X2, \Delta X3]' \quad \dots\dots (13)$$

$$\Pi = -(1_m - \sum_{i=1}^p A_i) \quad \dots\dots (14)$$

$$\text{And } \Gamma_i = -(1 - \sum_{j=1}^i A_j) \quad \dots\dots (15)$$

For $i=1, \dots, p-1$. Γ measures the short run effect of the changes in Z_t . Meanwhile, the (4×4) matrix of $\Pi = (\alpha\beta')$ contains both speed of adjustment to equilibrium (α) and the long run information (β) such that the term βZ_{t-k} represents the (n-1) co-integrating vector on the multivariate model. A test statistic is calculated by taking the sum of the squared F-statistics of Γ_i and t statistic of Π . The Granger causality is implemented by calculating the F-statistics (Wald test) based on the null hypothesis that the set of coefficients (Γ_i) on the lagged values of independent are not statistically different from zero. If the null hypothesis is accepted, then it can be concluded that the independent variables do not cause the dependent variables. On the other hand, if Π is significant (that is, different from zero) based on the t-statistics, then both the independent and dependent variables have a stable relationship in the long run.

5. Results Interpretation

5.1 Results from the Panel Unit Root Test

We begin our analysis with Ng-Perron unit root test results for all the time series variables together with comments on their stationarity. Table 1 shows the results of Ng-Perron unit root test. The results indicate that all the variables are non-stationary in their levels but become stationary after taking the first difference i.e. I (1).

Table 2: Unit root test: Ng-Perron Test

Variables	With constant and trend				Stationarity Status
	MZa	MZt	MSB	MPT	
LPGDP	-3.8945	-1.5842	0.3245	24.2800	
ΔLPGDP	-19.0045	-3.6987	0.1651	5.0047	I (1)
LGI	-4.8471	-2.0047	0.1785	6.0714	
ΔLGI	-19.5008	-5.2214	0.1907	2.0230	I (1)
BM	-11.6700	-1.0988	0.1286	3.0587	
ΔBM	-14.5018	-2.9814	0.1807	2.0711	I (1)
DCB	-0.1048	-0.1899	0.7073	6.4177	
ΔDCB	-13.8245	-4.8145	0.1601	3.0145	I (1)
DCP	-7.6700	-1.1198	0.1586	3.7201	
ΔDCP	-16.1015	-3.0514	0.1910	4.7144	I (1)
MCAP	-6.7259	-1.5710	0.2036	4.4141	
ΔMCAP	-16.9140	-3.0510	0.8512	6.2084	I (1)
TRD	-1.7014	-1.0014	0.2012	2.6954	
ΔTRD	-5.5014	-4.0142	0.2214	4.0214	I (1)
TURN	-1.5114	-0.8825	0.2001	1.5147	
ΔTURN	-20.0140	-3.7023	0.1346	3.3141	I (1)
LINF	-3.8471	-3.1458	0.1251	2.8007	
ΔLINF	-10.1452	-2.3715	0.2004	6.1104	I (1)

Source: Author's own Calculation by using E-views 8.0

Δ denotes the first difference of the series. L implies that the variables have been transformed in natural logs.

Ng–Perron unit root test does not provide any information about structural breaks in time series data. Therefore, stationarity properties of the variables in the presence of structural break have been checked by employing the unit root test proposed by Saikkonen and Lütkepohl (2002). Table 2 provides the Saikkonen and Lütkepohl (2002) unit root test results.

In this analysis, shift dummy is used for structural breaks for all the variables. The empirical evidence shows that variables are not stationary in levels but in case of first difference form,

these three variables become stationary in the presence of structural breaks (determined in level form of the variables and after making these variables in first difference form and then identifying the break date and incorporating that break date in the unit root analysis) at 1% level of significance. The results lend a support to apply the ARDL bounds testing approach to co-integration to examine long run relationship and short run dynamics among the variables.

Table 3: Saikkonen and Lütkepohl (SL) unit root test results

Unit root test with structural break: constant and time trend included

Variables	Shift dummy and used break date is 2004	Saikkonen and Lütkepohl (k)	Variables	Shift dummy and used break date is 1991	Saikkonen and Lütkepohl (k)
LPGDP	-1.9547(0)	Yes	LGI	Yes	-2.6255(1)
ΔLPGDP	-3.9851*(0)	Yes	ΔLGI	Yes	-5.8140* (1)
DCB	-1.4379 (0)	Yes	DCP	Yes	-2.1033 (0)
ΔLDCB	-8.2145**(0)	Yes	ΔLDCP	Yes	-6.0145*(0)
Variables	Shift dummy and used break date is 2007	Saikkonen and Lütkepohl (k)	Variables	Shift dummy and used break date is 2012	Saikkonen and Lütkepohl (k)
MCAP	-1.7114(0)	Yes	LINF	0.2865 (0)	Yes
ΔLMCAP	-5.0458*(0)	Yes	ΔLINF	-6.1011**(0)	Yes
TRD	-1.6478(0)	Yes			Yes
ΔLTRD	-6.0117*(0)	Yes			Yes
TURN	-1.0147(0)	Yes			
ΔLTURN	-4.9987*(0)	Yes			
BM	-2.0471(1)	Yes			
ΔLBM	-8.1102* (1)	Yes			

Note: k denotes lag length. *, ** and *** denotes significance at 1%, 5% and 10% levels respectively.

5.2. Results from ARDL Bounds Co-integration test

The results of the ARDL bounds testing approach to co-integration are reported in Table 4, we used critical bounds tabulated by Narayan (2005), the critical values provided by Pesaran et al. (2001) are inappropriate for a small sample. The results indicate that calculated F-statistic is higher than upper critical bound at 5% level of significance in all the models, this implies the existence of co-integration that confirms the long run relationship among the variables.

Table 4: The results of ARDL co-integration test*Panel I: Bounds testing to co-integration*Estimated Equation: $LPGDP = F(LFD, LGI, LINF, IQ)$

<i>Indicators</i>	Panel I	Panel II	Panel III	Panel IV	Panel V	Panel VI
Optimal lag	01	01	01	01	01	01
F – Statistics	6.2142	5.8901	6.2285	8.0145	7.0014	5.2445
<i>Panel II: Diagnostic Tests</i>						
Normality J-B value	1.0224	0.5824	0.9541	1.0514	1.1004	1.0085
Serial Correlation LM Test	0.8601	0.8596	0.8201	0.9847	0.8008	0.8110
Heteroscedasticity Test, (ARCH)	0.6013	0.6889	0.8593	0.9547	0.6014	0.0985
Ramsey Reset Test	1.9740	1.0041	1.0078	0.9985	1.0078	1.0177

The long run results are provided in Table 4. The empirical results show that both financial development and globalization index have positive impact on economic growth (Panel I, II and IV). The impact is statistically significant as well. The coefficients of institutional quality index also contribute to economic growth according to Panel I and II. It is also found that inflation is negatively associated with growth and significant in Panel III, IV.

Table 5: Estimated Long Run Coefficients using ARDL Approach (Dependent variable: LPGDP)

<i>Regressors</i>	<i>Panel I</i>	<i>Panel II</i>	<i>Panel III</i>	<i>Panel IV</i>	<i>Panel V</i>	<i>Panel VI</i>
LBM	0.7679** (2.5866)	----	----	----	----	----
LDCB	----	0.4419*** (5.8541)	----	----	----	----
LDCP	----	----	0.7762 (0.8514)	----	----	----
LMCAP	----	----	----	0.0204** (2.2054)	----	----
LTRD	----	----	----	----	0.2124 (1.0047)	----
LTURN	----	----	----	----	----	0.0118* (1.9045)
LINF	0.1867	0.3097	-0.2397*	-0.0413**	0.0457	-0.0145

	(1.0692)	(0.1582)	(1.8850)	(2.7790)	(0.8841)	(1.1550)
LGI	0.1867*	0.5085**	0.7760	0.0928**	0.05621	0.0136
	(1.9045)	(2.8852)	(0.8547)	(2.9141)	(1.1445)	(1.9063)
IQ	0.09909*	0.0521*	0.4622	0.0110	0.0425	0.0585
	(1.9850)	(1.8850)	(1.0074)	(0.9985)	(1.0078)	(1.3385)
CONST	1.0471***	1.9821***	1.0074***	0.9854**	1.5241***	1.0041***
	(5.0145)	(3.5210)	(5.1444)	(3.0045)	(7.0145)	(4.5578)

Note: (1) The lag order of model is based on Schwarz Bayesian Criterion (SBC).

(2) *, ** and *** indicate significant at 10, 5 and 1 percent level of significance, respectively.

The results of short run dynamics are presented in Table 6, the empirical results support the findings of long run. The proxy variable of financial development (Broad money supply as a share of GDP (BM), Domestic credit to the private sector (DCP) and market capitalization as a share of GDP (MCAP)) are positively and significantly related to economic growth. The globalization index affects economic growth positively in Panel II, V, VI. Institutional quality also enhances growth in panel I, II, V. These empirical findings are in line with Mishkin (2009) hypothesis who suggested that institutional quality play an important role in mediating the effect of globalization on financial development and economic growth.

**Table 6: Estimated Short Run Coefficients using ARDL Approach
(Dependent variable: DLPGDP)**

<i>Regressors</i>	<i>Panel I</i>	<i>Panel II</i>	<i>Panel III</i>	<i>Panel IV</i>	<i>Panel V</i>	<i>Panel VI</i>
DLBM	0.1797*	---	---	---	---	---
	(2.0041)					
DLDCB	---	0.0673	---	---	---	---
		(1.8571)				
DLDCP	---	---	0.0247**	---	---	---
			(2.0521)			
DLMCAP	---	---	---	0.0304**	---	---
				(2.2011)		
DLTRD	---	---	---	---	0.0147	---
					(1.0477)	
DLTURN	---	---	---	---	---	0.0118
						(0.5524)

DLINF	0.1125 (0.5581)	0.0818 (1.0041)	0.0099 (0.3645)	0.5501 (0.5140)	0.0031* (1.8895)	-0.0165* (1.8955)
DLGI	0.1017 (1.9985)	0.1343* (1.7989)	0.0506 (0.8584)	0.1141 (0.8745)	0.2124** (2.4048)	0.1136* (1.5220)
DIQ	0.0156* (2.2210)	0.0139 (1.8017)	0.0155* (1.9650)	0.0521 (0.5841)	0.0192** (2.2591)	0.0118 (0.8858)
DCONST	0.0773* (1.9101)	0.5237* (1.8055)	0.0106* (1.9880)	0.1794* (1.8220)	0.2510** (2.4596)	0.1337 (0.5584)
ECM_{t-1}	-0.1577** (-2.6064)	-0.2642*** (-2.+426)	-0.0588 (-1.0085)	-0.2003** (-2.0014)	-0.2712** (-2.2330)	-0.0340 (-1.8966)

Note: (1) The lag order of model is based on Schwarz Bayesian Criterion (SBC).

(2) *, ** and *** indicate significant at 10, 5 and 1 percent level of significance, respectively.

5.3. Results from the Causality test

The results of Granger causality analysis are reported in Table 7. The analysis reveals that there is unidirectional causality running from financial development to economic growth in case of Panel I, II, III and IV (Broad money supply, Domestic credit provided by the banking sector, Domestic credit to the private sector and Market capitalization are used as a proxy variables for financial development). Globalization index is causing economic growth in all the panels except panel V. It is also found that the unidirectional causality is running from coefficient of institutional quality to economic growth when Domestic credit provided by the banking sector, Traded stocks and Turnover ratio are used to represent financial development (panel II, V, VI).

Table 7: Granger causality test

<i>Dependent Variable</i>	<i>Sources of causation</i>					
	<i>Short-run (or weak)</i>					<i>Long run</i>
<i>Panel I: FD=Broad money supply (BM)</i>						
	Δ LPGDP	Δ LFD	Δ LGI	Δ LINF	Δ IQ	ECT (t Value)
Δ LPGDP	.....	2.1410**	1.5417*	0.5795	0.2822	-3.5104***
Δ LFD	1.0442	.....	2.4410**	0.5214	1.4953	-0.4471
Δ LGI	0.2593	0.9533	.....	1.5521	1.0514	-1.4110
Δ LINF	1.1741	1.6623	0.9845	.....	0.4972	-0.1425
Δ IQ	2.3340**	1.9855*	0.7785	0.4711	.....	-0.8821
<i>Panel II: FD= Domestic credit provided by the banking sector (DCB)</i>						

	Δ LPGDP	Δ LFD	Δ LGI	Δ LINF	Δ IQ	ECT (t Value)
Δ LPGDP	.....	2.0108**	1.9808*	0.5846	1.9908*	-1.9125*
Δ LFD	2.1041*	.....	1.0751	0.5652	0.1889	-1.0411
Δ LGI	0.9392	0.8588	.....	1.0668	0.8859	-0.5582
Δ LINF	1.1302	0.5309	1.0144	.....	1.0699	-0.9855
Δ IQ	1.8856*	0.2563	0.2652	0.4711	.....	-1.1178

Panel III: FD= Domestic credit to the private sector (DCP)

	Δ LPGDP	Δ LFD	Δ LGI	Δ LINF	Δ IQ	ECT (t Value)
Δ LPGDP	.....	3.4851***	3.5623*	1.3373	1.3979	-2.0041**
Δ LFD	1.6255	.....	1.2214	1.0339	1.8337	-1.0589
Δ LGI	1.0798	0.5581	.....	0.8475	0.8821	-1.0911
Δ LINF	1.2966	1.0447	0.9015	.....	0.4572	-0.8525
Δ IQ	1.4698	0.5668	1.0185	0.4711	.....	-0.9695

Panel IV: FD= Market capitalization (MCAP)

	Δ LPGDP	Δ LFD	Δ LGI	Δ LINF	Δ IQ	ECT (t Value)
Δ LPGDP	.....	2.4108**	1.9878*	1.0245	1.1285	-1.9980*
Δ LFD	1.0457	.....	1.0751	1.0019	4.0152**	-1.0526
Δ LGI	1.3102	0.5525	.....	0.8545	1.5201	-0.9815
Δ LINF	0.6367	0.4711	1.0225	.....	1.5541	-0.8512
Δ IQ	1.9885*	0.6692	1.1102	0.9851	.....	-0.0125

Panel V: FD= Traded stocks (TRD)

	Δ LPGDP	Δ LFD	Δ LGI	Δ LINF	Δ IQ	ECT (t Value)
Δ LPGDP	.....	1.0041	1.9878*	1.2252	3.2455**	-1.8851*
Δ LFD	2.5755**	.....	1.0751	0.5012	1.3730	-0.0147
Δ LGI	1.2331	0.8854	.....	0.1478	0.9962	-0.8163
Δ LINF	0.2152	0.3365	1.1179	.....	0.8196	-0.5162
Δ IQ	1.0552	0.8152	0.9856	1.0214	.....	-0.6214

Panel VI: FD= Turnover ratio(TR)

	Δ LPGDP	Δ LFD	Δ LGI	Δ LINF	Δ IQ	ECT (t Value)
Δ LPGDP	.....	0.8585	1.1102	0.5417	2.2152**	-2.1458**
Δ LFD	1.5200	.....	2.0145*	1.9855*	0.5215	-0.5151

Δ LGI	0.5146	0.9812	.....	0.58156	0.8415	-0.4801
Δ LINF	0.1551	0.5285	1.0045	.....	0.6041	-0.7126
Δ IQ	0.4168	0.5814	1.0458	0.9856	.....	-0.9110

Notes: (1) The null hypothesis is that there is no causal relationship between variables. Δ is the first difference operator. *, ** and *** are 1%, 5% and 10% significance levels, respectively.

(2) The number of appropriate lag is one according to Akaike information criterion and Schwarz information criterion and Hannan–Quinn information criterion.

5.4 Results from the Variance Decomposition Analysis

Pesaran and Shin (2001) point that the variable decomposition method shows the contribution in one variable due to innovation shocks stemming in the forcing variables. The variance decomposition indicates the amount of information each variable contributes to the other variables in the auto regression. It determines how much of the forecast error variance of each of the variables can be explained by exogenous shocks to the other variables. The main advantage of this approach as it is insensitive to the ordering of the variables. The empirical results of variance decomposition analysis are presented in Table 8. The column SE is the forecast error of the variable to be forecast at different lengths into the future. The results suggest that the LBM variable play the most important role to define economic growth in India.

Table 8: Variance decomposition Analysis

Variance Decomposition of LPGDP										
Period	S.E.	LPGDP	LGI	LBM	LDCP	LDCB	LCAP	TURN	LTRD	LINF
1	0.0203	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0976	13.2432	3.5235	82.7607	0.0026	0.1693	0.0000	0.0354	0.2504	0.0144
3	0.3185	16.5390	4.5792	77.1417	0.0025	0.0175	0.2656	0.2183	0.6785	0.1910
4	0.4952	16.8431	5.1024	72.48.64	0.0891	0.2767	1.1423	1.1776	2.3394	0.5425
5	0.5236	15.2029	4.5889	64.8706	0.5766	1.5544	2.5098	3.8031	6.0208	0.8727
6	0.8652	19.6830	4.9097	68.0269	0.4634	1.1203	0.9350	1.8710	2.6354	0.3547
7	1.1383	20.6212	5.8709	67.4453	0.2714	0.6490	1.1267	1.2725	1.9911	0.7515
8	1.3676	19.5481	4.7566	68.0602	0.3478	0.7621	1.2729	1.7889	2.6749	0.7881
9	3.0803	20.4062	5.1212	72.6506	0.0993	0.1716	0.3971	0.3557	0.5443	0.2536
10	3.9142	19.4954	5.6461	69.1331	0.1103	0.3295	1.4541	1.3054	1.8272	0.6986

6. Conclusion and Policy Implication

Maintaining high level of economic growth has always been a central policy concern for developing economies. Further it is recognized that in the empirical literature that globalization and financial development play crucial role in augmenting economic growth of the economy. Hence, the present study proposed to empirically investigate the influence of globalization and institutional quality on financial development in the context of India by using the annual data from 1982–2014. The stationary properties of the variables are checked by employing Saikkonen and Lütkepohl (2002) unit root test. The long run relationship is investigated by applying the ARDL bounds testing approach to co-integration and error correction method (ECM) is used to examine the short run dynamics among the variables.

Indicators of financial development include three banking indicators (Broad money supply, Domestic credit provided by the banking sector and Domestic credit to the private sector) and three indicators of stock market development (stock market capitalization, value traded and turnover ratio), all relevant to GDP are used. Globalization index is used to include the effects the globalization. Economic growth is measured by per capita GDP. Along with these variable two control variables are also included: (1) Composite consumer price index is used to represent price change and (2) Institutional Quality.

The empirical results of long run estimates of ARDL suggest that financial development and Globalization contributes to economic growth. These findings are supported by short run estimates. It is also found that Quality institutions do impact economic growth positively; this is in support of sustainable growth. The VECM based causality results reveals that there is unidirectional causality running from financial development to economic growth when Broad money supply, Domestic credit provided by the banking sector, Domestic credit to the private sector and Market capitalization are used as a proxy variables for financial development. Globalization index is also causing economic growth in all the panels except panel V. It is also found that the unidirectional causality is running from coefficient of institutional quality to economic growth when Domestic credit provided by the banking sector, Traded stocks and Turnover ratio are used to represent financial development (panel II, V, VI).

In terms of policy implications, these findings suggest that it is important for Indian economy to actively participate in liberalizing trade and accounts to upgrade institutional quality. An institutional reform that results from efforts to promote globalization represents an important channel in terms of its overall effect on economic growth. In fact sound institutional quality

are designed to exert a positive influence on economic growth by reducing uncertainty, increasing efficiency and channeling resources to productive investment and business activities. Thus, eliminating corruption, strengthening the role of law and order, enhancing property rights are essential components of the development process and will further promote the well functioning of financial system and economic growth in a given country and region.

Further, the present study recommends that policy should be geared towards development of financial sector, promotion of financial integration, which will create the environment for the efficient allocation of credit. In addition to that In addition, institutional quality and globalization index are essential indicators to accelerate economic growth. Therefore, policy efforts should be focused on the improvement of these indicators by offering protection of property rights, reduction in government corruption reducing political instability, price stability, and stable macroeconomic environment.

The present study opens up new dimensions for future research such as inclusion of other variables i.e. governance and economic instability in the current model would improve the empirical results on the concerned issue.

Endnote:

[1] The study limits to the starting period as 1982-83 due to the non-availability of data on stock market capitalization prior to this period.

[2] Civil liberties and political right indices are used to measure the institutional variable. Both these indices are measured on a scale of 1 to 7, 1 represents strong democratic institutions and 7 the least democratic institutions. We normalize these two measures of democracy to a range from 0 to 1 on the basis of the following computation methodology taken by Gastil (1990): $INST = [14 - (PR + CL)] / 12 = 0$ for unstable institutions = 1 for stable institutions (Kandil et al., 2013).

[3] The procedure is adopted for three reasons. First, the bound test is simple as opposed to other multivariate co-integration technique such as Johansen and Juselius (1992), it allows co-integrating relationship to be estimated by OLS once the lag order is selected. Second, the bound test procedure does not require the pre testing of the variables included in the model for unit root. These approaches require that all the variables to be integrated of the same order ($I(1)$). Otherwise the predictive power will be lost (Kim et al., 2004; Perron, 1989, 1997). Third, the test is relatively more efficient in small sample data sizes as is the case of this study. Fourth the error correction method integrates the short-run dynamics with long-run equilibrium without losing long-run information.

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Research

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Publications

1. Madhu Sehrawat, A.K. Giri, "Does female human capital contribute to economic growth in India? an empirical investigation", (Accepted for publication, International Journal of Social Economics).
2. Madhu Sehrawat, A.K. Giri, "Sectoral Analysis of the Role of Stock Market Development on Economic Growth: Empirical Evidence from Indian Economy", (Accepted for publication, Global Business Review (GBR)).
3. Madhu Sehrawat, A.K. Giri, "An empirical relationship between financial development indicators and human capital in some selected Asian Countries", (Accepted for publication, International Journal of Social Economics).
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1. Sehrawat Madhu, Giri AK “Do Globalization and Institutional Reforms Effect Financial Development: Evidence from South Asian countries”.
2. Giri AK, Sehrawat Madhu, Mohapatra Geetilaxmi, “Technological Developments, Financial Developments and Economic Growth: Empirical Evidences from India”.

Papers in Progress

- Madhu Sehrawat, A.K. Giri, “Inflation and growth trade-off: evidence from Asian countries”.
- Madhu Sehrawat, A.K. Giri, “Does Financial Development affects the environment? Role of Industrialization, Energy Consumption in Asia”.

Peer reviewed Paper Presentations

1. Measuring Core Inflation in India: An Empirical Evaluation of Alternative Methods” paper presented at 20th Biennial Conference of AIEFS, IGIDR, Mumbai, 2nd -3rd August, 2013.
2. “Does financial development lead to poverty reduction in India? An Empirical Investigation” paper presented 50th Indian Econometric Society Conference, IGIDR, Mumbai, 22nd -24th December 2013.
3. “Financial development and economic Growth: empirical evidence from India” paper presented at National Seminar of Input Output Economics: Application of Planning, Growth & Development Issues in Indian Economy, Gokhale Institute of politics and Economics, 31st Jan- 2nd Feb 2014, Pune, India.
4. “The relationship between Financial Development Indicators and Human Development in India: An application of ARDL Approach” paper presented at 4th International Conference on Applied Econometrics, IBS Hyderabad, 20th -21st March 2014, Hyderabad.
5. “Financial Development and Poverty reduction: Panel data analysis of Asian Countries” paper presented at National Seminar on Applications of Panel Data, Centre for Economic and Social Studies (CESS), Hyderabad, 25th-26th March 2014.
6. “Financial development index, trade openness and economic growth in India: re-examining the nexus” paper presented at Empirical Issues in International Trade and Finance (EIITF), IIFT Delhi Campus, New Delhi, 18th-19th December, 2014.
7. “Data Analytics and using R for Statistical Analysis: Workshop” attended at Birla Institute of Technology and Science (BITS), Pilani, 22nd-23rd November, 2014, India.
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10. “The role of Globalization and Institutional quality on Finance-Growth Nexus: Empirical Evidences from India” paper presented at East Asian Economic Association’s 15th Convention, 5-6th November 2016, Indonesia.

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