Re investigation into the relation between financial development and investments in India

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ABSTRACT

This study aims at investigating the relation between financial development, trade openness and investment activities in India. The study makes use of Autoregressive Distributed Lag (ARDL) bounds testing approach. The long run relationship between the variables is established for the period ranging from 1961-2015. Time series analysis is incorporated for understanding the relation between investment and financial development. We created a composite term for measuring financial development. The results suggest that financial development has positive impact on investment. Therefore, we could say that investment activities in India are financial development driven. The speed of adjustment is 43.5%. The error correction term (ECT) is negative which is appropriate. In contrast, the findings also reveal that the trade openness has a negative impact on investment. The model used in our study gives desirable results which imply that for an improved productivity of a nation, investments have to be induced and this would be enhanced by a sound financial system.

Contribution/ Originality
This study has tried gauging the relation between financial development, trade openness and investment activities in India. As financial development has several facets, we have tried to make a composite term for measuring financial development. The study incorporates a large time period (1961-2015, maximum available data) for a single country, which makes it up to date with the recent developments.

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1. INTRODUCTION

The relationship between financial development and economic growth has been a debatable issue for a long time. Thus the relation between financial development and growth has been an object of study for decades; however we still find no clear consensus in this regard. One of the earliest profounder of this thought was Bagehot (1873) who emphasized the importance of financial system in the industrialization of England, and later we saw John Hicks (1969) put forward thoughts on similar lines. Schumpeter (1911) proposed that financial sector development could influence the innovation and growth structure of an economy. It is understood that the financial stability of a nation plays a significant role in the growth prospects of a nation; therefore this relationship is of great relevance to both the policy makers and the citizens of a country. Hence, we can say we found immense scope to make further research in this area. There are various aspects that are identified as crucial for the progress of the nation's growth, and finance is identified as one such key force detrimental in elevating a nation with respects to other nations in the world economy.

There is no ambiguity on the thought that financial development is one of the significant factors in the study of growth. Hence, we find that there is an availability of extensive theoretical and empirical literature revolving around it. Given that the Economic growth-Financial development research is available in abundance, yet we find that the role of investment in not focused on. If financial development influences investment, there will be rise in the productivity of the nation, hence, a rise in the employment. There are various financial functions that influence the savings and investment decisions which will lead to economic growth (Levine, 1997). In the growth literature there are different opinions on the relation between financial system and growth, where few support the thought that finance leads to economic growth (Bagehot, 1873), (Schumpeter, 1911), (Hicks, 1969), there is another branch of thought who believe that growth leads to finance, (Robinson, 1952), and Lucas (1988) states that this finance- growth relation is trivial, hence, not important at all (Levine, 1997). Even though the various aspects of this relationship have been researched previously, yet there is no clear consensus on the financial development indicators, (Adu *et al.,* 2013). It has been observed that the relationship between financial development and growth, changes with the indicators taken to estimate financial development. Therefore, the results would be even more sensitive to the country specific study. Largely because the economic structure of each country is different due to the legal, political or economic framework. These differences are so central to a study that any variable like the culture of a nation can play a strong role in the outcome of the results. Therefore in this paper we use a time series approach to study the effects of financial development on the investment behavior of India.

In this paper, we further explore the efficiency of the impact of financial development on economic growth by looking into the impact of financial development on investment, which would help channel the transmission. In the theoretical literature, there is a famous argument by Harrod (1939) and Domar (1946) stating that there should be a rise in the capital stock which is important for the economic growth. According to Solow (1956) the neo classical growth theory, labor and technology should be used for the measurement of growth. The impact of financial development on investment raises the productivity, in other words the supply leading approach.

1.1. Financial structure of India
India is a rapidly growing economy which covers a land area of approximately, 32,87,590 Sq.km and a host to a very large population of 1354.05 Million in 2017 (World Population Prospects, United Nations) , which makes it the second most populous country in the world. It is a developing country with a promising future, making it desirable for our empirical research. India's growth in the period January-March of 2015 was 7.5 % which was more than China's which was at 7%. In India's case the growth in India is driven by the rapid expansion of the services sector, which makes it very peculiar and different from other growth stories. The service sector has clearly outperformed the other sectors of the Indian economy; it approximately contributes to 60% of the GDP in the financial year 2014.

These are evidences that show that the economic reforms are finally taking shape; the GDP of the country has reached US$ 2.2 trillion (as per IMF estimates).

The financial angle of the country speaks a story of its own. India has a sound banking structure that has evolved over time. The banking sector of India has played a major role in mobilizing savings and credit, paving path for economic development. It has been noted that after the financial sector reforms (1991) the banking structure has improved tremendously. There are evidences stating that India has employed varying banking sector controls in its financial history. The existence of the banks in India has been dated back to 1786 with the establishment of the General bank of India. In the 1950's, Indian banking sector was observed to be much more liberal, and there are no evidences of any specific control. In 1960's we could see attempts made by the government of India which focused on the developmental programs. The history of the Banking structure in India has majorly seen two paradigm shifts and they are the two rounds of nationalization. The first one in July of 1969, where 14 major private sector banks were nationalized and the second was in April 1980, when 6 more banks were nationalized. This paved path to the public sector banking in India. Various strategies were employed to tighten the sector, more power was to go in hands of the Reserve Bank of India, so that they could spread the banking network to the interior parts of India and avail credit. This marked the beginning of the liberalization process of the banking sector of India. Finally in 1991 the new economic policies were introduced.

An economy has many systems which help in its functioning, and the financial system is one of the most important ones. The financial system of a nation comprises of the banks, stock markets and the financial institutions. It is in fact one of the principle driving forces to maintain a global relation. It helps a nation integrate with the other economies, which is an inevitable condition in the present scenario, when the whole world is moving to a concept of global village. Each of the components of the financial system has significant impact on the development of an economy. The stock markets and its highly volatile nature keep the financial system prone to the fluctuations caused by the actions of the other nations. That's when the central bank of the specific country pitches in to see how it could shield the financial sector from external activities so that its own economy does not represent too much unpredictability. The financial institutions are indeed an integral part of any economy, so is the case for India.

The results of our study indicate that the financial development positively effects the investment in India. We gave equal weightage to four variables and created an index for measuring various aspects of financial development. From the earlier studies we know that the results change subject to the proxy chosen to measure financial development. Studying the investment-financial development relation using a financial development index is more appropriate making it is more reliable to use an index over a single variable proxy.

The rest of the paper is organized as follows. Section 2, captures a detailed review of literature on financial development and investment. In Section 3, we present the data, model specification and methodology used in the study. In Section 4, we present the empirical results and finally in the Section 5, we conclude summarizing our key findings and policy implication.

2. LITERATURE REVIEW

2.1. Theoretical literature
A sound financial system is one which can allocate its resources efficiently and one which will ultimately contribute to the economic growth. The nexus between financial development and economic growth has been a debate from the times of Bagehot. There are two mainstream views on this nexus. The first states that the economic growth leads and finance follows, this is commonly known as the 'demand - following' hypothesis, Robinson (1952). It is often reasoned that as an economy grows there is higher demand for financial institutions hence, there is a rise in availability of financial services. From this point of view, it could be implied that the lower development of financial

institution is because there is a lower demand for the financial activities. The other branch of the literature states that availability of financial institutions and services induces economic growth in the economy, which is known as the 'supply-leading' hypothesis. This is a more prominent point of view between the two set of thoughts. It is noted to be extensively discussed in the literature beginning from the times of Schumpeter (1911), followed by Mckinnon (1973) and many others till the date. An efficient financial sector for a country is found to induce investments and hence savings in an economy which will lead to capital accumulation. A well-functioning financial sector inculcates technological developments and innovation (Schumpeter, 1911). The advocates of this hypothesis argue that the quality of the financial development induces investments; here finance leads growth (King and Levine, 1993). Moreover, emphasis is also given to the channel in which the financial development will lead to the economic growth. The other prominent works on finance growth literature often focus on the relation between financial development and investment (Goldsmith, 1969). Mckinnon (1973) and Shaw (1973) introduced the idea of financial liberalization in quite a few developing countries (Adu et al., 2013). In the literature it is seen that the steady state economic growth is influenced by financial development through capital formation (Romer, 1986; Lucas, 1988; Rebelo, 1991).

To support the discussion on financial development and investment, the following production function is used wherein it is assumed that the productivity depends on capital stock alone. The model was proposed by De Gregorio and Guidotti (1995) model.

$$y_t = f(k_t) \qquad\qquad\qquad\qquad\qquad \text{............................ (1)}$$

Here y_t and k_t are output and stock of capital at a time t. By total differentiating equation (1), we get equation (2), where $\hat{y}$ signifies the rate of growth, $\frac{dk_t}{y_t}$ is the savings rate, s and marginal productivity of capital, Φ.

$$\hat{y}_t = \frac{dk_t}{y_t} f'(k_t) = s_t \Phi_t \qquad\qquad\qquad \text{............................ (2)}$$

From the equation (2), it could be inferred that the rate of output growth is a product of savings rate and the marginal productivity of capital. This equation shows that the economic growth depends on savings rate, s_t and marginal productivity of capital, Φ_t. As the capital stock, k_t grows over time, Φ_t (marginal productivity of capital) converges to zero, displaying the effect of diminishing marginal productivity of capital. In this setting, according to De Gregorio and Guidotti (1995) financial development has dual effect on the economic growth. Firstly, it can enhance the efficiency of the capital accumulation through development in the domestic financial market i.e. there is an increase in Φ_t, Goldsmith (1969). Secondly a rise in savings rate, s_t, i.e. an increase in the investment rate.

The research on the relationship between financial development and economic growth has been very extensive, yet there is no clear harmony on the impact and direction of the causality. Even though investment is an integral part of the growth literature, the volume elaborating this effect is comparatively very narrow.

2.2. Empirical literature
An understanding of financial development is an integral part in the study of financial development on investment and its impact vice versa. Financial development is comprehensive concept with its claws in various financial spectrums for a nation which makes the study of financial development a cumbersome process. We can see that in the literature there are evidences of both time series and cross sectional research in the literature. Financial development along with a sound banking system contributes in increasing the momentum of economic growth (Levine, 1997, 2005). There are researches concerning the trade openness of countries in relation to the financial aspects (Rajan and Zingles, 1998), where they come up with a novel methodology. There also a study that has discussed about financial development and openness by considering the panel data (Baltagi et al., 2007).

In the recent literature studies establish a nonlinear relationship between the two variables, Financial Development and Economic Growth. These studies suggest that there is an evidence of threshold effect between these variables. Research conducted at IMF establish that financial development leads to a positive influence over economic growth up to a certain level, after that it does not help in the economic development of the country (Law and Singh, 2014). Dynamic panel threshold technique was used to find the relationship between finance and economic growth, further the study made cross country analysis wherein the sample includes 87 developing and developed countries in the period 1980-2010. The results were very innovative as they found evidences of a threshold effect in the finance growth relationship. In other words we can say they found financial development supports economic growth till the threshold level and beyond that growth gets negatively affected if finances induce any development. This paper highlights the nonlinear relationship between the variables. Much before this Robert and Levine closely followed the ideas of Schumpeter and emphasized that financial system could support economic growth. Again here we can see a use of cross country analysis, sample consisting of 80 countries over the period ranging from 1960 to 1989. The empirical results are in line with the view point that financial services improve economic growth as it increases capital accumulation (King and Levine, 1993). One of the studies uses panel data for 101 countries in the period 1970-2010 to establish the findings that financial development and real sector output effects economic growth. The findings suggest that if private credit is not accompanied by growth in the real output, the effect of financial development on economic growth becomes negative. First difference generalized method of moments estimator is used to deal with the endogeneity issue, generalized method of moments procedure is used for generating efficient parameters (Ductor and Grechyna, 2015). In another cross country study the relationship between economic growth and financial development is looked upon, taking into consideration panel data for 52 middle income countries in the period 1980-2008 (Samargandi et al., 2015). It is found that these variables exhibit a nonlinear relationship in the long run; which is explained using pooled mean group estimation in a dynamic panel setting. In other words, it is stated that the finance beyond a threshold level effects growth in a negative manner. This non monotonic relationship is validated using the threshold model.

There are evidences in literature where the causal relation between the financial development and the real GDP is tested using a novel econometric method for time series analysis. The results do not support the idea that finance leads economic development rather there are evidences stating a bi-directional relationship between both. This work also gives insight to the fact that cross sectional data of countries for study considers all the countries as homogenous, which can lead to dangerous conclusion. 16 countries are included in the study (Demetriades and Hussein, 1996). The empirical finding of the study by Ram (1999) does not support the idea that financial development promotes growth. The data includes 95 countries over the period 1960-1989 and the findings revealed a largely negative covariance between financial development and economic growth. It's suggested that cross country analysis gives spurious results and hence in future more emphasis should be given to country specific studies, also suggesting that the exploration of parametric heterogeneity across the sample subgroups in cross country data in further research.

We discussed few country specific studies which are different from country specific studies, which give a better understanding of the relationship between financial development and economic growth. There is a country specific study, looking into the nonlinearity between financial development and economic growth specific to Nigeria. The study looks into the impact of financial reforms on the Nigerian economy with respect to the economic growth. The sample includes the annual data ranging from 1960-2010. Along with that the threshold effects have been established which gives interesting results. It gives evidences of financial development negatively impacting economic growth. The autoregressive distributed lag (ARDL) model is used to gauge the long run relation between them (Adeniyi et al., 2015). Similarly in Tunisia, it was empirically investigated if the financial development enhances economic growth during the period 1978-2008 using the Auto regressive distributed lag method to gauge the relationship between financial development and economic growth. The study establishes that financial development is a long run influencing factor in economic growth. There are policy recommendations that Tunisia should give priority to financial reforms which will

supplement for economic growth (Jedidia *et al.,* 2014). The countries that are studied here are African countries, namely, Nigeria and Tunisia. The relationship between financial development and economic growth is also analyzed for Kenya in the period ranging over 1971–2011(Uddin *et al.,* 2013). The study is based on a Cobb–Douglas production augmented function which also incorporates financial development. This is done using a simulation based ARDL bounds testing and Gregory and Hansen's structural break cointegration method. Cointegration has been established at certain breaks along with a positive impact of financial development on economic growth. Bhattacharya and Sivasubramanian (2003) look into a similar relationship for India. They try to establish a causal relationship between the financial development and economic growth in the period ranging from 1970-1971 to 1998-1999. The long run relationship is established using the techniques such as unit root and the cointegration analysis taking GDP, gross domestic product and M3, broad money which represents the economic growth and the financial development respectively.

From the literature we could understand that most of the research done is based on cross country analysis, and this often leads to issues of considering all countries as homogenous. Hence, we focus on country specific study. This was our rationale in taking India.

3. DATA AND METHODOLOGY

3.1. Composite term for financial development
Financial development is a large term thus it incorporates various dimensions of the economy. Therefore we can say there is no single appropriate variable that could be used as a proxy for financial development. We give equal weights to the variables in question to reduce the dimension of the financial development indicators, and came up with a single composite term for each year in the selected period, FD. We made the composite term for the Financial Development by using four variables namely, broad money (M2% GDP) , domestic credit to private sector (DCPS % of GDP) , total bank deposit (BD % of GDP), Liquid liabilities (LL % of GDP).

3.2. Model specification and model
The empirical specification to capture the impact of financial development on investment follows the following model represented in form of equation (3):

$$Y_t = \beta_0 + \beta_1 FD_t + \beta_2 TRA_t + \beta_3 INF_t + \beta_4 fldum_t + \mu_t \qquad \text{............................ (3)}$$

Where, Y is the real investment (proxied by the real gross fixed capital formation to GDP ratio), FD denoting financial development comprising of broad money (M2 as a percentage of GDP) , domestic credit to private sector (DCPS as a percentage of GDP) , total bank deposit (BD as a percentage of GDP), Liquid liabilities (LL as a percentage of GDP) . TRA accounts for the level of trade openness of the economy (proxied by the sum of exports to GDP and Imports to GDP ratio), INF is used as a measure of inflation at consumer prices and finally *fldum* accounts for the financial liberalization and μ_t is the error term.

The expected relationship in our study, between financial development and investment is positive, which is in line with the empirical research from literature. In the growth literature a positive relation between financial depth, real output and the real interest rate is predicted (King and Levine, 1993). The nexus between real output and financial depth is also studied in terms of money and capital (Mckinnon, 1973). The level of output could be increased with investment which could further be augmented by enhanced financial intermediation (Shaw, 1973).

For the empirical analysis, the annual time series data of India for the period ranging from 1975 to 2015 is used. All the data required are collected from the World Bank database, the World Development Indicators (WDIs),Global financial development database of world bank and the RBI's handbook of statistics and International Financial Statistics (2013, CD-ROM).

3.3. Methodology
Here we rely on autoregressive distributed lag model /Bounds Testing method of Pesaran and Shin (1998) and Pesaran *et al.* (2001) for estimating our model. This methodology is found to be advantageous over the previously used cointegration testing. For instance, it could be used on data set which is a mixture of I(0) and I(1) provided there are no I(2) variables. The ARDL model has a single equation structure, which makes it convenient to understand and implement. Moreover, in ARDL model different variables can be given different lag length when used in the model. Therefore to investigate the long run relationship between the growth, financial development and the control variables in the economy, we use the bounds test of co-integration in the ARDL model structure. The following model is estimated to examine both the short run and long run relationship:

$$\Delta Y_i = \beta_0 + \sum_{i=1}^{m} \alpha\, \Delta Y_{t-i} + \sum_{i=1}^{m} \gamma\, \Delta FD_{t-i} + \sum_{i=1}^{m} \psi\, \Delta TRA_{t-i} + \sum_{i=1}^{m} \omega\, \Delta INF_{t-i} + \sum_{i=1}^{m} \Omega\, \Delta fldum_t + \delta_1 Y_{t-i} + \delta_2 FD_{t-i} + \delta_3 TRA_{t-i} + \delta_4 INF_{t-i} + \delta_5 fldum_{t-i} + \varepsilon_t \qquad \ldots\ldots\ldots\ldots (4)$$

The ARDL procedure noticeably distinguishes between the dependent and explanatory variables. The variables used are already explained, β_0 is the drift variable that arises in the long run time series analysis and ε_t is the white noise error term.

3.3.1. ARDL bounds test procedure
The first step is to estimate the equation using the ordinary least squares (OLS), for testing the long run relationship among the variables. This is done by conducting an F-test or Wald Test for joint significance of lagged variables involved. The null hypothesis, $H_0: \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = 0$, states that there is no cointegration among the variable, whereas the opposite being true for the alternate hypothesis, $H_A: \delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq 0$. The F statistics that is calculated is compared with the critical value sets (at different intervals like 5% and 10%) formulated by Pesaran *et al.* (2001) which are specified as upper and lower bound i.e. I(1) and I(0). Analysing the values we can make inferences such as if the F-statistic is above the upper critical value, the null hypothesis stating there is no cointegration, is rejected i.e. there is a long run relationship between the variables. If the F-statistic is below the lower critical value, then we fail to reject the null hypothesis, which implies that the variables exhibit no cointegration. Finally if the F-statistic is caught between the lower and upper critical value, then we cannot make a logical conclusion.

$$\Delta Y_i = \beta_0 + \sum_{i=1}^{m} \alpha\, \Delta Y_{t-i} + \sum_{i=1}^{m} \gamma\, \Delta FD_{t-i} + \sum_{i=1}^{m} \psi\, \Delta TRA_{t-i} + \sum_{i=1}^{m} \omega\, \Delta INF_{t-i} + \sum_{i=1}^{m} \Omega\, \Delta fldum_t + \varepsilon_t \qquad \ldots\ldots\ldots\ldots\ldots (5)$$

Once the relationship between the variables is established, the long run coefficients of the ARDL model are estimated. The Akaike Information criterion (AIC) is used to select the optimum lag length for the long run model. The error correction model is used to capture the short run dynamics:

$$\Delta Y_i = \beta_0 + \sum_{i=1}^{m} \alpha\, \Delta Y_{t-i} + \sum_{i=1}^{m} \gamma\, \Delta FD_{t-i} + \sum_{i=1}^{m} \psi\, \Delta TRA_{t-i} + \sum_{i=1}^{m} \omega\, \Delta INF_{t-i} + \sum_{i=1}^{m} \Omega\, \Delta fldum_t + \Phi ECT_{t-1}\ \varepsilon_t \qquad \ldots\ldots\ldots\ldots\ldots (6)$$

4. EMPIRICAL RESULTS

4.1. Results of the unit root
Before we conduct the cointegration test, we check the order of integration for all the variables using the Augmented Dickey-Fuller test (Table 3). It's a known fact that ARDL does not require the testing of unit root but the doing so will help us understand if we should use the ARDL model or not. From the Table 3 we understand that only and the Inflation (INF) is stationery at level 0. But all the variables are significant after they are first differenced i.e. at level1. Hence, from the unit root results we can show that ARDL model is in fact more suitable for analysing the data set available then the earlier methods of cointegration like the Johansen cointegration model.

From the Table 1, we can see most of our variables are not stationery at level. Non stationarity has implication that can be explained statistically as well as economically. In economic terms we can say that the presence of non-stationarity means that the shocks will have permanent effect on the variables, which means there are no evidences of mean reversion. And statistically speaking, there are chances of the ordinary least square estimators leading to spurious results. Hence we use ARDL approach, as it meets our condition where our variables are a combination of both stationary and non-stationary.

Table 1: Unit root test

Variables	ADF test In level I(0)		ADF test First difference I(1)	
	Intercept	Intercept & trend	Intercept	Intercept & trend
GFCF	-1.0240	-1.7714	-6.5730***	-6.5371***
FD	0.8003	-2.0118	-4.7732***	-4.9988***
TRA	-0.2005	-1.8242	-5.9033***	-5.8358***
INF	-5.9281***	-5.8633***	-8.3545***	-8.2979***

Note: *, **, and *** indicate significance at 10%, 5% and 1%

The data set under consideration consists of a long period, and there are evidences of structural break. We conducted the chow test (Table 2) to ascertain the structural break in 1991, for which we got significant result. We then incorporated this structural break by introducing a dummy variable *fldum,* taking the value zero (0) before the breakpoint i.e. the period ranging between1961-1990 and the value one (1) after the breakpoint i.e. the period between ranging 1991-2015. This break indicates the liberalization of the Indian economy, as the year 1991 marks the introduction of the new economic policies, which targets a more open free and fair market system.

Table 2: Chow Breakpoint Test: 1991

Null Hypothesis: No breaks at specified breakpoints Varying regressors: All equation variables Equation Sample: 1961 2015			
F-statistic	13.78363	Prob. F(4,47)	0
Log likelihood ratio	42.68788	Prob. Chi-Square(4)	0
Wald Statistic	55.13453	Prob. Chi-Square(4)	0

4.2. Results of the cointegration test

We apply the ARDL bounds test approach to test the cointegration. The F-statistics calculated are shown in the Table 3. We got the F-statistics as 5.6628 which is greater that the upper bound critical value at 1% significance level. Therefore we cannot accept the null hypothesis that implies that there is no cointegration. From here we can say that the variables have a cointegrating relation between them, i.e., they display a long run relation. Hence we can look into the long run effects of financial development on the investment prospects of India, controlling for key growth factors such as trade and inflation.

Table 3: Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	5.662777***	4
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.50%	3.25	4.49
1%	3.74	5.06

4.3. Long run and short run: Impact and adjustment

The Table 4 shows the results for the estimation of the long run effects of financial development on investment in India. From the results we can see that FD is significant at 1%, Trade (TRA) is significant at 10% which implies trade openness, Inflation (INF) is significant at 10% and finally our dummy variable that incorporates the structural break is significant at 1% showing that the financial liberalization has effect on the investment structure in India. From the results we can understand that 1% rise in the financial development leads to 47% increase in the investment activities. From our model we get a negative relation between trade and investment, i.e. with 1% increase in the trade, the investment activities reduce by a 20%. Similarly when there is a 1 % increase in the prices (inflation), there is a 16% fall in the investment activities. The results show that financial development, trade, and inflation are robust determinants of investment. From the literature we could infer that an increase in the investment activities lead to a rise in the saving of an economy. A rise in the saving rate opens new growth prospects of a nation.

Table 4: Long run coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FD	0.4788***	0.0838	5.7162	0.0000
TRA	-0.2064*	0.1024	-2.0144	0.0519
INF	-0.1640*	0.0905	-1.8126	0.0787
FLDUM	2.3350*	1.1623	2.0090	0.0525
C	11.3811	1.3881	8.1988	0.0000

Note: *, **, and *** indicate significance at 10%, 5% and 1%

The results from the Table 5 show the short run dynamics of the model. How the investment is effected by the financial development, inflation and trade in the short run. An important factor here is the error correcting term (ECT), which is -0.4249. Therefore we can say that the speed of adjustment is 43.5%. ECT is negative and significant. The negative sign is the appropriate sign for it. ECT captures the speed of adjustment in long run as a reaction to the disequilibrium caused by the short run shocks of the previous period (Long and Samreth, 2008).

Table 5: Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GFCF(-1))	0.0790	0.1633	0.4840	0.6315
D(GFCF(-2))	0.1641	0.1512	1.0853	0.2854
D(GFCF(-3))	0.6039	0.1403	4.3053	0.0001
D(FD)	-0.1328	0.1398	-0.9502	0.3487
D(FD(-1))	0.0677	0.1966	0.3445	0.7326
D(FD(-2))	-0.1809	0.1233	-1.4672	0.1515
D(TRA)	0.1549	0.0592	2.6182	0.0131
D(TRA(-1))	0.2139	0.0672	3.1831	0.0031
D(INF)	-0.0697	0.0303	-2.3029	0.0275
D(FLDUM)	-0.275025	1.009347	-0.272478	0.7869
D(FLDUM(-1))	2.06135	1.323493	1.557507	0.1286
D(FLDUM(-2))	-3.020018	0.991465	-3.046015	0.0045
CointEq(-1)	-0.424997	0.134412	-3.161902	0.0033
Cointeq = GFCF - (0.4788*FD -0.2064*TRA -0.1640*INF + 2.3350*FLDUM + 11.3811)				

4.4. Diagnostic test

The R-squared value (Table 6) for the estimated model is 98%, therefore we can say that the goodness of fit of the model is good. We also conducted the Breusch-Pagan-Godfrey test to check for heteroscedasticity and found that there is no heteroscedasticity. We also used the Breusch-Godfrey Serial Correlation LM Test and concluded that there is no serial autocorrelation in our study. Further

we used the Jarque-Bera test and concluded for normality. We conducted the CUSUM and CUSUMSQ stability test and found that the results of the residual from ARDL equation lie between the critical boundaries of 5% significance level. Figure 1 shows these results. From all these statistics undertaken we can say that the long run and short run coefficients (error correction model) are steady.

Table 6: ARDL model diagnostic tests

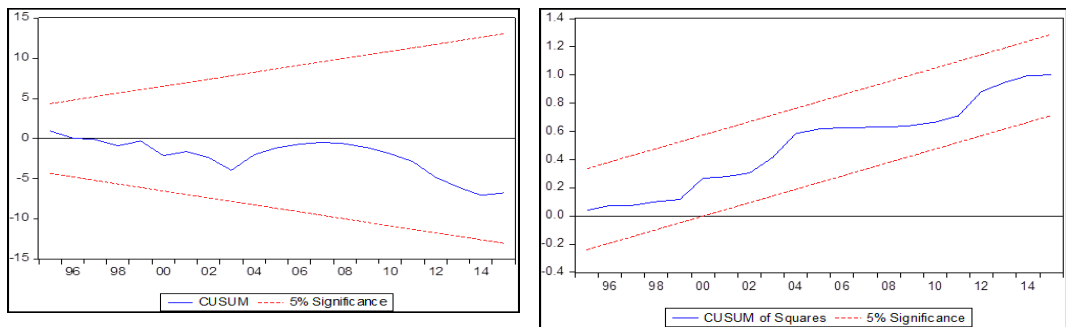|		
R-squared	0.9869	
Adjusted R-squared	0.9808	
	F-statistic	**Probability**
Heteroskedasticity	1.0364	0.4465
Normality (Jacque Bera test)	1.3108	0.5192
Serial Correlation	0.8923	0.4197

Figure 1: Plot of CUSUM and CUSUMQ

5. CONCLUSION AND POLICY IMPLICATION

This paper re-investigates the influence of financial development on investment activities overtime in India. We use ARDL approach to get conclusive results for this empirical study. The results suggest that the financial development has a positive and long run impact on the investment in India. We get a negative impact of trade on the investment, which implies that, the rise in trade activities are leading to reduction in the investment. This result can be interpreted by stating that the imports dominate the trade activities in India. Hence the results show a negative impact on investments. As increase in the imports will reduce the savings, therefore the investments will be lugged down. This in fact has a direct effect on the growth prospects of the country. Alongside this, the rise in the inflation will have a negative impact on the investment, which is already established in the literature. In our empirical study we get a negative relation between inflation and investment. In our study we are getting significant results which will be a boost to the existing literature in the area.

Growth of a nation is an important aspect for its global wellbeing. Hence, growth is studied in different forms and ways, which makes it all the more an interesting area of study. Here in this paper we have gone back to the literature and re-established the investment-saving relation, as one of the most basic channel influencing financial development on growth is the saving rate. And we know that an increase in the investments will induce growth prospects. The growth in the Indian financial system is in form of financial institutions, services and instruments. Apart from the financial institutions the NBFC's have played a role in financial system development. The savings and investment in the economy has been supported by the development taking place in the banking and non-banking financial sectors, which ultimately contributes to the real activities.

The financial development estimation is a complex procedure as we are trying to quantify a very large idea. To get the best essence of the varied aspects of financial development we use various proxies. But to get the more precise result we created an index, as an index will capture more delicate information available. From the literature as well as our research we came to an understanding that

the results are sensitive to the proxy we take to measure the financial development. Hence, using evidences from the literature we created an index FD. We constructed a composite term for each year in the period ranging from 1961-2015.The proxies used are broad money as a percentage of GDP, domestic credit to private sector as a percentage of GDP, total bank deposit as percentage of GDP, liquid liabilities as a percentage of GDP. This combination of component variables for our analysis is novel compared to other similar method of estimation of a financial development indicator. In the literature we find extensive use of principal component analysis to formulate the composite index for financial development. From our understanding we came to a conclusion that it would be wiser to give equal weight to the components of the index rather than use the PCA as our study deals with time series data.

From our key findings, and evidences we can say that that more growth could be induced by improving the access of financial services. A more inclusive financial development will have better representation in the growth of the economy, i.e. further develop the banking sector and ease in access to the financial service as well as crating awareness about these facilities would have excellent results. Finally government should focus on growth while controlling the inflation and help in promoting more domestic credit availability.

5.1. Robustness checks

Our model has effectively passed all diagnostic and stability test, so we carry out different robustness checks to observe the sensitivity of our results to alternative model specifications. We begin by re-examining our models with individually taking every single measure that constitutes the financial development, FD namely domestic credit to private sector, bank deposits as a percent of GDP, Broad money as a percent of GDP and Liquid Liabilities as a percentage of GDP are included in the index individually.

The results indicate a positive and significant effect on investment in relation to these measures. We used four different models (Table 7, Table 8, Table 9 and Table 10) to assess the same relation, and from here we can conclude that our results are robust. This justifies our results and the model used. In form of summary we can say that our results are strong with respect to different model specifications. Inferring from this we can conclude that our results that financial development has a positive impact on the investment activities hence the growth prospects of the India. And overall we can see that there is a negative impact on investments with respects to trade.

Table 7: Model 1 long run coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCPS	0.7655***	0.2124	3.6041	0.0009
TRA	-0.5421**	0.2564	-2.1142	0.0413
INF	-0.1412	0.1334	-1.0585	0.2967
FLDUM	6.7154***	2.1834	3.0755	0.0039
CointEq(-1)	-0.2742	0.1244	-2.2031	0.0339
C	13.4711	1.8958	7.1054	0.0000

Note: *, **, and *** indicate significance at 10%, 5% and 1%

Table 8: Model 2 long run coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BD	0.4389	0.0882	4.9715	0.0000
TRA	-0.1522	0.1088	-1.3987	0.1709
INF	-0.1652	0.0987	-1.6730	0.1035
FLDUM	1.7023	1.3425	1.2680	0.2134
CointEq(-1)	-0.3636	0.1245	-2.9194	0.0062
C	13.6733	1.4648	9.3340	0.0000

Table 9: Model 3 long run coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TRA	-0.2249	0.1321	-1.7022	0.0978
INF	-0.1753	0.1087	-1.6132	0.1159
FLDUM	1.7260	1.4623	1.1803	0.2461
LL	0.4882	0.1054	4.6286	0.0001
CointEq(-1)	-0.3429	0.1247	-2.7494	0.0095
C	9.0067	1.8620	4.8369	0.0000

Table 10: Model 4 long run coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TRA	-0.2543	0.1262	-2.0146	0.0517
INF	-0.2150	0.1163	-1.8473	0.0732
FLDUM	1.4810	1.4208	1.0423	0.3044
M2	0.4454	0.0870	5.1176	0.0000
CointEq(-1)	-0.3758	0.1303	-2.8833	0.0067
C	10.6617	1.7069	6.2460	0.0000

5.2. Model of growth

We propose a supply leading approach to understand the finance growth nexus, which is in line with the Schumpeterian thought. A sound financial system will enhance the innovation and growth prospects of an economy. With availability of proper credit system, and knowledge about the same more people would be interested in investment and saving activities. This idea has a direct link to the rise in the productivity of the economy. Once the rise in productivity is achieved, there will be more trade activities. There will be a rise in the export. The worldwide status of the nation will be improved. This would represent itself in form of healthy economic indicators. Finally, we would be able to see India with better living conditions, better infrastructure, more health facilities, higher literacy and many other social indicators.
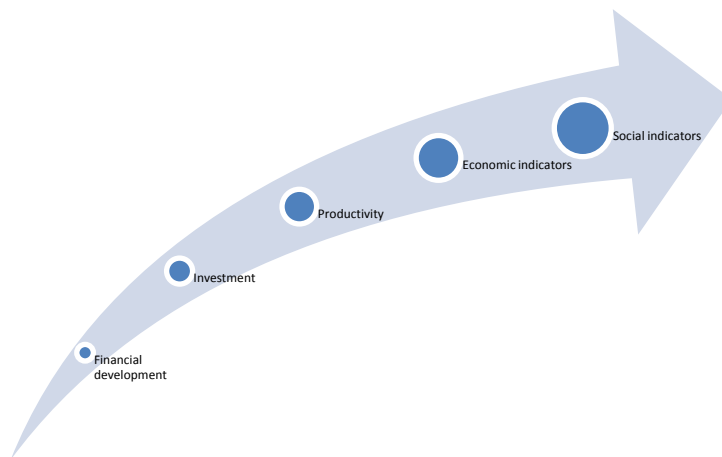
Source: Self-generated by authors

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