Role of Finance in Economic Growth in India: An Empirical Analysis
Parul Mishra
Assistant Professor
Narayan Arya Girls P.G. College, Farrukabad U.P.

Abstract

This paper uses quarterly data from 1991 to 20015 to examine the impact of financial development on economic growth in India during the post-reform reform period. This study used ADF and PP tests to identify quiescent states between variables. Since most financial variables are inherently volatile, if the study performs a regression analysis directly on highly volatile data, the results may be suspicious and unexpected. Therefore, the study conducted a fixed test and found that financial development, i.e., M3 / GDP and growth rate is integrated at the level of 5%, to the level of significant I (1). Second, Johnson and Jesusiu (1991) were used to find long-term relationship cointegration vectors. The sign of the M3 / GDP coefficient is positive to previous expectations. India has a positive impact on financial development. Demonstrates that financial development plays an important role in India's economic growth. Integral relations support the existence of long-term equilibrium relationships between variables in the context of India. It also reports on Granger causality, supporting the findings supporting India's financial-driven growth hypothesis. The study concludes that financial development is more conducive to long-term growth and in the long run is not the opposite as one of the determinants of economic growth. Increasing money market interest rates have a positive impact on economic growth.

Keywords: financial development, reform, economic growth, co-integration, causality.

Introduction

There are numerous studies on the link between financial development and economic growth. Recently, this relationship has become a matter of extensive analysis. The question is whether financial development precedes economic growth or simply follows economic growth. In general, the development of the financial sector is expected to have a positive effect on economic growth. Since the early 1990s, the Indian economy has been undergoing economic reforms, including the financial sector. The financial sector reforms were mainly accompanied by reforms of the banking system and capital markets. With interest rate deregulation, the Indian banking system has been market-driven since 1991. After the influential work of Goldsmith (1969), Mackie Non (1973) and Shaw (1973), there has been a long debate about the role of financial brokers. Promotes long-term growth In the 199s, a series of theoretical papers contributed to this debate, including Greenwood and Jovanovic (1990), Bencivenga and Smith (1991, 1993), Obstfeld (1994), and Saint-Paul (1992) (2). Theoretical models
discuss conflicting inferences about whether the stock market and banks act as substitutes or complements to each other (see Boyd and Prescott (1986) and Stiglitz (1985)) (3). Theoretical models began empirical research exploring the relationship between banks, stock markets, and economic growth. King and Levine (1993a, b) show that bank development helps explain economic growth in a sample of 80 countries.

Levine (1998, 1999), Beck, Levine and Loayza (2000), and Levine, Loayza and Beck (2000) made similar observations. However, these studies did not lead to inferences about whether a positive relationship between banks and economic growth is maintained even after controlling stock market development. But Levine and Zervos (1998) are an exception. They found in stocks in 47 countries that stock market liquidity and bank development are both strong predictors of economic growth. (4)

Beck and Levine (2004) confirmed these findings, but Levine and Zervos (1998) (i) used average moving average data for five years, (ii) controlled many other growth determinants, and (iii) generalized Methodology technology for dynamic panels covering 40 countries. Arestis, Demetriades, and Luintel (2001) also examine the relationship between stock market development and economic growth while controlling the effects of stock market volatility, applying time series methods to banks and five developed countries(5). They confirmed the findings of Levine and Zervos in only three countries. Studies in the other two countries have shown that bank-based financial systems are more powerful than the stock market in promoting long-term growth. (6)

The purpose of this white paper is to further explore the relationship between Indian financial development and economic growth in the post-reform era. Specific goals include the following: (7)

1. How financial development drives growth in India
2. Focus on quarterly data to track the relationship between financial development and economic growth in India after the post-reform period.

The rest of the paper is organized as follows: Section 2 addresses the rationality of the study. Section 3 provides an overview of the financial sector reforms in India. Section 4 literature review and experimental results. Chapter 5 deals with methodology problems and data used in empirical analysis. Chapter 6 presents the experimental results. Section 7 explains the conclusions and policy implications. (8)

**Rationality of the Study**

India is one of the most emerging countries in the world in the recent era, particularly since the globalization of 1991. Globalization is a process, by which an economy gets integrated with the rest of the world. It brings growing interdependencies of economies across the world, particularly through trade, investment and financial flows(9). Though it was initially initiated in India during 1970s and 1980s, these attempts were considered as half-hearted, self-contradictory and often self-reversing in nature. On the contrary, globalization in the 1990s has been much wider and deeper
and decidedly marked a ‘Uturn’ in the direction of economic policy followed by India during the last forty years of centralized economic planning (1950-1990). India’s transition to globalization era is from an economic regime of state-led growth (10). The regime had a strong commitment to a development strategy of self-reliance and import-substitution industrialization, based on massive public investments in long-term capital-intensive projects. The globalization of 1990s has generated a mixture of achievements and failures in the Indian economy (Pradhan, 2006). One of such achievements is attainment of economic growth and its link with financial development, particularly in money supply, foreign trade, market capitalization and bank credit (11). The empirical researches, discussed in the previous section, suggest that there is nexus between financial development and economic growth. Hence, we like to investigate the same in India, particularly during the globalization regime of 1990s.

3. An overview of the financial sector reform in India

Financial sector reforms in India were introduced as a part of the economic reform programme initiated in 1991. The principal objective of financial sector reforms was to improve allocative efficiency of resources, ensure financial stability and maintain confidence in the financial system by enhancing its soundness and efficiency (Gopinath, 2007) (12). In August 1991 the Indian government appointed the Narasimham Committee to look into all aspects of the financial system and make comprehensive recommendations for reforms. The Committee, submitted its report in November 1991, recommended various reform measures for the banking sector and the capital market. The government broadly accepted the recommendations without delay and the process of reform was set in motion. We shall discuss briefly the major reforms introduced in the banking sector and the capital market in India since then. (13)

Following the recommendations of the Narasimham Committee, the interest rate was liberalized in 1991. Interest rates on time deposits were deregulated gradually. With effect from October 1997 interest rates on all time deposits, including fifteen days deposits, have been freed. However, the rate on savings deposits remained controlled by the Reserve Bank of India. Lending rates were also decontrolled (14). The Reserve Bank of India now controls only the interest rate charged on export credit, which accounts for only 10 percent of commercial advances (Ahluwalia, 1999). The banking sector in India remained heavily regulated for long time. Public sector banks accounted for about 93% of total deposits. Now the monopoly of public sector banks has been dismantled because of entry of foreign and private banks and share the deposit and credit market by them. Because, after reforms the Government removed the restrictions on entry and expansion of private banks, and reduced those on foreign banks also. Even now the public sector banks continue to dominate the banking industry (15). The reserve requirements which ensures the liquidity of banks, also imposes a significant cost on the banks since the interest received on the reserves is low i.e. around 4% per annum. The requirement ranges is 3% to 20% in India. Since reforms of 1991 this ratio has
progressively come down and now it is 4%. The SLR which reached to 38.5% in 1991 was reduced to its low level 20.50%. India has partially liberalized the interest rates structure and continues to regulate interest rates on priority sector loans.(16). Thus, India retains a ceiling on the maximum deposit rate that can be paid on fixed deposits with banks. However, following the reforms nominal interest rates were significantly raised. The reforms were followed by significantly foreign capital inflows, which led to excess liquidity and these slightly lower interest rates. Thus, it is clear that in the pre reform period, interest rates were significantly below market clearing level in India. The interest rates in India were mostly controlled by the Government prior to reforms. Money market rate, Government bond rates, real rate of interest, nominal deposit rates, State Bank of India (SBI) advance Rate, commercial papers and company deposits rates have been liberalized completely. Money market rates, before 1970 were very low around 4.5%. During the 1970’s, there was upward trend with high fluctuations, however, during the 1980s, the rates have moved upwards(17). During the 1960s, the average real interest rates remained minus (i.e. -1.20). Even during early 1970’s, they were negative but have been moderately positive since then. During the 1980s, especially 1984 onwards, real rates remained positive. And 1991 onwards this rate remained positive mainly interest rates have assumed a key role as an instrument of macroeconomic policy. Since the 1970s, driven by McKinnon & Shaw hypothesis, policy authorities have rolled back repression regimes and have undertaken concerted reform measures in their endeavor to strengthen competition and improve the functioning of financial markets. Deregulation of interest rates is the most common element of financial reforms occurring around the world. Shifts in operating procedures of monetary control have accompanied these changes in the policy environment, paving the way for a shift from direct instruments to indirect instruments of monetary control. Short term interest rates have become the key instrument through which central banks transmit policy impulses to the financial market. (18)

Increase in competition via more liberal rules for the entry of new domestic and foreign banks, raising the number of banks from 70 to over 90 by March 2004. Recent consolidation in the industry has reduced the number of total number of banks to 80 with number of foreign banks declining from a peak of 40 to 29 and private banks shrinking to 27 by end March 2007. Since 1993, twelve new private sector banks were set up but some of them have already either merged with other PSBs or private banks or have gone out of business. Foreign direct investment in private sector banks is allowed up to 74%.(19)

4. Literature Review and Empirical Findings

Financial markets perform several functions which in turn exert a positive influence on growth (see Levine 1997): they reduce liquidity and idiosyncratic risks, enhance the allocation of resources towards to their more productive uses, improve monitoring and corporate control, mobilize savings, and facilitate specialization a deeper financial systems are associated with a more effective supply of these financial services to the real sector(20). The thesis that financial
development can influence economic growth and structural change has received strong theoretical underpinnings that identify two distinct, yet complementary channels. On the one hand, it is argued that the financial sector may influence growth through the accumulative channel and the allocative channel. The accumulation channel emphasizes the finance-induced positive effects of physical and human capital accumulation on economic growth (e.g. Pagano, 1993; De Gregorio and Kim, 2000). The allocation channel focuses on the rising efficiency of resource allocation which is caused by financial deepening and which subsequently enhances growth (e.g. King and Levine, 1993) (21). Vamvakidis (2002) and Harrison (1996), amongst others reported openness to international trade affects economic growth positively. Openness to international trade can lead to an increase in specialization that will accelerate productivity growth by more fully realizing economies of scale. Moreover, the more open economy is expected to face more competitiveness and which stimulates productivity, which in turn stimulates economic growth huge empirical studies have emerged since the 1990s. Put briefly, those studies have mostly concluded that financial development positively contributes to the economic growth, although more country-specific researches are required to explain the heterogeneity across the countries. These studies can be roughly divided into two lines(22). While cross-country studies usually start with the priori assumption that finance influences growth, time series studies are largely devoted to finding the causality patterns suggested by Patrick (1966)’s hypotheses, stated that the relationship between financial development and economic growth is bidirectional, namely, supply leading and demand-following. In addition, he argued that the direction may gradually shift from the former to the latter over time as an economy develops. We therefore review country specific study to see the direction of causality among financial development, trade openness and economic growth. Sanjaya Kumar (2015) finds a co-integration relationship between financial sector development and economic growth. (23)

It concludes that financial development can be interpreted as one of the long run determinants of economic growth, not vice-versa. Pal, Mahendra (2013) empirically tested the hypothesis of Finance – led growth in India. For this it traces the relationship between growth rate of GDP and the M3/GDP ratio, well researched indicator of Financial Deepening for the period of 33 years (i.e, 1971-2004) and found that 1% increase in the level of M3/GDP causes growth rate to rise by 0.54%. Results support the view that finance is a leading sector in the process of Economic development(24). He find considerable evidence of unidirectional (i.e. causality runs from finance to growth) in India. Indrani Chakraborty (2010) examined little support to the theoretical prediction that the development of stock market would play an important role in enhancing economic growth in India. Instead, the banking system reform appears to have promoted economic growth significantly. These results support the view that in India stock markets are no substitutes for the banking sector, unlike in some emerging economies like Chile and Mexico. Yucel (2009) examined the causality relations
between financial development, trade openness and economic growth (GDP) for the Turkish economy for the period 1989 to 2007. The econometric method employed was the Johansen and Juselius co-integration and Granger causality to test for causality test among the variables. The findings of the study showed that while trade openness has a positive effect, financial development has a negative effect on growth(25). Moreover, the Granger causality test results revealed the presence of bi-causal relationship between financial development, trade openness and growth indicating that economic policies aimed at financial development and trade openness have a statistically significant impact on economic growth. Hassan and Islam (2005) examined whether financial development and openness to international trade can play any positive role in reducing poverty in Bangladesh through their growth enhancing effect for the period 1974-2003 Standard Granger-causality test is employed to ascertain whether financial development and trade openness cause growth.. Variables are found first difference stationary without having any co-integrating relationship as reported by Johansen co-integration test. As such Granger-causality test is carried out in first difference VAR. The paper does not find any causal relationship between trade openness and growth, and financial development and growth. This implies that financial development and trade openness do not reduce poverty through their effect on growth(26). However, bi-directional causal link evidenced between financial development and trade openness indicates that these two can contribute to poverty reduction directly through their mutual effect on each other. Soukhakian (2007) empirically investigated the causal relationship between financial development, trade openness and economic growth in Japan covering the period 1960-2003. Results suggest that a long run equilibrium relationship exists between financial development, trade and economic growth in Japan except between domestic credit (second measure of financial development), trade and growth. The results of Granger Causality tests suggest that financial development as proxied by broad money gives causation to economic growth that supports the supply-leading growth hypothesis for the Japanese economy and support the growth-driven trade (GDT) hypothesis, which claims that economic growth causes “more efficient imports and exports” for Japan. Katiricioglu, Kahyalar and Benar (2007) aimed at investigating the possible co-integration and the direction of causality between financial development, international trade and economic growth in India. Annual data covering the 1965-2004 period have been used to investigate co-integration and Granger causality tests between financial development, international trade, and growth after employing unit root tests to see if the variables under consideration are stationary. Results reveal that there is a long-run equilibrium relationship between financial development, international trade and real income growth in the case of India. (27) Furthermore, unidirectional causality was investigated that runs from real income to exports and imports, from exports to imports, M2 and domestic credits, from M2 to imports, from imports to domestic credits. Bidirectional causality has also been obtained between real income and M2, and between real income and domestic credits. Finally, no direction of causality has been obtained between M2
and domestic credits. Wong Hock (2005) investigated the impact of openness to international trade and financial development on economic growth in Malaysia. The empirical model in the study is based on an augmented production function, where the real GDP per capita is specified as a function of the employment, the capital, a measure of openness to international trade and financial development. The study uses different measures of financial development. The unit root test results show that on the whole all the variables are found to have a unit root. Moreover, the results of the Johansen (1988) multivariate cointegration procedure show that economic growth, the employment, the capital, a measure of openness to international trade and financial development are cointegrated. All the variables are found to have the expected signs, except the measures of financial development in Model 3 and Model 4, when data set 1970-1996 is used. ECMs are estimated. The results show openness to international trade and financial development to have a significant impact on economic growth. Generally, the results suggest that openness to international trade and financial development are important for economic growth in Malaysia.

Furthermore, there is strong evidence that openness to international trade Granger causes economic growth and not vice versa. However, Granger-causality between financial development and economic growth was found to be less robust, depending on the measure of financial development. Rajan and Zingales (2003), the joint test between trade openness (TO) and capital flows (CF) is conducted using x2 test statistic. If β2 and β3 are positive and jointly significant, this implies that the combination of financial and trade openness exerts holds, revealing that a small increase in either trade openness or capital flows would then result in greater financial development or both jointly determine the financial development.

Yanikkaya (2003) examined the impact of openness to international trade on economic growth of over 100 developed and developing countries using panel data from 1970 to 1997. The results showed that openness to international trade does not have a simple and straightforward relationship with economic growth. However, contrary to the conventional view on economic growth effects of trade barriers, the results showed that trade barriers were positively and, in most specifications, significantly associated with economic growth, particularly for developing countries and they were consistent with the findings of theoretical economic growth.

5. Research Methodology

This study tests for the long run relationship and direction of causality between financial development and economic growth. In doing this, the study will carry out a stationary test, co-integration test and Granger causality test. The stationary test is to help determine if the time series are stationary or not as empirical literature has argued that estimation of time series data that have unit root will produce a spurious result. Also, the co-integration procedure will explore the possible long run relationships among the variables in the model and interpret the evidence of this relationship as the interdependence between the
variables. The Granger causality test which is the main purpose of this work will be carried out within the multivariate framework as against the bivariate framework that is commonly used. This will help to determine the direction of causality and feedback among the variables in Indian scenario from 1991Q3-2015Q4. (28)

5.1 Unit Root Test

The standard regression analysis is based on the condition that the variables being used are stationary. However, many macroeconomic time series variables are often not found stationary; they trend up and trend down over time. Therefore, before regression analysis can be carried out on time series variables, test for stationary must be done to avoid getting bias estimates or spurious results. The Augmented Dickey Fuller (ADF) test examine the presence of unit root among the variables (or non-stationary) or otherwise. This is based on the regression equation in the form:

\[ \Delta Y_t = \alpha_0 + \alpha_1 \beta Y_{t-1} + T + \sum_{j=1}^{m} \beta_j \Delta Y_{t-K} + \varepsilon_t \quad \ldots \ldots \quad (i) \]

Where \( Y_t \) is the time series, \( \Delta \) is the first difference operator, \( T \) is the linear trend, \( \alpha \) is a constant and \( \varepsilon_t \) is the error term. The null hypothesis of existence of unit root is \( \beta = 0 \).

The significance of \( \rho \) will be tested against the null (\( \rho=0 \)) based on t-stat on \( \rho \) obtained from the OLS estimates of the above two equations. Thus, if the null hypothesis of non-stationary cannot be rejected, the variables are differenced until they become stationary. It is after this is done that we will proceed to test for co-integration.

5.2 Co-integration Test

It is known that if the variables are non-stationary, they should be differenced before being used in the regression model to avoid a spurious regression. If the variables are co-integrated or there is a stable long run equilibrium relationship between them over time, then they could be used in the regression model in the level forms without leading to a spurious regression. There are numerous tests that were acknowledged in the literature for co-integration analysis such as the Co-integrating regression Durbin-Watson test, Engle-Granger Co-integration test and Johansen Co-integration test. We will use Johansen test to test for co-integration between the variables in the empirical model because it has an advantage over other previously mentioned tests as it takes into consideration the possibility of multiple co-integrating vectors. The Johansen co-integration equation starts from vector auto regression.

\[ \Delta Y_t = \mu + A_1 Y_{t-1} + \ldots + A_p Y_{t-p} + \beta X_t + \varepsilon_t \quad \ldots \ldots \quad (ii) \]

When \( Y_t \) is a k-vector of the 1 (I) variables, \( \varepsilon_t \) is an \( X_t \) vector of innovation. The VAR can be written as:

\[ \Delta Y_t = \mu + \Pi Y_{t-1} + \ldots + \sum_{t=1}^{p-1} \Gamma Y_{t-p} + \beta X_t + \varepsilon_t \quad \ldots \ldots \quad (iii) \]

In co-integration test of Johansen he develops two different tests to check the long run relationship between variables. The equation (iv) and (v) represents the trace and max statistic.

\[ J \text{Trace} = -T \sum_{i=r+1}^{p} \eta_n (1-\lambda_i) \quad \ldots \ldots \quad (iv) \]

\[ J \text{max} = -T \eta_n (1-\lambda_{r+1}) \quad \ldots \ldots \quad (v) \]
Where $Y_t$ is the time series, $\Delta$ is the first difference operator, $T$ is the linear trend, $\alpha$ is a constant and $\epsilon_t$ is the error term. The null hypothesis of existence of unit root is $\beta$ is 0.

### 5.3 Granger Causality Test

It is a statistical test of causality that is based on prediction. According to Granger, if a signal $X_1$ “G causes” a signal $X_2$, that means the past value of $X_1$ contains information to predict $X_2$. We will use the Granger causality test to know the direction of the causal relationship among the variables in our empirical model. The intuition behind Granger causality tests can be expressed using the following equations:

\[
\Delta Y_t = \alpha_0 + \sum_{i=1}^{p} \alpha_1, i Y_{t-i} + \sum_{i=1}^{p} \beta_2, i X_{t-i} + \epsilon_{1t} \quad \text{..... (vi)}
\]

\[
\Delta X_t = \mu + \sum_{i=1}^{p} \delta_1, i X_{t-i} + \sum_{i=1}^{p} \theta_2, i Y_{t-i} + \epsilon_{2t} \quad \text{..... (vii)}
\]

The Granger causality test thus helps to determine the direction of causality between the current account deficits and the budget deficit. If a specific variable ($Y$) can be forecasted by its own lagged values as well as the current and lagged values of another variable ($X$), ($X$) is said to Granger-cause ($Y$).

If only as in equation (vi) were significant and as are insignificant in equation (vii), it means that ($X$) granger causes ($Y$), and vice versa. If both as and as were insignificant, it means that ($Y$) and ($X$) are independent from each other, if both as and as were significant, it means that a feedback causal relationship exists between ($Y$) and ($X$).

### 5.4 Model Specification

To proof whether financial development is causing economic growth in India, we constructed a model.

\[
F.D = f (GDP) \quad \text{..... (viii)}
\]

**Econometric Specification:**

\[
Y = \alpha + \beta F.D + \epsilon \quad \text{..... (ix)}
\]

**Log form**

\[
\log y = \log \alpha + \beta \log F.D + \epsilon \quad \text{..... (x)}
\]

We use the following notations.

**Variables**

- $F.D = $ Financial Development or $M3/GDP$
- $GDP = $ Gross Domestic Product at Factor Price

### 5.6 Overview of the variables (Data) used

The empirical analysis is carried out using quarterly data for India for the period 1991Q1 to 2015Q4. The data series have been directly obtained or compiled from Handbook of Statistics on Indian Economy, 2015-16 (Reserve Bank of India), Reserve Bank of India Bulletin (various issues), International Financial Statistics (International Monetary Fund, various issues) and Organization for Economic Co-operation and Development (OECD) database. (29)

### 6. Empirical Findings

#### 6.1 Result of Unit root test

The results of unit root test are presented in the table 1 and 2. The pre-requisite of time series analysis is to bring the stationary of each variable over the sample period. For this, the study used ADF (augmented Dickey-Fuller) and PP (Phillips Peron) unit root test to investigate stationary of each time series data involved in this analysis. The ADF unit
root test requires the estimation of the following regression:

\[ X_t = \alpha + \beta t + \rho X_{t-1} + \mu t \quad \ldots \quad (xi) \]

Where, \( \alpha \) is the intercept, \( \beta \) is the coefficient of lagged term, \( \rho \) is the number of lagged term chosen to ensure that \( \mu \) is white noise. The optimal lag length is chosen by Akaike Information Criteria (AIC). Based upon this estimate, the hypothesis of test are:

H0: \( \rho = 1 \), i.e. there is a unit root – the time series is non stationary.

H0: \( \rho < 1 \), i.e. there is no unit root – the time series is stationary.

The results indicate that the variables considered in this paper, financial development (M3/GDP) and gross domestic product (GDP) analysis are non stationary I(1) variables. Variables such as the log of GDP and log M3/GDP appears to be non stationary at the level trend terms are included in the regressions (see Table 1 and 2).

Finally, the result of ADF unit root test shows that the null hypothesis of presence of unit root is rejected at their level. To check the reliability of the unit root result found in the ADF test, we conducted Phillips-Perron (PP) test. When the variables are stationary in their level form, there is no need to check their first difference. After confirming stationery in all series, the study proceeds to conduct cointegration test to ascertain that the variables are co-integrated..

**Table-1 Unit root test (Level) for LOGM3/GDP**

<table>
<thead>
<tr>
<th>Augmented Dickey Fuller (ADF)</th>
<th>Phillips Perron (PP)</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test statistic</td>
<td>t-Statistic</td>
<td>Prob.*</td>
</tr>
<tr>
<td></td>
<td>-8.516015</td>
<td>0.0000</td>
</tr>
<tr>
<td>Test critical values:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1% level</td>
<td>-4.054393</td>
<td>-4.053392</td>
</tr>
<tr>
<td>5% level</td>
<td>-3.456319</td>
<td>-3.455842</td>
</tr>
<tr>
<td>10% level</td>
<td>-3.153989</td>
<td>-3.153710</td>
</tr>
</tbody>
</table>

Source: Calculated with the help of Review 7

MacKinnon’s (MacKinnon, 1991) tabulated value has been used to test the level of Significance. I (1): Integrated of order one

**Table-2 Unit root test (Level) for LOGGDP**

<table>
<thead>
<tr>
<th>Augmented Dickey Fuller (ADF)</th>
<th>Phillips Perron (PP)</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test statistic</td>
<td>t-Statistic</td>
<td>Prob.*</td>
</tr>
<tr>
<td></td>
<td>-7.570207</td>
<td>0.0000</td>
</tr>
<tr>
<td></td>
<td>-7.637883</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

I(1)
MacKinnon’s (MacKinnon, 1991) tabulated value has been used to test the level of significance. I (1): Integrated of order one

6.2 Johansen Co-Integration Test

Since both variables are stationary after first difference, it is appropriate to test whether the variables are co-integrated. The first step of Johansen – Juselius procedure is to determine the lag order. Since we have annual data and the variables achieve stationary after first differencing. The maximum number of lags used by applied researchers for annual data is two. Although, we report the results of only one lag, we have also tested with two lags. However, we get the same results.

Table- 3 gives results of the co-integration tests with GDP and M3/GDP growth rate in the trended. In the trended cases, there is a strong evidence of a long run relationship among the variables, where trace statistic (26.37671) is greater than critical value of 5% (15.49471). The results suggest that financial development as one of the long run determinant of economic growth.

<table>
<thead>
<tr>
<th>Test critical values:</th>
<th>1% level</th>
<th>5% level</th>
<th>10% level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-4.059734</td>
<td>-3.458856</td>
<td>-3.155470</td>
</tr>
</tbody>
</table>

Source: Calculated with the help of Review 7

<table>
<thead>
<tr>
<th>Hypothesized CE(s)</th>
<th>No. of CE(s)</th>
<th>Eigenvalue</th>
<th>Trace Statistic</th>
<th>0.05 Critical Value</th>
<th>Prob.**</th>
</tr>
</thead>
<tbody>
<tr>
<td>None *</td>
<td>0</td>
<td>0.205726</td>
<td>26.37671</td>
<td>15.49471</td>
<td>0.0008</td>
</tr>
<tr>
<td>At most 1</td>
<td>1</td>
<td>0.063908</td>
<td>2.877665</td>
<td>3.841466</td>
<td>0.0553</td>
</tr>
</tbody>
</table>

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

6.3 Granger Causality Results

We carried out the test of causality with the help of Granger Causality Test. Growth rate of Financial Development causes the growth rate of income in Indian Economy. It shows unidirectional results i.e., from Financial Development to growth during the period of 25 years after post reform period on quarterly data i.e., (1991Q1-2015Q4). Table –4 shows the causality results in which M3/GDP running towards causing GDP with F-Statistic value of 3.74. Indian panel shows
the direction from finance to growth. It means that India is a case of Supply Leading Hypothesis. Patrick (1966) designed two hypotheses in the context of Developed and Developing Countries. He talks about the application of Demand Following Hypothesis in the case of developed countries and while the application of Supply Leading Hypothesis in the case of developing countries. India is a case of Supply Leading Hypothesis that increasing the growth rate. However these results cannot be conclusive. (30)

**Table- 4 Granger Casualty Test**

<table>
<thead>
<tr>
<th>Null Hypothesis:</th>
<th>Ob’s</th>
<th>F-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOGGDP does not Granger Cause LOG M3</td>
<td>85</td>
<td>0.18487</td>
<td>0.9064</td>
</tr>
<tr>
<td>LOGM3 does not Granger Cause LOGGDP</td>
<td>3.74887</td>
<td>0.0015</td>
<td></td>
</tr>
</tbody>
</table>

Source : Calculated with the help of Review 7

### 7. Conclusions and Policy Implications

This paper has examined the impact of the financial development on economic growth in India in the post-reform period by using quarterly data for the period 1991 to 20015 for India. The study used ADF and PP test to check the stationary among the variables. Because most of the financial variables are highly volatile by nature, if the study conduct direct regression in high volatility data the result may be spurious and unexpected. So the study conducted stationary test and found variables Financial Development i.e., M3/GDP and growth rate are integrated at level and significant 1 (I) at 5% level. Secondly, for the purpose of finding long run relationship co-integration vector we have used Johnsoen and Jesulisu (1991). The sign of coefficient of M3/GDP is positive a priori expectations. India has the positive impact of financial development. It shows that financial development is playing a significant role in the economic growth in India.

The co-integrating relationship supports the existence of long run equilibrium relationship among the variables in the context of India. We also report the Granger causality to support our findings, which support the hypothesis of Finance-Led Growth in India. Here the study concludes that, the financial development is more helpful in long run growth and as one of the long run determinants of economic growth, not vice-versa. An increase in the money market rate of interest has a positive significant effect on economic growth. The policy implication of this result is that financial development is considered as the policy variable to accelerate economic growth and economic growth could be used as the policy variable to generate financial development in the economy.

Hence to maintain sustainable economic growth, government has to deepen the financial sector, further financial sector reforms to improve the efficiency of domestic financial sector and undertake essential measures to strengthen the long
run relationship between financial development and economic growth.

These measures include more financial integration, minimize government intervention in the financial systems, increasing the status of financial institutions, etc. These are very crucial and useful for strengthening the relationship between financial development and economic growth. The lack of same not only affects the finance-growth relationship but also overall socio-economic development in the country. Hence, government has to take the initiative with greater caution.

References


