Research Article

Financial Development and Economic Growth: Evidence from Indian Economy

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Abstract:

This paper examines the relationship between financial development and economic growth in India from 1970-71 to 2008-09. Using a multi-variable VAR model, the competing hypothesis of supply-leading versus demand-following hypothesis is tested empirically. The results from Johansen and Juselius co integration test supports for the existence of long run equilibrium relationship exist among variables of financial development and economic growth for Indian economy. Further, the results from Granger causality tests based on vector error-correction models (VECM) suggests unidirectional causality running from financial development to economic growth. This result supports the supply leading hypothesis for Indian economy during the sample period. This finding highlights the importance of financial development in India's recent growth.

Keywords: Financial development, Economic Growth, Granger Causality, Co integration, VAR, VECM, India

1. Introduction:

Some economists hold the view that financial development is a precondition for achieving higher economic growth. This notion of "supply leading" role of financial development emerged in the literature due to Patrick (1966). A distinctly opposite view has also emerged in that literature as "demand following" role of financial development. The demand following hypothesis argues for a reverse causation from real economic growth to financial development.

The main objective of the present paper is to investigate whether financial development leads to economic growth or vice versa, using multivariate VAR models for Indian economy, over the period from 1970-71 to 2008-2009. Testing the relationship between economic development and economic growth for Indian economy is important due to several reasons.

The financial market in India which was laying as a dormant segment of the financial system has undergone metaphoric transformation since the mid eighties involving multi-dimensional growth. The magnitudes of growth have been rapid in terms of funds mobilizations, the turnover on the stock exchange, the amount of market capitalization and expansion of investor population. The development of capital market during the 1980s, signifies the widening and deepening of the market. Since the mid eighties, debentures emerged as a powerful instrument of resource mobilization in the primary markets. Introduction of public sector bonds since 1985-86, imparted an additional dimension to the financial development in India. The growth in the secondary market was also impressive since 1984-85 in terms of increase in the number of institutions, listed companies, their paid-up capitals and market capitalization. The capital market also witnessed the emergence of several specialized institutions such as SEBI, CRISIL, CARE, ICRA and OCTEI. The above developments in the Indian financial market thus have brought about a new element of development of financial sector. Further, with a move towards deregulation, a particular interest rate may be administered and market determined, partly for a particular time period. However, in India, money market instruments like call money, commercial papers, certificate of deposits are market determined. Deposit and lending rates have been rationalized as a prelude to complete deregulation. Major chunk of treasury bills are sold on auction basis. Again, the recent institutional arrangements have important role to play in widening and deepening the money/securities market in India. All these arrangements are primarily aimed at providing basic infrastructure development of the finance sector.

Further, the rate of growth of the economy has improved since 1980s. From the financial year 1980 to 1989, the economy grew at an annual rate of 5.5 percent, or 3.3 percent on a per capita basis. In the early 1990s, considerable progress was made in loosening government regulations, especially in the area of foreign trade. Many restrictions on private companies were lifted, and new areas were opened to private capital. However, the balance of payments crisis of 1990 and subsequent policy changes led to a temporary decline in the GDP growth rate, which fell from 6.9 percent in 1989 to 4.9 percent in 1990 to 1.1 percent in 1991.

In March 1995, the estimated growth rate for 1994 was 5.3 percent. However, the real growth rate was around 6.5 percent in 1995. Since, then the economy was growing at a higher rate. Today, India's economy has been one of the stars of global economics in recent years, growing 9.2% in 2007 and 9.6% in 2006.

Growth had been supported by markets reforms, internalization of financial markets, growth of financial intermediation, huge inflows of FDI, rising foreign exchange reserves, both an IT and real estate boom, and a flourishing capital markets.

2. Previous Research:

The question of whether financial development precedes economic growth or economic growth precedes financial development has been empirically examined in the recent literature. For example, using data for 56 countries, Jung (1986) found that the supply-leading hypothesis holds for the LDCs and the demand following hypothesis holds for the developed countries. In his study of ten sub-Saharan countries Spears (1992) finds that financial development causes economic growth. Ahmed and Ansari (1998) investigate the relationship between financial development and economic growth for three major South-Asian countries, namely, India, Pakistan and Sri Lanka. Results from causality analysis indicate that financial development causes economic growth in these countries. Together, these results support the supply-leading hypothesis, at least for LDCs. However Thornton (1996) found contradictory evidence. Using data for 22 Asian, Latin American and Caribbean developing economies, Thornton concludes that in many case financial development does not cause economic growth. Given the differences in the countries examined, time periods, variables, and methodologies, it is obvious that the empirical findings in these studies are different.

In particular, the statistical methodologies used in these studies limit them to an estimation of the short-run dynamics between financial development and economic growth and do not permit the estimation of long-run properties. Recently, new time series methods, namely cointegration tests and the vector error-correction mechanism (VECM), have been used to investigate the demand-following versus supply-leading hypotheses in a number of studies. For example, Murinde and Eng (1994) investigate the relationship between financial development and economic growth in Singapore. They have used various econometric techniques to test for stationary, cointegration, and Granger causality. Their study supports the supply-leading hypothesis for Singapore.

In a similar study, Demetriades and Hussein (1996) conduct causality tests between financial development and economic growth using co integration and Granger causality techniques for 16 countries. Their results provide no support for the notion that financial development is a leading factor in the process of economic development. They found considerable evidence of bi-directionality and some evidence of reverse causation running from financial development to economic growth.

Ghali (1999) investigates whether financial development leads to economic growth in the small developing economy of Tunisia and found the existence of a stable long-run relationship between the financial development and per capita real output that is consistent with the view that financial development can be an engine of growth in this country. Using cointegration and Hsiao's version of the Granger causality method, Cheng (1999) finds causality running from financial development to economic growth with feedback in post-war South Korea and Taiwan. These results support the Patrick (1966) hypothesis that there is likely to be an interaction of supply-leading and demand-following phenomena.

Most of the previous studies focus only on a two-variable case and their results may be biased due to the omission of relevant variables. Recent empirical studies have addressed this shortcoming. For example, Luintel and Khan (1999) examine the long-run relationship between financial development and economic growth using multivariate VAR models for ten countries. They find that the long-run financial development and output relationships are identified and bidirectional causality between financial development and economic growth exists for all sample countries. On the other hand, Darrat (1999) uses multivariate Granger causality tests within an error-correction framework to investigate the role of financial development in economic growth in three middle-eastern countries, namely, Saudi Arabia, Turkey, and the United Arab Emirates, and his results generally support the view that financial development is a necessary causal factor of economic growth. In this direction, the study by Kamat and Kamat (2007) for Indian economy is a modest attempt to test the directional causality with the help of multivariate cointegration and error correction techniques. The study supports the evidence in favor of a short run effect of "financial infrastructure led economic growth". Finance is found to be a leading sector, only, in the short-term link in Granger causality tests with stationary variables. Moreover, Granger-causality test based on vector error correction model (VECM) further reveals that in the long run, stock market development Granger-causes infrastructural growth.

Hence, this study provides robust empirical evidence in favor of finance-led growth hypothesis for the Indian economy. Although much of the recent evidence seems to indicate that financial development causes economic growth, the issue for India is unresolved. In this paper these new time series methods are used to investigate the relationship between financial development and economic growth in India

3. Data Definition and Sources:

The necessary secondary data for India (in Indian Rupees) for the period 1971-2008 is adjusted for inflation using the Wholesale Price Index (WPI) and emerge from number of sources namely, the Handbook of Statistics on the Indian Economy, published and the annual reports published by the Reserve Bank of India, To measure the dependent variable economic growth (EG), we use the growth rate in Gross Domestic Product (GDP) at factor cost & constant prices, based on new series with 1999-2000 as the base year. This is in line with the standard literature on the ties between economic growth and financial activity and specifically in the recent work on the subject by Demetriades and Hussein (1996), Luintel and Khan (1999) and others.

The indicator of financial development used in the model is Financial Activity (FA) emerging from productive investments by the private corporate sector and is defined as the ratio of Gross Domestic Capital Formation (GDCF) by the Private Sector to GDP. The stage of market development, of the macro economy, the interaction of institutions, markets and market practices, all have a positive influence on the real decisions on the firm and therefore, on the overall capital formation in the corporate sector. The second variable, (FS) is the ratio of Financial Savings to GDP. Financial savings is measured by the difference between M3 and M1. The subtraction of the money stock (M1) aims at getting the quasi-liquid assets considered as the main source of investment financing. A rising ratio of financial savings to GDP may reflect an improvement in bank deposits and / or other financial resources outside the banking sector, which are likely to be used for accumulation and growth.

Financial Deepening (FD) indicator is the ratio of the total assets of the financial system to nominal GDP and is calculated as the ratio of the liquid liabilities (M3) to the nominal GDP. M3 is a broader measure of money stock in accordance with the inside money model of McKinnon (1973) where the accumulation of real money balances is a required condition for investment. An increase in this ratio may be interpreted as an improvement in financial deepening in the economy.

In addition to the above variables representing the financial development parameter, the study also has included two more variables. For this purpose, out of several indicators of financial development, DEP, which is the ratio of deposits to GDP and LOA, which is the ratio of loans to GDP are seems most appropriate since, they have been used widely as a prime indicator of financial development. (Erdal G et.al, 2007).

4. Methodology: Testing Unit Root and Co integration:

Before estimating the Co integration models, it is essential to examine the time series properties of the variables in level or in first differences. If the equation is estimated with data that are non-stationary, the application of OLS method would not yield a consistent parameter estimator. That is, the t-statistics of the estimated coefficients are unreliable since the underlying time series would have theoretically infinite variance (Hendry, 1986, Granger, 1986). Moreover, in estimating the co integration, it is necessary that the variables should be non-stationary. Hence, the following, Dickey-Fuller (DF), Augmented Dickey-Fuller (ADF), and KPSS unit root tests are performed to know whether the process governing the concerned variables is stationary or not.

4.1 Dickey-Fuller (DF) and Augmented Dickey-Fuller (ADF):

It is necessary to start with a unit root test to check whether a given series say X_t is stationary or not. The Dickey-Fuller and Augmented Dickey-Fuller unit root tests are popular in the literature. The tests require estimation of the following equation

$$\Delta X_t = \mu + \alpha\, X_{t-1} + \sum_{i=1}^{k} \gamma_i\, \Delta X_{t-i} + \varepsilon_t \qquad \text{... (1)}$$

Where k is the value which ensures ε_t be a white noise series, Δ is the difference operator, α and γ_i are parameters. The above procedure is known as the ADF test. The DF test follows a special case of ADF test when summation part of the equation (4.1) is zero, that is when k = 0. The test statistics of DF and ADF are tested under the null hypothesis of non-stationary against the alternative of stationary.

4.2 KPSS Unit Root Test:

It is well established that the standard unit root tests that are discussed above have unit root as its null hypothesis. And it is established that these standard unit root tests failed to reject the null hypothesis of unit root for many economic time series (Nelson and Plosser, 1982). It is because; these tests are biased in favour of the null hypothesis. They tend to accept the null hypothesis, except when there is strong evidence against it. Therefore, an alternative explanation for the common failure to reject a unit root is simply that the standard unit root due to Kwiatkowski, D, Phillips, P C B, Schmidt, P and Shin, Y (1992) tests are not very powerful against the relevant alternatives. Hence it has been suggested (Dejong and whiteman (1991), Diebold and Rudebusch (1991)) that it would be useful to perform test of null hypothesis of stationary as well as of unit root. KPSS unit root test provides a test of null hypothesis of stationary against an alternative of unit root, to test whether the series is differenced stationary.

4.3 Cointegration:

Co integration theory was developed by Granger and his associates to examine whether long run equilibrium exist between the variables (Granger, 1986, Engle and Granger, 1987).

Consider initially a pair of series X_t and Y_t , each of which is said to be integrated of order one, denoted by I(1)) and having no drift or trend in mean. It is generally true that any linear combination of these variables will also be integrated of order one. However, it is possible that there exist a linear combination say Z_t , such that it is I(0) or stationary, it is said that X_t and Y_t are co integrated.

However, when X_t is the vector of N components time series, each without trend in mean and each I(d), d>0. Then X_t will be said to be co integrated CI (d,b) if there exist a vector such that $Z_t = \alpha' X_t$ is I (d-b) , b>0.

The case considered earlier has N = 2 and d = b = 1. Moving to a general values for N, d, b, adds a large number of possible interrelationships and models. In particular, α will not be unique, as there will be several equilibrium relationship linking N>2 variables. If there are r vectors α, each of which produces Z's integrated of order less than d, then r is called the "order of integration" and is easily seen that r<N-1.

Tests of Co integration: Johansen -Juselius (JJ) Procedure:

Tests of Co integration such as Engle Granger two step procedure allows for the estimation and testing of unique co integrating vector, even though there could be as many as the number of variables involved less one. As well since this single equation method estimates the co integrating vector with the data on the levels only; it has been criticized for ignoring potentially valuable information contained in the short run fluctuation of the variables. Moreover, the Engle-Granger test procedure relies on the OLS residuals for the estimation of the test statistics. Johansen (1988) outlined a method which was later expanded by Johansen and Juselius (1990), which allowed for the testing of more than one co integrating vector in the data and for the calculation of maximum likelihood of these vectors. This procedure yields two test statistics of the number of statistically significant co integrating vectors. One is λ - max, which compares the null hypothesis H_0 (r) with an alternative H_1(r+1) where r is the co integrating vector. The second test is the trace test which examines the same null of H_0(r) versus a general alternative, H_1 (p) where p is the number of variables. In this framework, it is desirable to obtain at least one co integrating vector, r = 1 to establish the model. If one gets r = 2, then one could in principle assume that the system is stable in more than one dimension.

4.4 Causality using Unrestricted VAR

In the literature, the test of causality has been done using causality test introduced by Granger (1988), a useful method to test for Granger causality between two variables. The basic idea is that if changes in X precede changes in Y, then X could be a cause of Y. This involves an unrestricted regression of Y against past values of Y, with X as the independent variable and regressing Y against past values of Y only. This is to verify whether the addition of past values of X as an independent variable can contribute significantly to the explanation of variations in Y, Pindyck and Rubinfeld (1998). The test involves estimating the following pair of regressions. The causal relationship between economic growth and financial development indicators is examined with the help of Granger-Causality procedure based on Unrestricted Vector Auto Regression using the error correction term. This procedure is particularly attractive over the standard VAR because it permits temporary causality to emerge from firstly, the sum of the lagged differences of the explanatory differenced variable and secondly, the coefficient of the error-correction term. In addition, the VECM allows causality to emerge even if the coefficients lagged differences of the explanatory variable are not jointly significant, Miller and Russek (1990).

It must be pointed out that the standard Granger-causality test omits the additional channel of influence. VAR model is estimated to infer the number of lag terms required (with the help of simulated results using VAR) to obtain the best fitting model and appropriate lag lengths were then used in causality tests yielding the F-statistics and respective p-values. For any F-statistic, the null hypothesis is rejected when the p-value is significant (less than 0.05 or 5% level of significance or those stated otherwise). A rejection of the null hypothesis would imply that the first series Granger-causes the second series and vice versa.

5. Results and Interpretations:

The role of the financial system in mobilizing and allocating the resources for economic growth has been well established by many empirical studies, Levine (1997). Here, in this study, we attempt to analyze whether the financial intermediation, measured in terms of the financial development measured with DEP (deposits to GDP ratio) and LOA (loans to GDP ratio), the financial deepening measured in the study by FD i.e. the extent to which an asset freely flows illiquid to the liquid form, the capacity of the financial system to generate savings (FS) and finally the ability trigger further financial activity (FA) through capital formation lead to ensure higher economic growth measured in terms of growth rate of GDP (EG) for Indian economy in the last 4 decades.

The unit root tests are employed to test the presence of stochastic trend of all the variables that are used in the present study over the total sample from 1970-71 to 2008-09. For the test of unit root, the present study used Dickey-Fuller (DF), Augmented Dickey Fuller (ADF), and KPSS unit root tests with trend. The results are presented in tables in table 1 and table2 below.

Table 1 presents the unit root tests statistics for DF, ADF tests for the sample period. Looking at the results in the upper tier of the table 1 for DF test the hypothesis of unit root in the level data is not rejected at the 1% critical level across all the series, hence, the series are trend stationary. Here, in the present study the order of ADF test (value of lag-length, (k)) is selected by following FPE criterion. The test results confirm that for all the series, the statistics are not statistically significant to reject the null hypothesis of non-stationary. Therefore, according to the ADF test also, all the series are non-stationary in levels. The lower tier of the table shows the test statistics for all the series at their first differences. It is checked that all the calculated values are above the critical tabulated values without trend. In other words, all the statistics are significant enough to reject the null hypothesis of non-stationary. Hence, it is concluded that the series are differenced stationary i.e., integrated of order one (I (1)).

Table - 1

Unit Root Test Statistics for Series: 1970-71 to 2008-2009

	DF	ADF
LEG	0.9712	0.9254
LFA	0.0425	1.3129
LFD	-0.4563	-0.4602
LFS	-0.8653	-0.8848
LDEP	-2.6037	-2.7077
LLOA	-2.5392	-3.0434
ΔLEG	-12.5981	-3.7275
ΔLFA	-18.561	-3.6853
ΔLFD	-4.0279	-4.6738
ΔLFS	-3.9504	-3.8431
ΔLDEP	-6.3136	-22.0229
ΔLLOA	-36.818	-19.3477

Note: Δ represent the first difference of the series.

It is important to note that the unit root tests employed above have the presence of unit root as the null hypothesis and the way in which these tests are carried out ensure that the null hypothesis is accepted unless there is strong evidence against it. Hence, the standard unit root tests discussed above are not powerful against the relevant alternatives. So, Dejong et. al. and Whiteman (1991) and Diebold and Rudebush (1991) after finding that these tests are weak, suggested that in trying to decide by classical methods whether a given economic data are stationary or integrated, it should be useful to perform test of the null hypothesis of stationary as well as test of the null hypothesis of unit root.

The present test known as KPSS unit root test provides the test statistics under the null hypothesis of stationary against the alternative of a unit root, to test that the series is differenced stationary. Following the methodology provided by Kwiatkowski, D, Phillips, P C B, Schmidd, P and Shin, Y (1992), the test statistics are calculated for all the variables at levels and at first differences with trend and without trend. Table 2 presents the test statistics calculated by following KPSS methodology for the sample period. It is to be noted that the 5% critical values of the test with trend and without trend are 0.146 and 0.463 respectively. A rejection of null hypothesis (at 5% level) requires statistically significant test statistics more than 0.146 for with trend and 0.463 for with out trend. The upper tier of the table presents the test statistics with and

Without trend for k = 1 to k = 4. The results show that all the test statistics are significant enough to reject the null hypothesis of stationary both with and without trend. Hence, all the variables are non-stationary at levels. The lower tier of the table shows the test statistics for all the series at their first differences. It is checked that all the calculated values are below the critical tabulated values for both with and without trend. In other words, none of the statistics are significant enough to reject the null hypothesis of stationary. Hence, it is concluded that the series are differenced stationary i.e., integrated of order one (I(1)).

Hence, the overall evidence from the unit root tests suggests that all the variables examined here for total sample period, are first differenced stationary i.e., integrated of order one (I(1)). Hence, the search for co integration among the variables is initiated, as the necessary condition (all the variables are being integrated of the same order, I(1) in this case) is satisfied.

Table - 2 KPSS Unit Root Test Statistics for Series: 1970-71 to 2008-2009

	WITH TREND				WITHOUT TREND			
	K=1	K=2	K=3	K=4	K=1	K=2	K=3	K=4
LEG	0.6491	0.4701	0.3810	0.3233	8.2724	5.5745	4.2202	3.4019
LFA	0.9285	0.6502	0.5116	0.4259	8.3217	5.5875	4.2175	3.3929
LFD	0.7908	0.5859	0.4777	0.4106	8.6298	5.8056	4.3875	3.5345
LFS	0.5463	0.3794	0.2968	0.2478	8.4396	5.6680	4.2813	3.4490
LDEP	0.8283	0.5892	0.4647	0.3902	8.6955	5.8437	4.4149	3.5566
LLOA	1.4127	1.0879	0.8877	0.7527	8.6342	5.8077	4.3883	3.5349
ΔLEG	0.0198	0.0209	0.0287	0.0447	0.0209	0.0223	0.0305	0.0475
ΔLFA	0.0361	0.0371	0.0474	0.0645	0.0372	0.0382	0.0788	0.0664
ΔLFD	0.0148	0.0178	0.0213	0.0246	0.0147	0.0177	0.0212	0.0244
ΔLFS	0.0336	0.0315	0.0317	0.0335	0.0345	0.0323	0.0326	0.0345
ΔLDEP	0.0226	0.0277	0.0279	0.0317	0.0306	0.0375	0.0378	0.0428
ΔLLOA	0.0067	0.0098	0.0129	0.0165	0.0268	0.0394	0.0516	0.0654

Note: Here K refers to lag-length. The critical values for the test at 5% level of significance with trend and without trend are 0.146 and 0.463 respectively.

Tests of co integration such as Engle-Granger two step procedures (Engle and Granger, 1987) allowed for the estimation and testing of unique co integrating vector, even though there could be as many co integrating vectors as the number of variables involved less one. As well, since this single equation method estimates the co integrating vector with the data in levels only, it has been criticized for ignoring potentially valuable information contained in the short-run fluctuations of the variables. Moreover, the Engle-Granger test procedures rely on the OLS residuals for the estimation of test statistics.

In the past few years, there has been a movement towards estimating co integrating relationships in a system of equation framework to make better use of all the information available in the long run and short run fluctuation of each variable. Johansen (1988) outlined a method, which was later expanded by Johansen and Juselius (1990) that allowed for the testing of more than one co integrating vector in the data and for the calculation of maximum-likelihood estimates of these vectors. Again, the procedure also allows direct hypothesis tests on the coefficients in the co integrating vectors.

The present study makes use of the Johansen and Juselius (1990) technique on deseasonalised the total sample period. The lag-lengths for the VARs were selected according to the Akaike Information Criterion for each specification.

Table 3 and table 4 reports the results of co integration tests using the Johansen and Juselius technique for the total the sample period on selected alternative specifications. This study relies upon only the trace statistics to determine the number of co integrating vectors. The results of the trace statistic rejects the null hypothesis of r = 0 for both the specifications, Hence, it may be concluded that a long run equilibrium relationship exist among variables of financial development and economic growth for Indian economy. However, it is found that the first specifications the statistics imply the existence of two co integrating vector and the second specifications signify the presence of three co integrating vectors.

Table – 3 Results of the test for Co integration: the Johansen and Juselius (JJ) Procedure Series: EG, FA, FD and FS (VAR lag = 1)

Trace Statistics	1% critical value	5% critical value	10% critical value
70.3359*	54.46	47.21	43.95
38.8448*	35.65	29.68	26.79
16.1915**	20.04	15.41	13.33
1.148	6.65	3.76	2.69

Table – 4 Results of the test for Co integration: The Johansen and Juselius (JJ) Procedure

Series: EG, FA, FS, DEP and LOA (VAR lag = 1)

Trace Statistics	1% critical value	5% critical value	10% critical value
132.2825*	76.07	68.21	61.45
79.5505*	54.46	47.21	43.95
44.2472*	35.65	29.68	26.79
20.8781*	20.04	15.41	13.33
3.6837***	6.65	3.76	2.69

Granger(1988) points out that if there exits a co integrating vector among variables, there must be causality among these variables at least in one direction. Granger (1986) and Engle and Granger (1987) provide a test of causality which takes into account information provided by the co integrated properties of the variables. The model can be expressed as an error correction model (ECM) as in Engle and Granger (1987). The model permits to test the causality among the indicator of economic growth and variables representing financial development. The lag length used for the estimation is calculated with FPE criterion. Table 5 reports the results from Granger causality test based on vector error-correction models (VECM). The results indicate unidirectional causality running from financial development to economic growth. This finding supports the supply-leading hypothesis for India over the sample period.

Table-5 Granger Causality results based on Vector error-correction models (VECM)

Short run F – statistics

Explanatory Variables	ΔLEG	ΔLFA	ΔLFD	ΔLFS	ΔLDEP	ΔLLOA
ΔLEG	---	1.35	1.01	0.03	0.52	1.002
ΔLFA	3.53*	--	2.42	0.42	0.72	1.23
ΔLFD	0.63	0.34	--	0.23	0.48	0.34
ΔLFS	6.34*	0.01	0.11	--	1.23	0.78
ΔLDEP	11.23*	0.52	0.24	0.50	--	1.24
ΔLLOA	2.71**	1.12	0.35	1.25	1.56	--

Note: * and ** indicate significance at the 5% and 10% levels, respectively.

6. Conclusions:

Using the multi variable VAR model, two competing hypothesis are empirically tested regarding the relationship between financial development and economic growth for Indian economy over the period 1970-71 to 2008-09. The two competing hypothesis are called supply-leading hypothesis and demand-following hypothesis. The supply-leading hypothesis refers to the situation of financial development leading to economic growth of a country. Whereas, the demand following hypothesis means economic growth in any country enforces financial development. For this purpose, the present study has used economic growth (EG), defined as the growth rate in Gross Domestic Product (GDP) at factor cost & constant prices, based on new series with 1999-2000 as the base year. The indicator of financial development used in the model is Financial Activity (FA) defined as the ratio of Gross Domestic Capital Formation (GDCF) by the Private Sector to GDP. The second variable, (FS) is the ratio of Financial Savings to GDP. Financial savings is measured by the difference between M3 and M1. In addition to the above variables representing the financial development parameter, the study also has included two more variables. For this purpose, out of several indicators of financial development, DEP, which is the ratio of deposits to GDP and LOA, which is the ratio of loans to GDP. Using various unit root tests such as Dickey-Fuller (DF), Augmented Dickey-Fuller (ADF) and unit root test due to Kwiatkowski, D, Phillips, P C B, Schmidt, P and Shin, Y (KPSS), we found that all the data series is found to be non-stationary in levels and stationary in first differences. Further, by using the Johansen (1988) and Johansen and Juselius (1990) co integration tests, it is found that a long run equilibrium relationship exist among variables of financial development and economic growth for Indian economy. The results from vector error-correction models (VECM) suggest unidirectional causality running from financial development to economic growth. This result supports the supply-leading hypothesis for Indian economy for the sample period. These finding have important implication for the conduct of economic policies in India. This implies that the evolution of financial sector tends to, or is more likely to stimulate and promote economic growth when monetary authorities adopt liberalized investment and openness policies, improve the size of the market with the macroeconomic stability. Development of financial infrastructure can do a good job of delivering essential services and can make a huge difference to a country's economic growth. Ensuring robust financial sector development with the minimum of crises is essential for growth and reducing transaction cost and inefficiencies as has been shown by recent research findings.

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