

Interlink between financial development and economic development

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Abstract

Objective: The study attempts to show the causality between 'economic development' and 'financial development' in India considering 'demand-following' and 'supply-leading' approaches along with 'structuralist' and 'repressions' views on financial development.

Methods/ Statistical Analysis: To examine the interlink between financial development and economic development in India, from 1990-91 (when the financial sector started liberalization process on larger scale) to 2014-15 is chosen. Technique of correlation and regression analysis are used to examine the interlink and the causality between both variables. We have used two regression equations for testing our data viz. $GDP = a + b TFC$ highlights on supply-leading approach and $TFC = a + b GDP$ highlights on demand-following approach.

Findings: From our data, we estimate the correlation coefficient between GDP (economic development) and TFC (financial development) is very high, indicating that both economic development and financial development go hand in hand. This show that there is an interlink between both. From our regression analysis, we examined two approaches (Supply-leading Approach and Demand-following Approach) and how change in GDP brings change in TFC. We can see that causality works both the ways i.e. financial development to economic development and vice versa. But the causality from economic development to financial development is more dominant than the other way. It also implies that the influence of supply-leading approach is more dominant than demand-following approach in India. This study's humble attempt is to show that both approaches have equal role to play in economic development, unlike other studies where they have stressed on importance of any one approach. At the same time, this study also shows the direction of causality from economic development to financial development is more dominant. The direction of causality in other studies was generally shown from financial development to economic development.

Application/ Improvements: To achieve rapid balanced and sustained rate of economic development, efforts are directed towards the creation of condition for a faster development of productive resources. Equal improvement is required about knowledge (financial literacy) to access finance or financial schemes provided by financial institutions.

Keywords: Financial Development, Economic Development, Interlink.

1. Introduction

The prime objective of any country is to step up the rate of economic development. Economic development is nothing but the monetization of the economy. Monetization requires more funds where provided by the financial sector. Economic development depends upon a multiplicity of factors. Amongst these factors, the rate of capital formation is one of the most important determinants. It is one of the key inputs of development. Savings, mobilization of savings and the act of investment in the productive factors are the three interlinked stages involved in the capital formation. The rate of capital formation, in turn, depends upon the efficiency of the financial system to mobilise funds from ultimate savers to ultimate users. Financial system plays a crucial role in creating savings and its mobilization. In this sense, financial system of the country plays a dominant role in its economic development because without finance there is hardly economic development. To achieve rapid, balanced and sustained rate of economic development, efforts are directed towards the creation of condition

for a faster development of productive resources. Relative importance of finance in economic growth is categorized into four broad thoughts.

1. Finance promotes growth: As per this thought, banks act as an engine of economic growth. Both the human capital and physical capital can be purchased and developed with finance. Finance is key to investment, to grow and employ factors and other business [1]. It helps to utilise resources optimally of different sectors of the economy by allowing businesses to invest beyond their cash in hand. It encourages innovations and dynamism, which ultimately increases firm's productivity [2-7].
2. Finance hurts growth: - This thought is diametrically opposite to the above one. This thought is supported by [10-11]. Financial development catalyses economic growth up to a point, beyond which more finance acts as a drag on growth. These authors argue that excessive finance draws human capital away from the productive economy and, by creating macro and financial fragility, credit growth leads to bigger booms and busts, which leave countries ultimately worse off [12].
3. Finance does not matter: - According to Lucas, the growth of economy is determined mainly by the growth of human capital accumulation and this growth is facilitated by the finance. In fact, the role of finance in economic growth is overstressed [13-14].
4. Finance follows growth: - This thought is supported by [15]. He pointed out that the enterprise leads financial development. Economic growth creates a demand for financial arrangements and the financial sector responds automatically to these demands. In other words, it was believed that finance would follow when the demand for it arose. This view was challenged by [16-17] who introduced the twin concepts of 'supply leading' and 'demand following' finance. It brought to the fore the causality aspects of financial development and economic development.

One can see that in the initial phase of economic development, financial markets of the country are underdeveloped. The reason for this is that there are lot of bottlenecks or hurdles regarding free movement of finance and its adequate availability. Since countries are caught in vicious circle of poverty, government has to take lead to break this vicious circle by setting up of variety of financial institutions to mobilize savings in economy. Successful government intervention is needed to rectify the faults of the market, improve the efficiency of the financial system, increase national income and leads to economic development. This is called the 'supply leading approach' to financial development [18]. This approach has two functions: transferring resources from traditional sectors to modern sectors and promoting entrepreneurial response in these modern sectors [19].

Once the process of development starts the economy demands or needs variety of finance and finance related services. To meet the demand for these financial services, a specific type of financial institutions emerged. This is called the 'Demand following approach' [20]. In this approach, when demand for their services by saver and investors in the economy arises, as a result modern financial institution and the related financial services are created. The demand-following supply response of the growing financial system is presumed to come about more or less automatically and is essential for increasing financial efficiency [19]. Financial markets develop and gradually become more perfect as a result of real economic growth. Consequently, the liquidity also improves and the risks reduce, thereby, in turn, stimulating further the real growth rate of the economy [21]. Economy will itself gets developed while providing such demand from the financial sector [22].

Economic development requires secure supply of funds for investment. Such funds or finance can be provided by two ways- direct finance and indirect finance. In direct finance, the group with excess financial resources (surplus economic units) directly finance those with financial needs (deficit economic units). And in case of indirect finance, both parties (deficit economic units) and (surplus economic units) get connected to each other through the network of the financial system [22]. A network of financial institutions lowers the real cost of financing, which, in turn, improves the allocation of investible resources in general (01). Thus, the level of economic development of a country depends on the level of advancement of its financial institutions or its capital market [23]. The highlighted four reasons to show the essentiality of financial development for economic development. They are: first economic development is nothing but monetization of the economy. Monetization requires more funds and is provided by the financial sector. Second, monetization gives better scope for division of labour in production than by pre-monetary forms of exchange. Third, if economic units rely entirely on self-finance, the level of investment in the economy remains low. Fourth, just as direct institutional finance breaks an investor's dependence on his own saving, so indirect finance breaks the direct link between any individual saver and an individual investor [1].

The 'supply leading' and 'demand following' approach indicate that economic development and financial development go hand in hand. They are interdependent on each other. Let us take a look at two another famous views on financial development. A widespread network of financial institutions and a diversified array of financial instruments will have a beneficial effect on the saving-investment process and hence on growth. This view is referred to as 'structuralist view' towards financial development. To deviate the market towards the pre-set objectives of the state, it requires government interference in the market. This in turn will create widespread network creation for the same [22]. Repressions view, on the other hand, is of the opinion that the free operation of the financial sector stimulates economic development in the country. According to them, economic instability in an economy is due to repressed financial conditions. The features of such conditions are nationalisation, higher CRR, SLR and interest rate than the market, lower or concessional lending etc. Such penalties and concessions, on the one hand reprimands the efficiencies and on the other hand it nurtures inefficiencies. Adverse impact is likely on economic growth, if government doesn't withdraw or reduce these penalties and concessions after reaching the threshold level of financial development [20]. Financial liberalization means either doing away entirely with interventionist regime or gradually phasing it out [20]. This will boost economic growth by improving the quality of investment rather than its quantity, allocation of resources, volume of savings and the investment rate [24]. However, macroeconomic stability and sound regulation of the banking sector seem to play a crucial role for the success of financial liberalization [25].

Though the 'financial structuralist' and 'financial repressions' approaches are slightly different, they recognize the importance of financial development in economic development. In fact, it is not the development of the financial sector that matters but what matters is the efficiency of the financial sector because the efficiency or inefficiency of the financial sector is the critical determinant of a country's economic growth [02]. History has shown that financial institutions have played a crucial role in the creation of industries as well as financing them in Europe, US and Japan. This example has led to so many less developed countries of Latin America, Asia and Africa, creating new financial institution to help the nation get ahead and catch up [26-27]. In case of India, financial assistance from the institution combined with the buoyancy in the capital market has triggered of a rapid acceleration of industrial development of the country. However, in a developing economy, higher rate of growth is achieved not merely by the availability of large financial and other resources but mainly by the more efficient use of these resources within the prescribed time schedule for each project. Proper financial measures can minimize risk of lending to new entrepreneurs and the cost of administering loans. Recently government of India has been rigorously implementing the measures of financial inclusion and enhancement of financial literacy. The purpose of doing this was that financial inclusion measures will help to enlarge the financial sector and the enhancement of financial literacy will help to improve the efficiency of the financial sector. The meaning of financial literacy was great awareness, impart knowledge and upgrade skills to make financial decisions about savings, investments, borrowings and expenditure in an informed manner. Hence, the expansion of the efficient financial sector will definitely help the economic development of the country [28-30].

1.1. Interlink between financial development and economic development

A humble attempt is made to examine the interlink between financial development and economic development in India since 1991, when the financial sector started liberalization process on larger scale. Various studies have shown that there is link between financial development and economic development. Investigates the causal links between financial development and economic growth in China by employing the Granger causality test within a VARECM framework. Bi-directional causality is found between financial development and growth, suggesting that economic growth and financial development are mutually reinforcing under the open-door policy [31]. A study by showed using data on 109 developing and developed countries for period of 34 years (1960-1994) that the direction of causality was generally from financial development to economic growth [32]. This study employs the Geweke decomposition test on pooled data to find that (1) financial development generally leads to economic growth; (2) the Granger causality from financial development to economic growth and the Granger causality from economic growth to financial development coexist; (3) financial deepening contributes more to the causal relationships in the developing countries than in the industrial countries; (4) the longer the sampling interval, the larger the effect of financial development on economic growth; (5) financial deepening propels economic growth through both a more rapid capital accumulation and productivity growth, with the latter channel being the strongest [32].

In [33] his study made use Granger-Causality test to confirm financial development causes economic development in India. For his test he took time span of 1990-91 to 2010-11. The estimated results confirmed that financial development, measured by ratio of gross domestic capital formation to GDP, ratio of gross domestic savings to GDP, etc are non-stationary at the level data and at the first differences when using ADF (Augmented Dickey-Fuller) test but attains stationary at first difference while using PP (Phillips- Perron) test. There does exist unidirectional causality which runs from gross domestic capital formation and gross domestic savings to GDP growth. No causality exists between export growth, population growth, outstanding debt ratio and GDP growth. Therefore, financial development in India has a stronger role in the growth process. The implication of the above is that India is in a better state of affairs as far as the growth potential is concerned by way of a more efficient financial system that is likely to evolve in the upcoming years to suit the changing global pursuit.

Consequently, government has to intensify the financial sector and carry out crucial measures such as more financial integration, minimization of government intervention in the financial systems, escalating the status of financial institutions, etc. to reinforce the long run relationship between both in order to maintain sustainable economic development [33] tried to criticize the tools used to analyze the financial development and economic growth in former studies. He has taken in to account the period from 1970-71 to 1998-99 for his study. For this research M3 has been taken as proxy for financial development and GDP for economic growth respectively. Three things are being examined here for example causality between GDP and M3, long run relationship between M3 and GDP and the structural breaks in time series data during pre-post liberalization period. Test for co-integration revealed that M3 and GDP are co-integrated. It is found that there were structural breaks in time series data. Causality is running from financial development to economic development and not vice versa [34].

2. Case study of India

To examine the interlink between financial development and economic development in India, period of 25 years from 1990-91 to 2014-15 is chosen. Technique of correlation and regression analysis are used to examine the interlink and the causality between financial development and economic development respectively. In the analysis given below, economic development is proxied by GDP (NNP at factor Cost) and the financial development proxied by the two ratios. They are Finance Ratio (FR) and Finance Interrelation Ratio (FIR).

FR is defined as the ratio of total financial claims to NNP at factor cost.

$$FR = \frac{\text{Total Financial Claims}}{\text{Net Income}} = \frac{\text{Total Financial Claims}}{\text{NNP at factor cost}}$$

And, FIR is defined as the ratio of total financial assets to net domestic capital formation.

$$FIR = \frac{\text{Financial Assets}}{\text{Physical Assets}} = \frac{\text{Total Financial Assets}}{\text{Net Domestic Capital Formation}}$$

The values of GDP are in absolute terms and the values of FR/FIR are in ratios or in percentages. Therefore, these two variables FR or FIR – cannot be used for establishing the inter-link or causality between real sector and financial sector. To make them comparable variables viz. FR & FIR should be in the absolute terms. Therefore, we made an attempt to estimate absolute values of total financial claims (i.e. FR) and total amount of financial assets (i.e. FIR).

Absolute values for Total Financial Claims (TFC) are estimated by multiplying Gross Domestic Product (GDP) of the given year with finance ratio (FR) of that year (Column 4) in the following table.

$$\text{Total Financial Claims} = \text{GDP} \times \text{FR}.$$

Similarly, Absolute values for Total Financial Assets (TFA) are estimated by multiplying Net Domestic Capital formation (NDCF) of the given year with finance interrelation ratio (FIR) of that year (Column 7) in the following table.

$$\text{Total Financial Assets} = \text{NDCF} \times \text{FIR}.$$

In the Table given below, first column gives Years. Second Column gives figures of GDP i.e. NNP at factor cost in Rupees Billion. Third Column gives Finance Ratio in percentage. Fourth Column shows product of GDP and FR i.e. Total Financial Claims in Rupees Billion. Fifth Column is Finance Inter Relation Ratio in percentage.

Sixth Column is Net Domestic Capital Formation (NDCF) in Rupees Billion and Seventh Column is product of FIR and NDCF in Rupees Billion.

Table 1. GDP, AMT. OF TFC & TFA (Rs BILLION)

YEAR (1)	GDP (NNP at factor cost) (Rs Billion) (2)	Finance ratio (FR) % (3)	Total AMT of Financial Claims (Rs Billion) (4)	Finance Inter- relation Ratio (FIR) % (5)	Net domestic capital formation (Rs Billion) (6)	Total amt of financial assets (Rs Billion) (7)
1990-91	4716.18	0.231	1089.43758	1.745	999.54	1744.1973
1991-92	5388.24	0.275	1481.766	2.922	822.81	2404.25082
1992-93	6179.4	0.209	1291.4946	2.183	1042.99	2276.84717
1993-94	7230.24	0.249	1800.32976	2.825	1149.29	3246.74425
1994-95	8455.54	0.25	2113.885	2.433	1618.12	3936.88596
1995-96	9925.16	0.29	2878.2964	2.26	1974.59	4462.5734
1996-97	11588.58	0.37	4287.7746	2.06	2062.77	4249.3062
1997-98	12871.41	0.49	6306.9909	2.71	2548.25	6905.7575
1998-99	14900.3	0.46	6854.138	2.87	2727.81	7828.8147
1999-00	16563.02	0.34	5631.4268	1.9	3523.62	6694.878
2000-01	17711.18	0.42	7438.6956	2.58	3214.07	8292.3006
2001-02	19263.43	0.52	10016.9836	3.27	3422.97	11193.1119
2002-03	20809.93	0.51	10613.0643	2.75	3815.63	10492.9825
2003-04	23329.56	0.49	11431.4844	2.31	4902.62	11325.0522
2004-05	26291.98	0.46	12094.3108	1.72	7441.5	12799.38
2005-06	30006.66	0.54	16203.5964	1.73	9160.33	15847.3709
2006-07	35013.13	0.63	22058.2719	1.93	11127.04	21475.1872
2007-08	40768.78	0.77	31391.9606	2.18	14160.67	30870.2606
2008-09	47054.47	0.53	24938.8691	1.83	13661.82	25001.1306
2009-10	54111.04	0.63	34089.9552	1.95	17033.3	33214.935
2010-11	64068.34	0.67	42925.7878	1.98	20812.39	41208.5322
2011-12	74349.65	0.61	45353.2865	1.89	23207.37	43861.9293
2012-13	80332.94	0.57	45789.7758	1.87	27862.17	52102.2579
2013-14	90424.54	0.57	51541.7758	2.19	25981.6	56899.704
2014-15	99917.96	0.54	53955.6984	2.02	29356.49	59300.1098

Source: [35-36]

First, correlation between two variables i.e. Total Amount of Financial Claims (Finance Ratio) and Total Amount of Financial Assets (Finance Interrelation Ratio) is estimated. The estimated correlation coefficient TFC and TFA is very high ($r = 0.99$).

$t = 46.424$, $df = 23$, $p\text{-value} < 2.2e-16$.

95% confidence interval: (0.9878324, 0.9977015)

$r = 0.99$

This is supported by the very small p -value and the 95% confidence interval with both lower and upper limit close to one. Hence, out of TFC (FR) & TFA (FIR), we shall use any one of them for the further analysis. Hence, we are using TFC (FR) to show the financial development and GDP for economic development.

Now, we estimate the correlation coefficient between GDP and TFC is also very high, indicating that both economic development and financial development go hand in hand.

Minitab Output.

Sample Correlation estimate (r):0.988

$t = 31.073$, $df = 23$, $p\text{-value} < 2.2e-16$

95% confidence interval: (0.9732136, 0.9949095)

To find out the interlink between financial development and economic development. We have used the regression technique. We have used two regression equations viz.

$GDP = a + b TFC$ highlights on supply-leading approach of financial development. Supply-leading Approach means due to financial development availability or supply of funds is possible in economy. Besides, setting up of financial institutions helps in economic development.

$TFC = a + b GDP$ highlights on demand-following approach to financial development. With economic development, more finance is required to meet varying needs. To meet these financial requirements, new financial institutions come into the existence. Hence, it is called as demand-following approach.

To run the regression, Ordinary Least Square Method is used with Minitab Software. In following analysis if there is one independent variable, the values of R^2 and adjusted R^2 are the same. Hence, value of R^2 is mentioned.

3. Supply leading approach

$GDP = a + b TFC$

Here, TFC (financial development) is independent variable and GDP (economic development) is dependent variable.

The values of the estimated equation are as follows

The regression equation is

$GDP = 3930 + 1.59 FF$

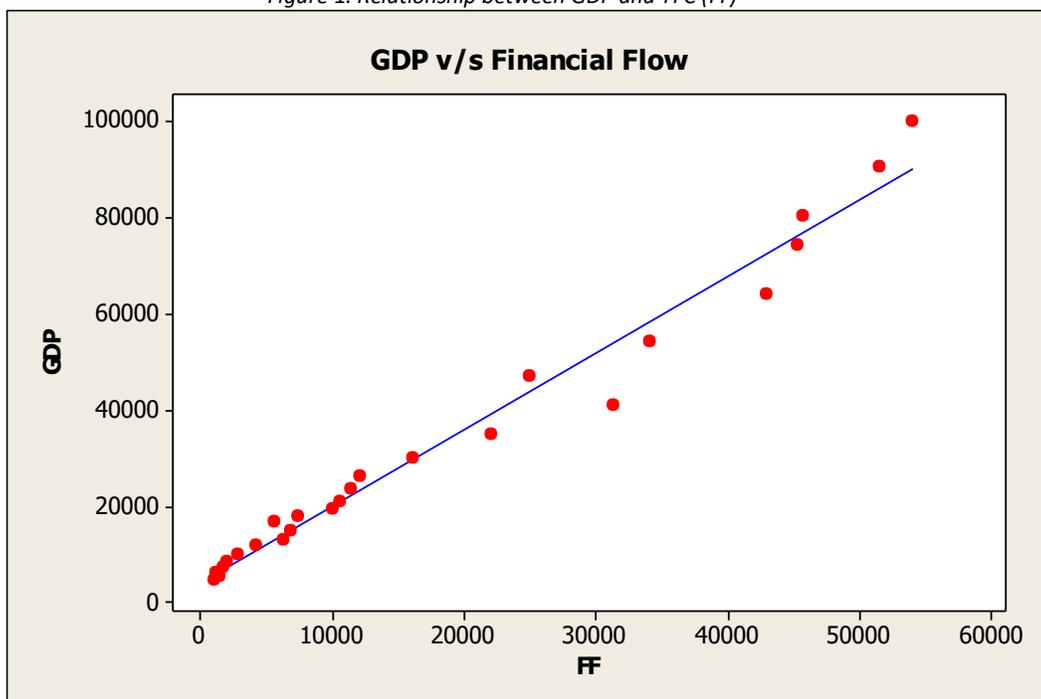
Predictor	Coef	SE Coef	T	P
Constant	3930	1289	3.05	0.006
FF	1.59406	0.05130	31.07	0.000

R-Sq = 97.7%

Analysis of Variance:-

Source	DF	SS	MS	F	P
Regression	1	19201264693	19201264693	965.50	0.000
Residual Error	23	457408073	19887308		
Total	24	19658672766			

Figure 1. Relationship between GDP and TFC (FF)



The too small p-values for both the intercept (constant) and the slope coefficients (coefficient of FF) indicate that both the coefficients are significant.

The R-square value tells that 97.7% of variation in GDP caused by TFC is explained by the model.

The regression model with positive slope coefficient tells that GDP increases as TFC increases. It also informs that if TFC increases by 1000 units then GDP increases by 1590, i.e. approximately 1600, units on an average.

In other words, it supports the supply leading financial development in the Indian economy. The above equation is presented in the Figure 1.

4. Demand following approach

$$TFC = a + b \text{ GDP}$$

Here, TFC (financial development) is dependent variable and GDP (economic development) is independent variable. The values of the estimated equation are as follows: -

The regression equation is

$$TFC = -1986 + 0.613 \text{ GDP}$$

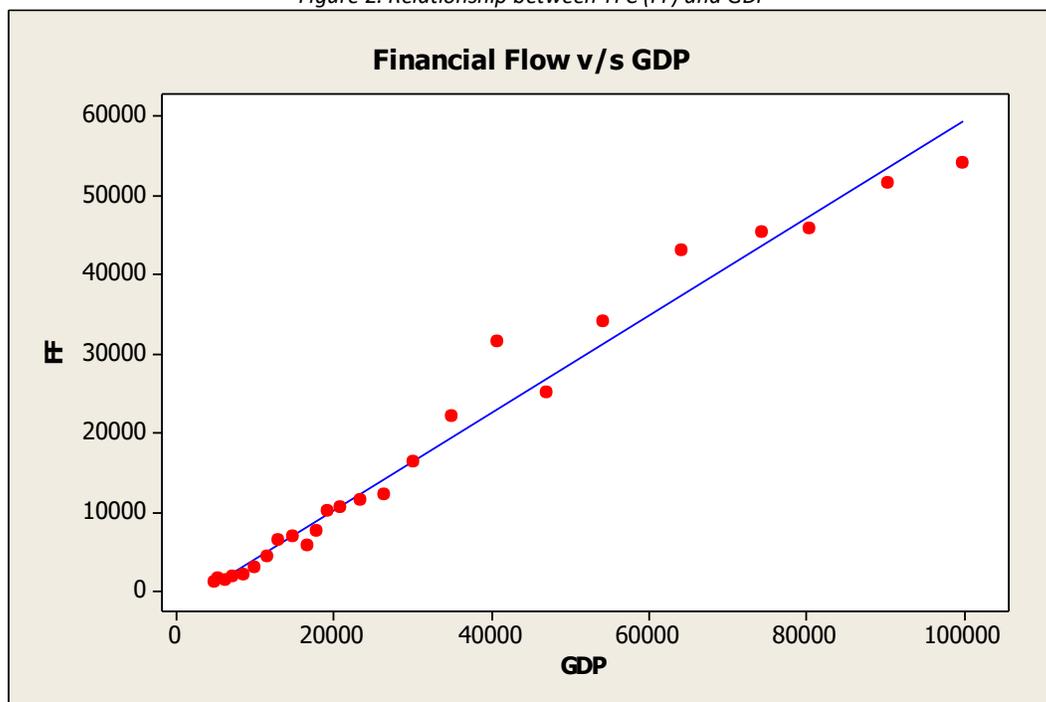
Predictor	Coef	SE Coef	T	P
Constant	-1985.6	851.7	-2.33	0.029
GDP	0.61273	0.01972	31.07	0.000

R-Sq = 97.7%

Analysis of Variance:-

Source	DF	SS	MS	F	P
Regression	1	7380668527	7380668527	965.50	0.000
Residual Error	23	175820573	7644373		
Total	24	7556489100			

Figure 2. Relationship between TFC (FF) and GDP



The too small p-values for both the intercept (constant) and the slope coefficients (coefficient of TFC) indicate that both the coefficients are significant. According to geometric proof, if we interchange variables in regression equation then in the second equation the intercept (constant) becomes negative. So, our constant is negative in given equation.

The R-square value tells that 97.7% of variation in TFC caused by GDP is explained by the model. The regression model with positive slope coefficient shows that TFC increases as GDP increases. It also informs that if GDP increases by 1000 units then TFC increases by 613 (or approximately 600) units on an average. Thus, this regression model supports demand following approach to financial development (Figure 2).

5. Conclusion

The analysis clearly indicates the following: First, there is an interlink between financial development and economic development in India. Second, the causality works from both the ways i.e. financial development to economic development and vice versa. Third, the causality from economic development to financial development is more dominant than the causality from financial development to economic development. Fourth, it also implies that the influence of supply-leading approach is more dominant than demand-following approach in India.

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The Publication fee is defrayed by Indian Society for Education and Environment (www.iseeadyar.org)

Cite this article as:

Dr Prakash Anant Salvi, Ms Shubhshree V Parab. Interlink between financial development and economic development. Indian Journal of Economics and Development. July 2019, Vol 7 (7), 1-9.

Received on: 23/03/2019

Accepted on: 22/07/2019