ECONOMIC GROWTH AND FINANCIAL DEVELOPMENT: A Comparative Study of India and Singapore

Dr. Yogieta S Mehra
Asst Professor
Dept of Management Studies
Deen dayal Upadhyaya College
University of delhi

ABSTRACT

The relationship between financial development and economic growth remains an enigma for the economists. Extensive review of the literature points out conflicting empirical evidence. This paper reviews through an empirical research the connections between the operation of financial system and economic growth. While subject to ample qualifications, preponderance of the results suggest that both financial intermediaries and markets matter for growth and that reverse causality is not driving this relationship alone. Results also vary depending on the choice of indicators, stage of development of the economy and kinds of tests used.

The present paper has explored the complex relationship between financial development and economic growth in India and Singapore. The Indian banking sector is now well developed and the stock market also competes well with leading economies in terms of technological development, timely settlements etc. Singapore, a small land mass occupying a wide bar on the international listings has shown immense results in development and growth with respect to time frame.

The paper has used appropriate indicators of financial development and the real economy to understand the relationship. The data has been analyzed using appropriate econometric techniques after testing for stationary and co-integration. Granger Causality has also been conducted to explore the predictable causality between indicators of economic growth and financial development.

INTRODUCTION

Financial liberalization and development of financial sector have been assigned strategic importance in economic development. There is even evidence that the level of financial development is a good predictor of future rates of economic growth & capital accumulation. The empirical growth literature has come up with numerous explanations of cross-country differences in growth, including factor accumulation, resource endowments, and the degree of macroeconomic stability, educational attainment, institutional development, legal system effectiveness, international trade, and ethnic and religious diversity. The list of possible factors continues to expand, apparently without limit. The positive link between financial depths, Defined broadly as the level of development of financial markets, and economic growth is inone sense fairly obvious. That is, more developed countries, without exception, have more developed financial markets. Indeed, the role of financial development is considered by many to be the key to economic development and growth. While economists have generally reached a consensus on the central role of financial markets in economic development, theoretical and empirical work supporting this concept is still very much in progress. The lessons one may learn from these empirical studies are not unambiguous and there is no final jury on the relationship between financial development and economic growth. Many times the relationship seems to work in specific situations which may be country specific.

The current paper examines this historic relationship through the lens of time series methodology for a two countries – India and Singapore on the basis of secondary research on the data for the time period 1960-2012.It is an endeavor to participate in the debate with the objective of adding some more input in to it so as to make the debate more update and informed. The current paper examines this historic relationship through the lens of time series methodology for a two countries – India and Singapore on the basis of secondary research on the data for the time period 1960-2012 .It is an endeavor to participate in the debate with the objective of adding some more input in to it so as to make the debate more update and informed.

Singapore had largely liberalized its financial sector by mid-1970s. The potential for the financial sector to become a growth sector, serving the needs of not only the domestic economy but also regional and international economy was realized in late-1960s. With these objectives in mind, cautious financial policies were undertaken to improve investor confidence both inside and outside, leading to increased monetization. By this way, financial sector became the second largest sector to contribute towards the GDP (16.6% - 1970 to 25.2% in 1991).

The present paper has explored the complex relationship between financial development and economic growth in India. The Indian banking sector is now well developed and the stock market also competes well with leading economies in terms of technological development, timely settlements etc. However, it is still not clear whether India is integrated with the world financial markets or it is decoupled from it; as was experienced during the 2008 US financial crises.

The objective of the paper intends to do by using a broader definition of financial development by including banking and stock market indicators along with money indicators. The paper is organized as follows; in section I we give a brief account of the current studies on the subject and try to learn lessons from them. In II section we discuss the methodological approach adopted in the paper along with the data. While section III provides results and analysis of our statistical analysis, section IV concludes the paper.

**LINKAGES   BETWEEN   FINANCIAL   DEVELOPMENT   AND   GROWTH   :
 LITERATURE REVIEW**

The foundation for the serious discussion about the relationship between the financial and real sector of an economy was laid by the pioneering articles, first by Schumpeter (1911), and then by King and Levine in 1993 based on the study of cross country experience of 77 countries. There have been host of other studies after it with some choosing to use the same framework, while others tried to reformulate their models. King and Levine (1993) study postulated a linear relationship, which has been construed by some as the main weakness of the model. They have used the average values of both financial and growth indicators over the time period: 1960-1989.They includes log of PCI and log of secondary education to control for non-linearity in them. They show that the level of financial intermediation is a good predictor of long-run rates of economic growth, capital accumulation, and productivity improvements.

Greenwood and Jovanovic (1990) in their model indicates that the relationship changes with and in fact depends on the level of PCI. They argue that in the initial stages of economic growth only rich has access to financial markets and with higher growth, more people can join the formal financial system with positive effect on economic growth. Zilibotti(1994)hasalso used a similar model.

Ross Levine and Sara Zervos (1996) extended the earlier work and along with banking, now also included stock market as indicators of financial market development and showed that stock market liquidity and banking development both positively predict growth, capital accumulation, and productivity improvements when entered together in regressions, even after controlling for economic and political factors.

Berthelemy and Varaudakis (1996) describes this relationship between initial level of economic growth (PCI) and financial development as a "virtuous" pattern where higher income supports the adequate development of the financial system, which in turn promotes future growth. Opposite is the "underdevelopment trap" where a low level of income makes the development of financial system impossible.

Levine, Loayza and Beck (1999) further extended the work and included the role of legal and accounting systems in explaining the differences in financial development and hence economic growth.

The paper by Wadud (2009) assesses long-run causal relationship between financial development and economic growth for South Asian countries - India, Pakistan and Bangladesh for the period 1976 -2008. The Results based on error correction models indicate Granger causality between financial development and economic growth running from financial development to economic growth.

Acaravci, et.al. (2009) in the paper investigate the causality between financial development and economic growth in Sub-Saharan Africa for the period 1975-2005 and found a bi-directional causal relationship between the growth of real GDP per capita and the domestic credit provided by the banking sector for the panels of 24 Sub-Saharan African countries.
OmololaOgunremi(2010) in his PhD dissertation studied the relationship for selected developing countries.The study reveals that there is a bi-directional causality between financial development and economic growth. In a significant departure from other studies it also concludes that the contribution of the insurance industry to economic growth is of the same degree as is of the banking and stock market

sectors.

ErdalGüryay(2007) tried to investigate the same relationship for Northern Cyprus by applying OLS and concludes that that there is a negligible positive effect of financial development on economic growth of Northern Cyprus. He also finds only uni-directional causality from economic growth to development of financial intermediaries.

Ali Acaravci (2007) in thepaper examines the causal relationship between financial development and economic growth in Turkey for the period 1986:1-2006:4 and used dynamic time series models. His results of the co-integration analysis did not provide any evidence of long-run relationship between financial development and economic growth. However, in a vector auto regression (VAR) framework the results showed a one-way causal relationship running from the financial development to the economic growth in Turkey.

Mohd.Aminul Islam (2012) in a paper on Malaysia investigates the causality between non-bank financial intermediaries and economic growth and finds that 'nonbank financial intermediaries and economic growth are cointegrated when economic growth is used as the dependent variable but are not cointegrated when the other variables are treated as the dependent variables. The result also shows evidence of a unique long-run causality running from nonbank financial intermediaries to per capita economic growth, but not the vice versa.'

RoselineOluitan (2012) in the paper shows that in the Nigerian economy real output causes financial development, but not vice versa. Acharya, Amanulla and Joy examined the relationship in Indian States using panel cointegration and found a long run relationship across Indian States.Besides level of income, human capital is also hypothesized to enhance the efficiency of financial markets through different channels-more and better information, better decision making about investments, better corporate governance, helps in creation of more innovative financial instruments, etc. So countries with low level of education and accordingly low human capital are faced with low savings and weak financial sector.

RESEARCH METHODOLOGY

Data Collection : Data collection for various financial and economic variables for inclusion in the study viz. GDP Annual growth Rate (%), Gross Capital Formation (as a % of GDP), Market Capitalization of listed companies (as a % of GDP), Money and Quasi money growth rate (as a % of GDP), Domestic Credit given by Commercial Banks (as a % of GDP).

(Source : World Bank)

Data Analysis: Test the data for stationarity using ADF Unit root tests to establish the order of integration of each variable followed by testing for Granger Causality in order to test 'predictive causality' between Economic Indicator (GDP Annual Growth Rate) and various Financial Indicators such as Gross Capital Formation (as a % of GDP), Market Capitalization of listed companies (as a % of GDP), Money and Quasi money growth rate (as a % of GDP), Domestic Credit given by Commercial Banks (as a % of GDP).

Data Analysis and Interpretation : To study the results of the tests undertaken on both India and Singapore and reach a logical conclusion to satisfy the objective

DATA:
1. Time Frame: The data for the study spans approximately fifty years from 1960- 2012.
2. Source: World Bank
3.Variables under study:

GDP growth (annual %)

Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2005 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.

Gross capital formation (% of GDP)

Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and "work in progress."

Money and quasi money growth (annual %)

Average annual growth rate in money and quasi money. Money and quasi money comprise the sum of currency outside banks, demand deposits other than those of the central government, and the time, savings, and foreign currencydeposits of resident sectors other than the central government. This definition is frequently called M2; it corresponds to lines 34 and 35 in the International Monetary Fund's (IMF) International Financial Statistics (IFS). The change in the money supply is measured as the difference in end-of-year totals relative to the level of M2 in the preceding year.

Market capitalization of listed companies (% of GDP)

Market capitalization (also known as market value) is the share price times the number of shares outstanding. Listed domestic companies are the domestically incorporated companies listed on the country's stock exchanges at the end of the year. Listed companies does not include investment companies, mutual funds, or other collective investment vehicles.

Domestic credit provided by banking sector (% of GDP)

Domestic credit provided by the banking sector includes all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net. The banking sector includes monetary authorities and deposit money banks, as well as other banking institutions where data are available (including institutions that do not accept transferable deposits but do incur such liabilities as time and savings deposits). Examples of other banking institutions are savings and mortgage loan institutions and building and loan associations

DATA ANALYSIS AND INTERPRETATION

A brief summary of the statistics of all the variables used in the analysis is given in Table 1: INDIA &Table 2 : SINGAPORE.

Table 1: Summary Statistics - INDIA

SNo	Variable	Obs	Mean	Std. Dev.	Min	Max
1	GDP Annual Growth Rate (%)	52	5.155878	3.194712	-5.23818	10.5463
2	Gross Capital Formation (as per cent of GDP)	53	22.90343	6.825392	14.236	38.0341
3	Money and Quasi Money Growth Rate	25	15.76754	3.953154	3.2117	24.4855
4	Market Capitalization of Listed Companies	52	45.36256	32.11771	7.8199	146.855
5	Domestic Credit provided by Banking Sector	53	42.26437	15.72969	21.243	76.5894
6	Log of Domestic Credit provided by Banking Sector	53	1.795902	0.166509	1.6512	1.88416

- The tabulated numbers accounts for descriptive statistics of various variables under study from 1960- 2012.
- India's average growth rate has been around 5% per annum till 2012.
- However, GCF has multiplied by 250 percent from a level of 15 percent in 1960 to a peak of 38 percent in 2007 and then declining to 35 percent in 2011.
- Domestic Credit provided by Commercial banks has grown rapidly from about 22% in 1960 to 76.5% in 2012. Variations in the data have been recognized in the early 1990's where credit extended dropped from 51% in 1989 to about 45% in 1998. Sharp rise has been seen in the same in early 2000 with commercialization of banks and reforms in the sector. It has continued its pace ever since.
- On comparing the minimum and Maximum numbers of Money and Quasi Money growth it can been seen that it has risen rapidly from 3.95% in 1960 to 24.5% in 1976. Market Capitalization of listed companies also show a similar story.

It is thus clear that the money variables grew faster than the real factors but who has influenced who is yet be investigated and analyzed. It is argued however that the relationship between real and financial sector is also influenced by some external factors which must therefore be controlled to understand the pure economic relationship between the real and financial sectors.

Table 2: Summary Statistics – SINGAPORE

SNo	Variable	Obs	Mean	Std. Dev.	Min	Max
1	GDP Annual Growth Rate (%)	52	7.658935	4.317621	-3.70163	14.78079
2	Gross Capital Formation (as per cent of GDP)	53	31.06729	9.521384	11.33782	46.95298
3	Money and Quasi Money Growth Rate	25	12.69658	6.841452	-2.04959	30.24853
4	Market Capitalization of Listed Companies	49	159.1308	54.54256	94.85379	256.3888
5	Domestic Credit provided by Banking Sector	50	54.11489	12.80312	7.15863	99.5233
6	Log of Domestic Credit provided by Banking Sector	50	1.657132	0.289338	0.85483	1.997925

- Singapore's average annual growth rate has been around 7.65%. It is currently at less than 2%.
- Gross Capital Formation saw a sharp rise from 11.33% in 1960 to as high as 46.95% in 1984. It is currently at 26% approximately as a percentage of GDP. Lot of variations have been seen in the data after its peak in 1984.
- Market Capitalization of listed companies has a similar story. It rose from 94.85% in 1988 to 256% in 2005. Besides, a lot of upward and downward variations in the data between 1988- 2005.

Statistics show that there has been a slowdown in the current times in the economy. However, it is puzzling to derive a simultaneous cause effect relationship between the two based on relative numbers.

TEST FOR STATIONARITY

The stationarity of all the variables was tested to observe whether they are stationary at first difference or not. The variable of Domestic Credit by Commercial banks has been transformed into logarithmic form in order to minimize the scale effect. The results of stationarity of all the variables are summarized in Table 3: India and Table 4: Singapore.

Table 3: Test for Stationarity-INDIA

SNo	Variable	Level	p I(1)	p I(2)
1	GDP Annual Growth Rate(%)	Intercept	Intercept Trend &Intercept None	
2	Gross Capital Formation (as per cent of GDP)		Intercept Trend &Intercept None	
3	Money and Quasi Money Growth Rate (as per cent of GDP)		Intercept Trend &Intercept None	
4	Market Capitalization of Listed Companies (as per cent of GDP)		Intercept Trend &Intercept None	
5	Domestic Credit provided by Banking Sector (as per cent of GDP)			Intercept, Trend &Intercept None
6	Log of Domestic Credit provided by Banking Sector (as per cent of GDP)		Intercept Trend &Intercept None	

Table 4: Test for Stationarity- SINGAPORE

SNo	Variable	Level	p I(1)	p I(2)
1	GDP Annual Growth Rate (%)	Intercept Trend and Intercept	Intercept Trend & Intercept None	
2	Gross Capital Formation (as per cent of GDP)		Intercept Trend & Intercept None	
3	Money and Quasi Money Growth Rate (as per cent of GDP)	Intercept Trend & Intercept	Intercept Trend & Intercept None	
4	Market Capitalization of Listed Companies (as per cent of GDP)		Intercept Trend &Intercept None	
5	Domestic Credit provided by Banking Sector (as per cent of GDP)		Intercept Trend & Intercept None	

It is obvious from Table 3 and 4 that all the variables are stationary at the first difference. The prerequisite for performing Johansen Co integration test is that all the variables should be non stationary and integrated of the same order. Hence, we may further analyze the time series to understand long term relationships between the variables by Co-integrating them.

GRANGER CAUSALITY TEST

The **Granger causality test** is a statistical hypothesis test for determining whether one time series is useful in forecasting another. Ordinarily, regressions reflect "mere" correlations, but Clive Granger argued that causality in economics could be reflected by some sort of tests. Since the question of "true causality" is deeply philosophical, econometricians assert that the Granger test finds only "predictive causality".

A time series *X* is said to Granger-cause *Y* if it can be shown, usually through a series of t-tests and F-tests on lagged values of *X* (and with lagged values of *Y* also included), that those *X* values provide statistically significant information about future values of *Y*.

The following is a summary of Granger Causality Test done on data for India and Singapore with respect to GDP Annual Growth Rate.

Table 5 : GRANGER CAUSALITY SUMMARY : INDIA

Variable	Null Hypothesis	Result
Market Capitalization of Listed Companies	MCAP does not Granger Cause GDP Growth Rate.	Not Reject
	GDP Growth Rate does not Granger Cause MCAP.	Not Reject
Money and Quasi Money Growth Rate	Money Growth Rate does not Granger Cause GDP Growth Rate.	Not Reject
	GDP Growth Rate does not Granger Cause Money Growth Rate.	Not Reject
Gross Capital Formation	GCF does not Granger Cause GDP Growth Rate.	Reject
	GDP Growth Rate does not Granger Cause GCF.	Not Reject
Domestic Credit given by Commercial Banks	Bank Credit does not Granger Cause GDP Growth Rate.	Reject
	GDP Growth Rate does not Granger Cause Bank Credit.	Not Reject

Interpretation:
- The results show that neither GDP growth rate nor Market Capitalization are related causes of each other. An increase in Market growth independent of any change in economic growth.

- Similarly, Economic growth rate may not necessarily attribute to growth in Money and Quasi Money circulation in the economy and vice-versa. Economic Growth Rate may be due to factors other than increase in monetary gains in the economy.
- It may be seen that Investment activity (Gross Capital Formation) spurs economic growth. However, the reverse does not hold true in this case. Causality runs uni-directional from GCF to GDP Growth rate only.
- Causality Runs from Domestic Credit to GDP Growth Rate only. Extending Bank Credit leads to higher savings that spurs investment demand and therefore, causes economic growth. However, the reverse is not true in this case.

Table 6 : GRANGER CAUSALITY SUMMARY : SINGAPORE

Variable	Null Hypothesis	Result
Market Capitalization of Listed Companies	MCAP does not Granger Cause GDP Growth Rate.	Reject
	GDP Growth Rate does not Granger Cause MCAP.	Not Reject
Money and Quasi Money Growth Rate	Money Growth Rate does not Granger Cause GDP Growth Rate.	Reject
	GDP Growth Rate does not Granger Cause Money Growth Rate.	Reject
Gross Capital Formation	GCF does not Granger Cause GDP Growth Rate.	Not Reject
	GDP Growth Rate does not Granger Cause GCF.	Reject
Domestic Credit given by Commercial Banks	Bank Credit does not Granger Cause GDP Growth Rate.	Not Reject
	GDP Growth Rate does not Granger Cause Bank Credit.	Not Reject

Interpretation:
- Causality runs from Market Capitalization to GDP Growth Rate only. Underlining an important role of a strong Market structure in economic growth of Singapore.
- Causality runs from Money and Quasi money growth to GDP Growth rate and vice- versa.
- Causality runs from GDP growth rate to GCF. This implies that economic growth contributes to Capital Formation in the country.
- As per results of causality, Domestic Credit extended by Commercial Banks and economic growth are independent of each other.

On studying the variations in the data closely in coherence with the results of Causality, it may be recognized that because Singapore had largely liberalized financial sector by mid-1970s, it became a growth sector for the economy, serving the domestic as well as international needs of

trade and investment, thereby, economic growth. Clearly, money inflow due to trade and investment could be attributed to economic growth in light with the test results.

REFERENCES:

Acaravci, Ali et.al 2007, 'Finance –growth Nexus: Evidence from Turkey', International Research Journal of Finance and Economics, Issue 11.

Acaravci,*SongulKakilli, et.al 2009, '*Financial development and economic growth: literature survey and empirical evidence from sub-Saharan African countries', South African Journal of Economic and Management Sciences, Vol. 12, No 1.

Acharya, D; Amanulla,S and Joy,S 2009,*Financial Development and Economic Growth in Indian States: An Examination',International Research Journal of Finance and Economics, Issue 24.

Berthelemy, JC&Varoudakis, A 1996, *'Economic* growth, convergence clubs, and the role of financial development', Oxford Economic Papers, Vol.48, pp. 300-328.

Greenwood, J and JovanovicB 1990, 'Financial Development, Growth and the Distribution of Income', Journal of Political Economy, Vol.98, no.5, pp.1076-1107.

Güryay, E2007, 'Financial Development and Economic Growth: Evidence from Northern Cyprus', International Research Journal of Finance and Economics, Issue 8, pp. 57-62.

Hansen BE1996, 'Inference when a Nuisance parameter is not identified under the Hypothesis', Econometrica, Vol.64, pp. 413-430.

Hansen BE2000, 'Sample Splitting and Threshold Estimation', Econometrica,Vol.68,pp.575-603.

Islam, MA2012, 'An Empirical Analysis of Causality between Development of Non-Bank Financial Intermediaries and the Economic Growth in Malaysia',European Journal of Social Sciences, Vol.30 No.4 (2012), pp. 654-664.

King, RG. & Levine, R 1993a, 'Finance and growth: Schumpeter might be right', Quarterly Journal of Economics, vol.108, pp. 717-737.

King, RG and Levine, R 1993b, 'Finance, entrepreneurship and growth: theory and evidence', Journal of Monetary Economics, vol.32, pp. 513-542.

Lamin Leigh, International Monetary Fund, 01-Mar-1996 - Business & Economics,   Financial Development and Economic Growth - An Economic Analysis for Singapore .

Levine, Rand Zervos, S1996, 'Stock-market development and long-run growth',The World Bank Economic Review, vol.10, no. 2, pp.323-339.

Levine, R Loayza,N and Beck T2000, 'Financial Intermediation and Growth: Causality and Causes', Journal of Monetary Economics, vol. 46, pp.31–77.

Oluitan, R2012, 'Bank credit and economic growth: the Nigerian experience', InternationalJournal of Business and Management, Vol. 5, No 2. pp. 102-110.

Omolola,O2010, 'Financial Development and Economic Growth: A Comparative Study of Selected Developing Countries', unpublished PhD thesis submitted to Faculty of the Graduate School of Howard University, Washington,US.

Schumpeter, J1911, 'The Theory of Economic Development', Cambridge Mass,Harvard University Press.

Wadud, MA2009, 'Financial development and economic growth: a cointegration and error correction modeling approach for south Asian countries'Economics Bulletin, Vol. 29 no.3 pp. 670-677.

Zilibotti, F 1994, 'Endogenous Growth and Intermediation in an Archipelago Economy', Economic Journal, Royal Economic Society, vol.104, pp.462-73.

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