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Capital Market Efficiency and Economic Growth: The Case of India

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Abstract

This paper examines the impact of capital market efficiency on economic growth in India using the time series data on market capitalization, total market turnover and stock price index over the period spanning from the first quarter of 1991 to the first quarter of 2010. The application of multiple regression model shows that the capital market in India has the potential of contributing to the economic growth of the country. This is as a result of high market capitalization and relatively high market liquidity. Thus, the market organizations and regulations should be such that large number of domestic as well as foreign investors enters the market with huge listings, investments, and trading so that the very objective of optimal allocation of economic resources for the sustainable growth of the country can be ensured.

Keywords: India, Capital Market, Market Efficiency, Economic Growth
JEL Classification Codes: C13, C22, E44, G14,

I. Introduction

Since last few decades the importance of the capital market as an efficient channel of financial intermediation has been well recognized by the researchers, academicians, and policy makers as a primary determinant of the economic growth of a country, both developed and developing. Some evidence from cross-country studies supports the view that efficient financial intermediation is crucial to economic development and positively influences growth (e.g., King and Levine 1993a and 1993b; Beck, Levine and Loayza 2000; Levine, Loayza and Beck 2000). In his classic, *Lombard Street,* published in 1873, Walter Bagehot argued that it was England's efficient capital markets that made the industrial revolution possible.

Economic growth in a modern economy hinges on an efficient financial sector that pools domestic savings and mobilizes foreign capital for productive investments. Underdeveloped or poorly functioning capital markets typically are illiquid and expensive which deters foreign investors. Furthermore, illiquid and high transactions costs also hinder the capital raising efforts of lager domestic enterprises and may push them to foreign markets.

Recent theoretical literature on financial development and growth identifies three fundamental channels through which capital markets and economic growth may be linked (Pagano, 1993): First, capital market development increases the proportion of savings that is funnelled to investments; Second, capital market development may change the savings rate and hence, affect investments; Third, capital market development increases the efficiency of capital allocation. In compliance to these channels, introducing an efficient capital market to link between the net savers (households) and net investors (entrepreneurs) results in reduction of transactions costs associated with funnelling savings, making the household savings highly liquid, enabling selection of efficient investments by gathering information on investment returns efficiently, and providing markets for diversification of risks by households and corporate.

If the capital markets are not efficient, the public offering largely disappears as a result of high transaction costs or the uncertainty of getting a fair price in the stock market. Thus, inefficient capital markets may reduce the incentive to enter new ventures, reducing overall long-term productivity of the economy. On the other hand, an efficient capital market reduces the transaction costs of trading the ownership of the physical assets and thereby paves the way for the emergence of an optimal ownership structure.

Thus, efficient and liquid capital markets provide avenues for the effective utilization of funds for long-term investment purposes by mobilizing them from the surplus spending economic units to the deficit spending economic units (Ekineh, 1996). In short, an efficient capital market is essential for long-term growth in capital formation (Osaze, 2000). Ekundayo (2002) argues that a nation requires a lot of local and foreign investments to attain sustainable economic growth and development. The capital market provides a means through which this is made possible. In addition, capital markets provide the opportunities for the purchase and sale of existing securities among investors thereby encouraging the populace to invest in securities and fostering economic growth (Ewah, *et al* 2009).

Therefore, efficiently functioning capital market affects liquidity, acquisition of information about firms, risk diversification, savings mobilization and corporate control (Anyanwu 1998). Hence, by altering the quality of these services, the functioning of stock markets can alter the rate of economic growth (Equakun 2005).

It is with this backdrop, this paper is an attempt to examine the impact of capital market efficiency on the economic growth in India. For the purpose, the rest of the paper is organised as: Section II outlines an overview of Indian capital market; Section III reviews the related literature; Section IV discusses the data and methodology; Section V analyses the data; and Section VI makes the discussion and concludes.

II. Indian Capital Market: An Overview

The development of the capital market in India dates back to the eighteenth century when East India Company securities were traded in the country. In 1850s, the trading was limited to a dozen brokers and their trading place was under a banyan tree in front of the Town Hall in Bombay. The location of trading changed many times, as the number of brokers constantly increased. The group eventually moved to Dalal Street in 1874 and in 1875 became an official organization known as 'The Native Share & Stock Brokers Association'. In 1895, this association acquired a premise in the Dalal Street and it was inaugurated in 1899. Thus, the Stock exchange at Bombay was consolidated. And, the orderly growth of the capital market in India began. The Bombay stock exchange got recognition in May 1927 under the Bombay Securities Contracts Control Act, 1925. The constitution of India came

into being on 26th January, 1950. The constitution put the stock exchanges and the forward markets under the exclusive authority of the Government of India.

In 1956, the BSE became the first stock exchange to be recognized by the Indian Government under the Securities Contracts (Regulation) Act. The main objective of recognizing the Indian capital market is to mobilize savings from numerous economic units for economic growth and development, provide adequate liquidity to investors, broaden the ownership base of assets as well as the creation of a buoyant private sector, provide alternative source of funds for government, encourage more efficient allocation of new investments through the price mechanism, encourage more efficient allocation of a given amount of tangible wealth through changes in the composition and ownership of wealth, create a built-in efficiency in the operations and allocation in the financial system to ensure optimal utilization of resources, and promote rapid capital formation.

The 1980s witnessed an explosive growth of the securities market in India, with millions of investors suddenly discovering lucrative opportunities. Many investors jumped into the stock markets for the first time. The government's liberalization process initiated during the mid-1980s, spurred this growth. The Bombay Stock Exchange developed the BSE Sensex in 1986, giving the BSE a means to measure overall performance of the exchange.

The 1990s will go down as the most important decade in the history of the capital market of India. The Capital Issues (Control) Act, 1947 was repealed in May 1992. The decade was characterized by a new industrial policy, emergence of SEBI as a regulator of capital market, advent of foreign institutional investors, euro-issues, free pricing, new trading practices, new stock exchanges, entry of new players such as private sector mutual funds and private sector banks, and primary market boom and bust. The 1991-92 securities scam revealed the inadequacies of and inefficiencies in the financial system. It was the scam, which prompted a reform of the equity market. The Indian stock market witnessed a sea change in terms of technology and market prices. Technology brought radical changes in the trading mechanism. The Bombay Stock Exchange (BSE) was subject to nationwide competition by two new stock exchanges – the National Stock Exchange (NSE), set up in 1994, and Over the Counter Exchange of India (OTCEI), set up in 1992. The National Securities Clearing Corporation (NSCC) and National Securities Depository Limited (NSDL) were set up in April 1995 and November 1996 respectively form improved clearing and settlement and dematerialized trading. The Securities Contracts (Regulation) Act, 1956 was amended in 1995-96 for introduction of options trading. Moreover, rolling settlement was introduced in January 1998 for the dematerialized segment of all companies. With automation and geographical spread, stock market participation increased. In 1996, the National Stock Exchange of India launched S&P CNX Nifty and CNX Junior Indices that make up 100 most liquid stocks in India. CNX Nifty is a diversified index of 50 stocks from 25 different economy sectors. The Indices are owned and managed by India Index Services and Products Ltd (IISL) that has a consulting and licensing agreement with Standard & Poor's. In 1998, the National Stock Exchange of India launched its web-site and was the first exchange in India that started trading stock on the Internet in 2000. The NSE has also proved its leadership in the Indian financial market by gaining many awards such as 'Best IT Usage Award' by Computer Society in India (in 1996 and 1997) and CHIP Web Award by CHIP magazine (1999).

In 2000 the BSE used the sensitive index, i.e., Sensex to open its derivatives market, trading Sensex futures contracts. The development of Sensex options along with equity derivatives followed in 2001 and 2002, expanding the BSE's trading platform. The introduction of rolling settlement system in all scrips and electronic fund transfer in 2003 reduced the settlement cycle to T+2. Indian capital market in 2007-08, thus, features a developed regulatory environment, a modern market infrastructure, a steadily increasing market capitalization and liquidity, better allocation and mobilization of resources, a rapidly developing derivatives market, a robust mutual fund industry, and increased issuer transparency. However, in the last quarter of 2008 and up to the first quarter of 2009, the capital market went through a phase of downsizing due to the direct impact of global financial crisis that originated from the USA sub-prime mortgage market. Indian capital market has seen its worst time with the global financial crisis. The most popular stock index, i.e., Sensex declined to its levels attained in

December 2005. Similar decline has also been noticed for S & P CNX Nifty index. Despite the scale down of popular capital market indices up to the first quarter of 2009, Indian stock markets now provide the evidence of strong resistance to global financial contagion. This infers the strong investor confidence and well risks diversification in Indian capital market.

The role of the Indian capital market in the development of the economy includes: First, it provides opportunities for companies to borrow funds needed for long-term investment purposes; Second, it provides avenue for the marketing of shares and other securities in order to raise fresh funds for expansion of operations leading to increase in output; Third, it provides a means of allocating the nations real and financial resources between various industries and companies. Through the capital formation and allocation mechanism the capital market ensures an efficient and effective distribution of the scarce resources for the optimal benefit to the economy; Fourth, it reduces the over reliance of the corporate sector on short-term financing for long-term projects and also provides opportunities for government to finance projects aimed at providing essential amenities for socioeconomic development; Fifth, it can aid the government in its privatization programme by offering her shares in the public enterprises to members of the public through the stock exchange; Last but not the least, it also encourages the inflow of foreign capital when foreign companies or investors invest in domestic securities, provides needed seed money for creative capital development and acts as a reliable medium for broadening the ownership base of family-owned and dominated firms.

III. Literature Review

There exists a voluminous literature concerning the role of capital market in the process of economic growth of a country. The most important and systematic early contribution on financial and economic development came from Joseph Schumpeter. Schumpeter (1912) contended that financial development causes economic development – that financial markets promote economic growth by funding entrepreneurs and in particular by channelling capital to the entrepreneurs with high return projects. However, a systematic approach to the issue has been addressed with the empirical study by Goldsmith (1969). He demonstrated a positive correlation between financial development (measured by the value of financial intermediary assets relative to GNP) and economic growth.

But the seminal work of McKinnon (1973) and Shaw (1973) brought to the forefront the role of financial development in promoting economic growth. Their argument was that the financial liberalization and deepening in countries that suffer from ‘shallow finance’ or ‘financial repression’ are critically important to the economic growth of these countries. Ever since this pioneering contribution, the relationship between economic growth and financial development remained an important issue of debate among academicians and policy makers (De Gregorio and Guidotti, 1995). There is now a growing theoretical and empirical body of literature on how financial intermediation mobilizes savings, allocates resources, diversifies risks, and contributes to economic growth (Jbili, Enders, and Treichel, 1997; Greenwood and Jovanovic, 1990).

These early works, though insightful, lacks rigor analytical structures. Starting from the beginning of 1990s, a growing body of work builds a series of analytical frameworks which show how the financial intermediaries and markets appear endogenously to contribute to long-run economic growth. Levine (1996), Jacque(2001), Tufano (2003), Chou (2007), Agarwal (2000), Mohtadi and Agarwal(1998), Sarkar (2006), Capasso(2006), Kamat, Kamat and Murthy(2007), Agrawalla and Tuteja (2007), Deb and Mukherjee (2008), and Chakraborty (2008) have contributed a lot to the literature in this direction.

This theoretical and empirical explanation on the nexus between capital market and economic growth of a country has been given a new tint with the development of Efficient Market Hypothesis (EMH) by Fama (1965). Then it has been argued that for capital market to contribute to economic growth and development of a country, it must operate efficiently. If the market operates efficiently, confidence will be generated in the minds of the public and thus, investors will be willing to part with hard earned funds and invest them in securities with the hope that in future they will recoup their

investment. On the other side, where the market is highly and unreasonably speculative, investors will be discouraged to invest their funds. The implication is that the entrepreneurs cannot raise additional capital for expansion. Such a situation would have detrimental effect on economic growth of any country. Thus, it suffices to say that capital market efficiency is a necessary condition for growth and development of a country.

In an exposition, Gabriel (2002) as enunciated by Nyong (2003) lay emphasis on the Romanian capital market and conclude that the market is inefficient and hence, it has not contributed to economic growth of Romania.

In a more recent study, Ewah *et al* (2009) appraise the impact of the capital market efficiency on the economic growth of Nigeria using time series data from 1961 to 2004.The study found that the capital market in Nigeria has the potential of growth inducing, but it has not contributed meaningfully to the economic growth of Nigeria because of low market capitalization, low absorptive capitalization, illiquidity, misappropriation of funds among others.

As inferred, the empirical financial economics literature is very thin on the issue that capital market efficiency can exert an impact on the economic growth of a country. And, the studies for an emerging market economy like India are almost non-existent in the literature. Therefore, this paper is, perhaps the first kind of attempt in this direction.

IV. Data and Methodology

The objective of this study is to examine the impact of capital market efficiency on the economic growth of India. The computational methodology used in this study is the multiple regression analysis with Ordinary Least Square (OLS) estimation techniques. The OLS technique has been chosen as it gives Best Linear Unbiased Estimators (Wannocott and Wonnocott, 1972; Koutsoyiannis, 1985; and Nyong, 1993). The study period spans from 1991:Q_1 to 2010:Q_1. In the study, the capital market efficiency is determine by a number of factors, which include how financial assets are priced, such as interest rates and market price for risk, transactions in buying and selling of securities (liquidity), efficient information system, size of the stock market that is market capitalization, number of listed equities and the level of money supply in the economy. The interrelationship of these factors ensures the efficiency of the capital market to mobilize and allocate resources for economic growth. In this study, the Stock Exchange, Mumbai (BSE) is considered as the representative of the Indian capital market due to its undoubted popularity among academicians, market analysts, investors and researchers.

The model used in the study is $LGDP = f(LMC, LMT, LS)$ and can be specified as follows:

$$LGDP_t = \alpha_0 + \alpha_1 LMC_t + \alpha_2 LMT_t + \alpha_3 LS_t + \varepsilon_t \quad (1)$$

Here, GDP is the real gross domestic product (proxy for economic growth), MC is the stock market capitalization, MT is the total market turnover, and S is the stock price index -Sensex. All the time series are considered in their natural logarithms. All the quarterly data for the sample period have been collected from the RBI database on Indian economy.

V. Results and Discussion

Table 1 shows the regression equation for capital market efficiency and economic growth, and the regression results. Observation shows that the coefficient of the constant term is 7.52, which is positive and significant. The coefficient of the logarithm of stock market capitalization (LMC) is 0.238 and it is significant. This means that a large capital market size of the country has the potential to enhance economic growth. The coefficient of the log of total market turnover (LMT) is 0.151 and it is also significant. It infers that the simplicity and efficiency in buying and selling of securities has the potential to augment the economic growth of India. Furthermore, the coefficient of the log of BSE

Sensitive index, although positive, but not statistically significant. Thus, the stock price index has a little power of explaining the economic growth of the nation.

Table 1: Results of Regression Estimation

$$LGDP_t = \alpha_0 + \alpha_1 LMC_t + \alpha_2 LMT_t + \alpha_3 LS_t + \varepsilon_t$$

Variables	Coefficient	Std. Error	t-Statistic	Prob.
Constant	7.524280	0.395029	19.04743	0.0000
LMC	0.238528	0.062814	3.797377	0.0003
LMT	0.151648	0.042445	3.572828	0.0006
LS	0.065762	0.107374	0.612454	0.5421
R-squared	0.809660	**Mean dependent variance**		12.83657
Adjusted R-squared	0.801838	**S.D. dependent variance**		0.568116
S.E. of regression	0.252899	**Akaike info criterion**		0.138898
Sum squared residual	4.668932	**Schwarz criterion**		0.260654
Log likelihood	-1.347576	**Durbin-Watson stat**		0.390110

Table 2: ANOVA

Dependent Variable: LGDP

	Sum of Squares	d.f	Mean Square	F-value	p-value
Regression	19.861	3	6.620	103.508	0.000
Residual	4.669	73	0.064		
Total	**24.529**	**76**			

The value of adjusted R^2 is 0.801, which means that about 80 per cent variation in the observed behavior in the dependent variable, GDP (the proxy for economic growth), is jointly explained by the independent variables except LS. The remaining 20 per cent is captured by the LS and the white noise. Thus, this high R^2 indicates that the model is a good fit. The F-value is 103.508 with a corresponding p-value of 0.000, which means that the overall fitness of the model is well justified.

Therefore, this study reveals that there is a linkage between capital market efficiency and economic growth in India. This linkage is established through high rate of market capitalization and total market turnover. The large size of capital market as measured by greater market capitalization is positively correlated with the ability to mobilize capital and diversify risk on an economy-wide basis (Agarwal, 2001). Thus, the increasing trend of market capitalization in India would certainly bring capital market efficiency and thereby contribute to the economic growth of the country. Likewise, the total value of shares traded is also a market efficiency inducing macro-economic variable that is capable of enhancing economic growth in India. The value of shares traded or total market turnover is the indicator of market fairness, competitiveness, and efficiency. In India, the nature of total market turnover shows that it has the potential to contribute to the sustainable growth of the nation.

However, it is also clear for this study that Indian economy is informationally inefficient as reflected in stock price index based market return (see Note-1). The security prices do not fully reflect all the relevant information that is available about the fundamental value of the securities. The implication is that a sizable amount of stock prices in the capital market may either be undervalued, or overvalued. Thus, informational inefficiency is the indicator of sub-optimal allocation of portfolios into the capital market and to this extent it can cause misallocation of economic resources and deter economic growth of the country. But, such inefficiency is a blessing in disguise. It by generating an opportunity of making an excess profit can stimulate financial innovations. Once financial innovations appear in the market, they will generate greater efficiency in the allocation of risks by breaking the links between origination and ownership, and by creating new securities that can more finely allocate risks to different investor classes. The boom in financial market innovation and growth undoubtedly will generate efficiencies in the allocation of capital, lower the cost of capital and contribute to economic growth.

Hence, the policy implication may be that the market regulators, credit rating agencies, and policy makers should ensure the formulation and execution of prudential norms so that the capital market efficiency would contribute to the sustainable economic growth in India.

VI. Summary and Conclusion

This paper examines the impact of capital market efficiency on economic growth in India using the time series data on market capitalization, total market turnover and stock price index over the period spanning from the first quarter of 1991 to the first quarter of 2010. The application of multiple regression model shows that the capital market in India has the potential of contributing to the economic growth of the country. This is as a result of high market capitalization and relatively high market liquidity. Thus, the market organizations and regulations should be such that large number of domestic as well as foreign investors enters the market with huge listings, investments, and trading so that the very objective of optimal allocation of economic resources for the sustainable growth of the country can be ensured. In this direction, the development of a sound regulatory framework; the reform of inefficient financial institutions, whether through privatization or by allowing competition – including from foreign firms – to restructure the financial system; the removal of discriminatory taxes and other elements of financial repression; and strong corporate governance and the adoption of sound accounting practices would go a long way.

Note 1: Informational Efficiency Test

Fama (1970) defines an efficient capital market as a market in which prices always reflect the recent available information. And, this informational market efficiency is very significant in its weak form (security prices reflect all the information contained in the history of past prices and returns). Thus, in this study, the non-parametric test as suggested by Phillips and Perron (1988) is performed to examine the informational efficiency of Indian capital market. The Phillips and Perron (PP) method estimates the following equation:

$$\Delta S_t = \alpha S_{t-1} + x_t'\delta + \varepsilon_t \quad \& \quad \alpha = \rho - 1$$

Where, S_t is the quarterly Sensex based stock market return, x_t are optional exogenous regressors which may consist of constant, or a constant and trend, $\rho \, and \, \delta$ are parameters to be estimated, and, ε_t are assumed to be white noise. The null and alternative hypotheses of this test are $H_0 : \alpha = 0$ (existence of unit root or non-stationarity) vs. $H_1 : \alpha < 0.$

Variable	PP(Level Form) Test statistic with No Trend & Intercept	PP(Level Form) Test statistic with Trend & intercept	PP(1st Difference) test statistic with No trend & intercept	PP(1stDifference) test statistic with Trend & intercept
S_t	**-14.5889 (2)**	**-14.5710 (1)**	**-78.9796 (43)**	**-80.8155(44)**

i. PP (Level Form) critical values with an intercept and no trend are -3.4600, -2.8744, and -2.5737 at 1%, 5%, and 10% levels of significance.
ii. PP (Level Form) critical values with an intercept and trend are -4.0003,-3.4303, and-3.1387 at 1%, 5%, and 10% levels of significance.
iii. PP (1st Difference) critical values with an intercept and no trend are -3.4601,-2.8745, and -2.5737 at 1%, 5%, and 10% levels of significance.
iv. PP (1st Difference) critical values with an intercept and no trend are -4.0005, -3.4304, and -3.1388 at 1%, 5%, and 10% levels of significance.
v. The numbers within parenthesis represents the bandwidth selected based on Newey-West using Bartlett Kernel.

It is cleared from this test that for Indian capital market, the null hypothesis of unit root (non-stationarity) is rejected, as the value of test statistic is more negative than the critical value. Thus, stock

price returns in Indian capital market do not exhibit characteristics of random walk, and as such the market is not informationally efficient in the weak form.

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