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Indian Capital Markets in the Post Liberalization Period and Their Relationship with Economic Growth

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Abstract – This paper has made a study of the Indian capital markets together with analyzing their role in the growth process of the economy. Starting with a survey of literature on the importance of these markets in the process of economic growth, this paper brings to the fore in what way the reforms undertaken in the financial sector as part of the liberalization package of the early nineties have transformed them. Specifically, the situation concerning size, liquidity, and volatility has been studied, together with various qualitative aspects of the transformation. The paper further examines with the help of vector autoregressive and the vector error correction models as to what extent these markets have played a catalytic role in India's growth process in the post-reform period. It has also examined whether their role is complementary to that of the financial institutions or do the two stand in competition to each other.

Keywords – Financial Sector Reforms, Granger Causality, Market Capitalization, Turnover Ratio, Value-Traded Ratio, Volatility, VAR, VEC.

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1. INTRODUCTION

The financial system speeds up the growth process of an economy in various ways such as by increasing savings and capital formation in an economy and through efficient allocation of capital. This in turn raises the productivity of investment. From the perspective of financial stability, it is necessary to have a financial system in which both financial institutions and markets play an important role. This also enhances the efficiency of a financial system as various constituent parts compete with each other for financial resources. In any study of the financial system, the institutions are often given overriding importance to noticeable neglect of the associated markets. This paper has tried to make a detailed study of the Indian financial markets together with outlining their role in the growth process of the economy.

The financial market, specifically the stock market is an important and growing constituent of the financial system, more so in developing countries. It adds to the financial depth of the economy by enlarging the financial sector and promoting the use of innovative, cost-effective, and sophisticated financial instruments, which ultimately reduce the cost of capital. While capital markets provide both equity and debt finance, banks and other financial intermediaries specialize in providing debt finance only. Equity and debt markets diversify the credit risk across the economy, thereby diffusing stress on the banking sector. Well-developed capital markets, thus, have the potential to offer different kinds of financial services as compared to the financial institutions and therefore can provide a different kind of impetus to investment and growth.

The next section provides a brief review of literature on the study of Indian capital markets and their relevance in the growth process of the economy. Section 3 provides a snapshot of the financial sector reforms related to the capital market and shows how the market has been transformed due to the reforms. Section 4 contains the econometric analyses for the relationship between growth of markets and economic growth, as also the nature of relationship between financial institutions and markets for the Indian economy during the post reform period. Section 5 summarizes the whole thing and concludes.

2. LITERATURE SURVEY

In the available literature, there exist models emphasizing the tensions between bank-based and market-based systems on one hand, and those focussing on complementarity hypothesis on the other. Such studies have shown that stock markets and financial intermediaries have grown hand in hand in the emerging market economies and that their advancement exerts a positive influence on economic

growth. Levine and Zervos (1998) show that the current level of stock market liquidity (and banking development) is positively and significantly correlated with future growth rates, capital accumulation, and productivity growth. Industry-level studies have also demonstrated a positive association between financial development and economic growth (Rajan and Zingales, 1998). Demirguc-Kunt and Maksimovic (1998), using firm-level data, have shown that the proportion of firms growing at rates exceeding the rate at which each individual firm can grow with only retained earnings and short-term borrowings is positively corelated with stock market liquidity (and banking system size). Well-functioning markets also impose discipline on the firms to perform. Thus, there exist ample literature supporting the role of the stock market in economic growth.

While considering the role of financial markets in economic growth, the associated problems and limitations cannot be ignored. The benefits of the stock market are, often, more from the viewpoint of maximizing (speculative) returns for the individual investors and the intermediaries, that is, the market operator. The efficient market hypothesis in most cases does not hold. The stock market valuations are often incorrect because they are related more to speculative activity/trading and less to fundamentals. The system of corporate financing based on equity displays a tendency to discourage long-term (riskier) investment in productive physical capital as the companies become overtly occupied with the considerations of short-term financial return to keep the shareholders happy, and also to avoid possible takeovers. The stock market-induced liquidity may encourage investor short-sightedness and weaken investor commitment. It may reduce the incentive for the investor to exert corporate control and monitor the company's performance, which can hurt economic growth. In today's liberalized and globalized economics, stock markets can easily spread speculative pressures all over the world. Singh (1997) has shown that stock market expansion is not necessarily a result of a country's financial development and the stock market development itself may not help in achieving quicker industrialization and faster long-term economic growth in developing countries.

3. CAPITAL MARKET IN INDIA: THE IMPACT OF REFORMS

India has the largest number of recognized stock exchanges in the world; all of them being regulated by the Securities and Exchange Board of India (SEBI). The Bombay Stock Exchange (BSE) is the apex stock exchange in India. The relative position of BSE has gone down over the years although it still is the premier institution. It is the National Stock Exchange of India Ltd. (NSE), set up in 1994-95 that has gained in importance. Together BSE and NSE account for more than 95 percent of the total turnover. In addition to the official stock exchanges, about 40 unofficial exchanges are operating as brokers' associations. They are not recognized by SEBI, but some of them transact a considerable amount of business. Additionally, kerb and illegal badla markets are doing the securities trading business. In India, equity derivatives were introduced in 2000. The derivatives market has since then, flourished rapidly.

In 1991, wide-ranging economy-wide reforms were undertaken. A separate committee was set up under the chairmanship of Shri M. Narasimham to examine the financial system and make recommendations for improving the efficiency and effectiveness of the system. The committee's approach was to ensure that the financial services industry operates on the basis of operational flexibility and functional autonomy intending to enhance efficiency and profitability. In the context of the capital market, it was felt that the ongoing restrictive environment was not conducive to the development of the market and a substantial and speedy liberalization was therefore recommended. The market was to be gradually opened up to the foreign portfolio investments and efforts were to be initiated to improve the depth of the market by facilitating the issues of new types of equities and innovative debt instruments. Attempts towards facilitating securitization of debt were also recommended.

The reform measures were aimed at creating growth enabling institutions, boosting competitive conditions in the equity market by improving the price discovery mechanism, putting in place an appropriate regulatory framework, and reducing the transaction costs and information asymmetry, thereby boosting the investor confidence. The reforms, based on international best practices, have been modified to suit the country's needs. They have been implemented gradually and sequentially in a phased manner.

These reforms have brought about a significant structural transformation of the Indian Capital market. SEBI, that had been initially set up (in 1988) as a non-statutory body was given statutory powers (as part of the reform package) in 1992 for regulating the stock markets. It was given the twin role of protecting the interests of the investors and ensuring the orderly functioning and development of the capital market. The most significant reform related to the primary capital market was the introduction of free pricing. All companies are now able to price their issues based on market conditions. The norms related to public issues were made stringent in 1996 to keep fraudulent companies away from the market. Greater disclosure now required has substantially increased transparency. This has resulted in improving the level of investor protection. Trading and settlement cycles have been successively shortened and trading infrastructure has been modernized. This has greatly reduced the risk element linked with unsettled trades due to fluctuations in the market.

The National Stock Exchange of India Ltd. has been set up as an electronic trading platform. This has set a benchmark of operating efficiency for other exchanges in the country. The setting up of National Securities Depository Ltd. in 1996 and Central Depositing Services (India) Ltd. in 1999 has enabled paperless trading in exchanges. This has also eliminated the risks to the investors that had been arising from bad deliveries in the market, fake and forged shares, delays in share transfer, and loss of scripts by facilitating the electronic transfer of securities. The electronic fund transfer facility together with the dematerialization of shares has created a conducive environment for reducing the settlement cycle in various stock markets. The improvement in the clearing and settlement system has brought about a substantial reduction in transaction costs. Several measures have also been undertaken to boost the safety and integrity of the market. Some of these are capital requirements, daily margins, trading and exposure limits, and setting up of trade/settlement guarantee fund to warrant smooth settlement of transactions in case of default by any member.

Some of the other important reform measures include a move towards corporatization and demutualization of stock exchanges, the introduction of trading in derivatives, opening the mutual funds industry to the private sector, allowing foreign institutional investors to invest in all types of securities, allowing Indian corporate sector to access the international capital markets, a system of redressal of investor grievances, etc.

As a result of various measures undertaken, the Indian equity market has now become modern and transparent. Its role in capital formation, however, continues to be limited. The public issues market for corporate debt is yet subdued, while the market for private corporate debt is mainly active in the form of private placements. It is the primary markets that link the issuers of securities to the investors and provide funding for capital formation. Therefore, to sustain the growth path of our country, the capital market has to play an important role. Further, as the banks now need to raise necessary capital from the market to sustain their growing operations, the relevance of a well-functioning domestic capital market has also escalated.

Ever since the reform process has been initiated in the early 1990s, the Indian Capital Market has endorsed significant quantitative and qualitative changes. Substantial improvement in terms of various parameters as size of the market, liquidity, transparency, and efficiency has taken place. The changes in governance and regulatory framework have led to an improvement in investor confidence. Together with these developments on the positive front it also needs to be noted that with opening up to the foreign sector the stock market has become much more volatile and vulnerable to foreign disturbances. This paper has examined the quantitative changes that have taken place after liberalization with the help of secondary data available in the Handbook of Statistics on the Indian Securities Market (various issues). Post-reform time-series data on indicators of size and liquidity is presented in Table 1 below. Sparklines have been drawn at the end of each row to give a quick visual feel of the trends suggested by the numerical data.

3.1 Size of the Market

The size of the market is governed by numerous factors including changes in financial technology, improvement in macro-economic fundamentals, and increase in institutional efficiency. A cross-country study by Li, 2007 has identified that for India, the size of equity market has expanded mostly due to change in financial technology followed by the change in market fundamentals while the change in institutional efficiency has had no impact on the market size.

The second column of Table 1 below indicates a sharp increase in the market size in the early nineties, as measured by the number of companies listed on the country's two premier exchanges. After that, it remained constant for nearly a decade. In 2004-05 the number took a sharp downturn and has increased steadily since then. While the size of the Indian equity market remains much smaller than many advanced economies (e.g., US, UK, Japan) it is significantly larger than many other emerging market economics including Brazil and Mexico

Table 1: Indicators of Size and Liquidity

Year	Number of listed companies (BSE + NSE)	BSE SMC/ GDP	NSE SMC/ GDP	Turnover Ratio BSE	Turnover Ratio NSE	Value-Traded Ratio BSE	Value-Traded Ratio NSE
1993-94	3585	47.11	..	22.97	..	10.82	..
1994-95	4837	51.12	..	14.45	..	7.39	..
1995-96	6025	52.53	37.41	8.88	16.76	4.66	6.27
1996-97	6382	40.62	33.72	24.59	70.44	9.99	23.75
1997-98	6465	45.33	34.64	32.86	76.88	14.9	26.63
1998-99	6497	38.77	30.73	50.16	84.38	19.44	25.93
1999-00	6535	51.81	57.92	75.2	82.23	38.96	47.62
2000-01	6654	27.4	31.5	175	203.6	47.9	64.1
2001-02	6575	26.9	28	50.2	80.6	13.5	22.6
2002-03	6468	23.3	21.9	54.9	115.1	12.7	25.1
2003-04	6437	43.4	40.6	41.9	98.3	18.2	39.8
2004-05	5701	52.4	48.9	30.5	71.9	16	35.2
2005-06	5850	81.8	76.2	27	55.8	22.1	42.5
2006-07	6049	82.6	78.4	27	57.8	22.3	45.3
2007-08	6268	103	97.4	30.7	73.1	31.7	71.2
2008-09	6361	55.3	51.9	35.6	95	19.7	49.3
2009-10	6445	94.1	91.7	22.4	68.9	21	63.2
2010-11	6641	94.1	92.2	16.2	53.4	15.2	49.2
2011-12	6779	71.1	69.8	10.7	46.1	7.6	32.2
2012-13	6877	69.2	67.6	8.6	43.4	5.9	29.4
2013-14	7024	75.4	74	7	38.6	5.3	28.5
2014-15	7357	96.2	94.1	8.4	43.6	8.1	41
Sparklines							

Source: Different issues of Handbook of Statistics on the Indian Securities Market

3.2 Liquidity

This measures the frequency of trading and friction lessness in trading proxied by low transaction cost.

The measures of liquidity used are (i) The Market Capitalisation Ratio (ii) The Turnover Ratio and (iii) the Value-traded Ratio. The market capitalization ratio (MCR) measures the stock market capitalization (SMC) as a percentage of the country's GDP. The turnover ratio (TR) is the value of shares traded on a country's stock exchanges divided by SMC, expressed as a percentage; while the value-traded ratio (VTR) is the value of domestic stocks traded on a country's exchanges relative to GDP. This ratio measures the trading activity relative to the size of the economy. The table above provides data on various liquidity ratios for BSE and NSE. As can be seen from the sparklines, the basic trend for all three ratios is parallel for the two premier stock markets.

The post-liberalization values in MCR show ups and downs, at times sharply. Amid lots of fluctuations, the ratio has significantly increased during the first decade of 2000. This indicates that after the announcement of the reforms, SMC greatly increased in hope of higher rates of economic growth and improved institutional and infrastructure facilities. A large number of companies got listed on stock exchanges. Apart from new listings, the ratio in the early years of the twenty-first century has gone up due to substantial increases in stock prices. During certain years of the last decade, the ratio approached 100 percent; in 2007-08, it crossed the 100 percent mark. Normally an MCR of above 100% signifies overvalued stock market. However, in the case of the Indian economy, we need to take cognizance of the growth trajectory that the economy has been expected to achieve as a result of numerous measures initiated by the policymakers and the central bank.

Both turnover ratio and value-traded ratio fluctuated with small variations in the first half of the 1990s. In the second half, however, they registered a sharp increase. The opening of the next century saw a fall in both liquidity measures although at varying rates. On the whole liquidity measures show higher magnitudes and higher rates of growth after reforms as compared to the pre-liberalization period. The spreading of trading terminals across the country has helped to give access to investors in the stock market. The opening of the Indian equity market to foreign institutional investors and growth in assets of mutual funds has also contributed to increased liquidity in the Indian Stock Market. This basic trend here is the same as in the case of stock market capitalization.

This increase was primarily driven by a sharp rise in stock prices resulting from the IT boom. It must however be remembered here that an increase in stock prices may lead to an increase in liquidity ratios even without an increase in the actual number of transactions or even with a fall in transactions. Further, liquidity may be concentrated among larger stocks. It may be noted here, that of the two liquidity measures, the turnover ratio, being the ratio of the value traded to the value listed, will be less affected by the increase in stock prices. This is so because both values are a function of stock prices. To the extent higher priced shares are more frequently traded, the turnover ratio will show an upward bias. In the light of this observation, the two liquidity ratios can be more closely examined.

Now turning to the other aspect of the liquidity i.e., frictionless trading or low transaction cost. It has been found that India is among one of the lowest transaction cost countries. Automation of trading in stock exchanges has led to increase in the number of trades and also the number of shares traded per day. This has greatly helped reducing transaction costs. Direct transaction costs such as a fee to broker and exchange; securities transaction tax, etc. are directly observable in the market. These direct charges in India are one of the lowest in the world. In addition to the direct transactions cost, there are indirect transaction costs, that are not directly observable but can be derived from the efficiency and speed of execution of trades. Estimating the impact cost that varies with the size of a transaction can capture these costs. The impact cost has fallen in case of both Nifty and Nifty Junior. There has been a sizeable fall in transaction cost in the Indian Securities Market. It declined from a level of nearly 5 percent in 1994 to 0.6 percent in 1999, close to the global best level of 0.45 percent. In comparison to some of the developed and emerging markets, the transaction costs for institutional investors are also one of the lowest on Indian stock exchanges. This makes India one of the attractive destinations for domestic and foreign investors.

In all developed economies, stock markets provide a mechanism for hedging. Derivatives (futures and options) have increasingly become popular as an instrument of risk management. By locking in asset prices, derivative products enable the participants in the market to transfer, at least in part, the risks associated with price fluctuations. In India, equity derivatives were introduced in 2000. Transactions in derivatives are carried out in both the important stock exchanges i.e., BSE and NSE. In a short period, the derivative market has flourished and sharply expanded. Major activity is concentrated in single stock futures in contrast to several other countries where index futures and options are more popular derivative products. The number of stocks on which individual stock derivatives are permitted has gone up steadily from 31 in 2001 to 117 in 2007. This has helped in percolating liquidity and market efficiency to a wide range of stocks. The turnover in the derivatives market has also risen sharply. In less than a decade, India has been able to build a modern and transparent derivates market. As per the world federation of stock exchanges, NSE was the leader in trading of single stock futures in 2006 and at fourth position in trading of index futures.

3.3 Volatility

The volatility of the stock market is measured by the standard deviation of daily returns. In the year 1992,

the first year for which data is available, the volatility index was very high at 3.3 percent. The possible reason for this high volatility can be found in the drastically changing and therefore uncertain economic environment in the immediate post-reform period. Subsequently it declined to 1.8 percent in 1993 and further to 1.4 in 1994 and fluctuated around that level. It was near about 2 percent in the closing years of the 1990s. For the rest, it has fluctuated largely between 1 percent and 1.5 percent.

Internationally, the index is at a relatively high level. It is quite high in comparison to countries like the US, UK, France, Australia, South Africa, and Japan and low only in caparison to Hong Kong and Brazil. One big achievement of the strengthening of market design and risk management practices followed after liberalization was manifested when in 2004 and again in 2006 the exchanges were able to contain the effect of the volatile movement in stock prices without any disruption in financial markets.

After the reforms, the Indian securities market has become modern in terms of trading and settlement practices and market infrastructure and has also become less risky than it was before the reform process began. The operational risk benchmark that takes into consideration the settlement and safekeeping benchmarks together with the other operational factors such as the counterparty risk, level of compliance with G30 recommendations, and the complexity and effectiveness of the legal and regulatory structure of the market, improved from 28 out of 100 in 1994 to 67.2 by 2004. The depth and liquidity in the secondary market have increased; transaction costs have fallen, and substantial improvements in efficiency and transparency have taken place.

However, despite the significant improvements in the trading and settlement infrastructure, liquidity, risk management system, and containment of volatility, the role of the Indian Capital Market has remained less significant in terms of resources raised by the corporate sector. Its role in capital formation has also remained less significant. The public issues segment of the market, in particular, has shrunk over the past 15 years. The size of the primary market in India is still small internationally. Resource mobilization from the primary market by way of public issues that touched the peak during 1994-95 declined in the subsequent years. Although it picked up again after 2003-04, the resource mobilization as a percent of GDP in 2005-06 was lower than that in 1990-91.

On the whole, after liberalization, the Indian Stock market has for sure become transparent and modern. All companies are now able to price their issues based on market conditions. With improvements in clearing and settlement cycles and automation, the transaction cost and risks of trading have greatly declined. Trading volumes and liquidity have sharply increased. A large number of new companies and new players (investors) have come on the scene. While all this seems good but one must not forget the potential dangers involved. With opening up to the world, the domestic markets' ups and downs will move along with other countries. It becomes more vulnerable to problems going on in other countries as manifested recently. Also, when stock market activity is high, speculative trading takes huge volumes with all its associated risks and dangers. So, a cautious approach is required.

4. CAPITAL MARKETS AND ECONOMIC GROWTH

This part of the paper examines the relationship of the capital markets with economic growth in India. It does not presume either a supply leading or the demand following patterns of relationship. Rather, using a set of vector autoregressive models, it treats both the variables as endogenous and examines whether they are correlated and if so, what are the causality patterns. It has just been noted above that in the post-liberalization period stock market size and liquidity have increased substantially. It has been shown elsewhere (Ph.D thesis of the author, unpublished) that after liberalization substantial growth of institutional credit to the private sector has taken place. It is now examined whether these developments in the capital markets and growth of credit have any bearing on the process of economic growth of the country. It has been specifically analyzed whether the relationship between financial development and economic growth in India has changed due to the liberalization of the economy.

As an indicator of economic growth (EG), the average annual rate of growth of real Gross Domestic Product (GDP) at factor cost has been used. Incremental market capitalization ratio (IMCR) i.e., the ratio of incremental stock market capitalization to GDP has been used to indicate the level of stock market activity. In addition, the ratio of incremental institutional credit to the private sector to GDP (ICR) has also been used to see the linkages between the two segments of the financial sector. Simultaneously considering the potential roles of institutions and markets permits one to distinguish among competing bank-based and market-based theories and provide evidence to policymakers on the independent roles of markets and banks in the process of economic growth. The data on the real sector and the financial institutions has been obtained from the RBI publication Handbook of Statistics on Indian Economy, 2015. Data on SMC (BSE) has been taken from the Handbook of Statistics on Indian Securities Market, 2015 published by SEBI.

To start with, all the variables are examined for stationarity. Multiple tests are used (Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), and KPSS)

as the tests for stationarity have low power. These tests show the presence of unit root in all cases. So, all variables of the VAR model are non-stationary. The first difference was then taken in all cases and all variables were found to be stationary in the first difference. This implies that all variables of the VAR model are integrated of order one, I(1).

Since all the variables are I(1), the obvious next step was to test for the presence of co-integration among variables. Due to the trending nature of the series, the co-integration test was carried including an intercept and with co-integrating restrictions imposed. The Johansen tests for co-integration (λ_{max} and λ_{trace}) indicate the presence of a single co-integrating vector in both cases. This implies the existence of a long-run equilibrium relationship among the variables examined. LR test for co-integrating restrictions was also carried out which suggested the restrictions to be valid.

Due to the presence of co-integration simply first differencing leads to misspecification error. So, the error correction model has been used in this study to examine the short-run dynamics. The sign and size of the estimated coefficient on the error correction term (ECT) in each equation gives the direction and speed of adjustments in the dependent variable to temporary deviations from the long-run relationship.

Since there exists a single co-integrating relationship among the three variables, Wald tests for block exclusion are used for Granger-causal inferences. The direction of the causal effects is given by the sign of the algebraic sum of the regression coefficients of each of the *p* lags of the concerned variable. Table 2 below gives the results from the estimates of VAR in levels and of the error correction model. In the left-hand portion, the standardized co-integrating vectors appear in the parentheses below the time period. In the center part of the Table, the equation numbers 1, 2, and 3 correspond to the equation with the dependent variable being EG, ICR, and IMCR respectively. The '+' and the '-' sign indicate the direction/ sign of the sum of the regression coefficients for all lags of the variable in levels VAR. The significance level or the p-value of the Wald test of block exclusion for Granger non-causality is given in the parentheses below the signs. The right-hand side panel reports the coefficients of the error correction term with the significance level in the parentheses.

Table 2 Results from VAR levels estimates and Error Correction Model

Time period	*VAR Model*				*Error correction model*	
	Equation	*EG*	*ICR*	*IMCR*	*Equation*	*ECT*
1991-92 to 2014-15 (0.774, 1, -0.397)	1	(-)	(+) (0.0005)	(+) (0.002)	1	0.322 (0.059)
	2	(+) (0.000)	(-)	(+) (0.000)	2	-0.209 (0.541)
	3	(+) (0.000)	(+) (0.000)	(-)	3	3.61 (.007)

The analysis indicates a bi-directional positive relationship between economic growth and financial development. Both the financial development indicators have a positive significant (at less than 1 percent level of significance) influence on economic growth and economic growth on the other hand has a positive effect (again significant at less than 1 percent) on both these indicators. The stock market activity also has a positive significant impact on the growth of institutional credit, and vice-versa. This implies complementarities between the institutions and the markets.

The error correction model shows a positive and significant coefficient of the error correction term in the economic growth equation as well as in the IMCR equation. This implies a negative response of the economic growth indicator to downward deviations from the long-run equilibrium position. While IMCR in the co-integrating vector has a negative loading and pushes the economic growth back to its equilibrium position ICR has a positive sign and therefore takes the growth farther in the direction of initial deviation. On balance, the movement is in the same direction as an initial disturbance. It means that if the economic growth was to deviate from its long-run equilibrium position, the system variables tend to move farther away from the equilibrium. This brings in an important role for the government's anti-cyclical policies whenever the economy deviates from its long-run growth path.

5. CONCLUSION

The capital markets are now much more advanced, transparent, and less risky as compared to the period before the reforms of the 1990s. These have grown noticeably in terms of size. These now offer a much higher level of liquidity and are much less volatile than before. Financial development and economic growth share a mutually reinforcing relationship that was absent in the period before the reforms. The analyses therefore clearly indicate that during the post-reform period the development of the capital markets together with financial institutions has played a catalytic role in India's growth process. The institutions and markets support the growth of each other rather than competing in the sense of the term.

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