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ON STOCK MARKET DEVELOPMENT, BANKS AND ECONOMIC GROWTH IN INDIA

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ON STOCK MARKET DEVELOPMENT, BANKS AND ECONOMIC GROWTH IN INDIA

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Abstract

Using the stock market development indicators viz., market size, liquidity, and volatility along with bank credit to GDP ratio as an indicator of banking sector development, and Index of Industrial Production (IIP) as the proxy for GDP, this paper examines the role of stock markets and banks in promoting economic growth in India. On the basis of monthly data (1991:1-1998:12), the present study shows that stock market size and banking development are positively correlated with economic growth. The paper also finds that the stock market liquidity and volatility are not robustly linked with economic growth.

I. Introduction

The debate as to whether financial development contributes to economic growth has persisted for quite a long time. Traditional economists have emphasized on the banking sector as most prominent to economic growth. Banks can actively impart innovation and activate future growth by identifying and financing productive investments (Bagehot, 1873; Schumpeter, 1912). However, Lucas Jr. (1988) opines that economists "badly overstress" the role of the financial system. Also, Robinson (1952) argues that banks respond passively to economic growth.

Apart from the banking sector, economists have also focussed on the links between stock market and long run growth. Specifically, this gained momentum in 1980s, in the wake of increase in stock market activities all over the world. Kyle (1984) and Holmstrom and Tirole (1993) argue that more liquid stock markets increase incentives for investors to get information about firms and improve corporate governance. Levine (1991) and Bencivenga *et al.* (1995) state that more liquid stock markets reduce disincentives to invest in long duration projects because investors can easily sell their stake in the project if they need their savings before the project matures. Therefore, liquid stock

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markets facilitate investment in the longer run and higher return projects that boost productivity growth. Greenwood and Smith (1996), show that large stock markets can lower the cost of mobilizing savings and thereby facilitate investment in the most productive technologies. However, the debate still continues about whether greater stock market liquidity actually encourages a shift to higher return projects stimulating productivity growths. Since it is easier to sell shares in liquid stock markets, some argue that more liquidity reduces the incentives of shareholders to undertake the costly task of monitoring managers (Shleifer and Vishny, 1986; Bhidé, 1993). In turn, weaker corporate governance impedes effective resource allocation and slows productivity growth. Stiglitz (1994) says that stock market liquidity will not enhance incentives to acquire information about firms or exert corporate governance. Moreover, Shleifer and Summers (1988), and Morck *et al* (1990) suggest that stock market development can hurt economic growth by easing counter-productive corporate takeovers. Finally, Mayer (1988) argues that ever-large stock markets are unimportant sources of corporate finance.

The disagreement has implications for various countries' experiences. Findings of a cross-country study of Atje and Iovanovic (1993) show a significant correlation between growth over the period 1980-88 and the value of stock market trading divided by GDP for 40 countries. Levine and Zervos (1996, 1998), using a similar approach, also demonstrate that various measures of equity market activity are positively correlated with measures of real activity, across different countries, and that the association is particularly strong for developing countries. They evaluate the extent to which these measures are robustly correlated with current and future rates of economic growth, capital accumulation and productivity investment. They also examine whether these effects are additional to those of a banking system development by including both stock market and bank base financial indicators in the same regressions. They conclude that after controlling for initial conditions and various economic and political factors, the measures of banking and stock market development are robustly correlated with current and future rates of economic growth, capital accumulation and productivity improvements. They, therefore, conclude that stock markets provide different financial services from banks.

By contrast, Singh (1997a) argues that stock market development is unlikely to help in achieving quicker industrialization and faster long-run economic growth in most developing countries. He finds that the inherent volatility and arbitrariness of the stock market pricing process under developing countries conditions make it a poor guide to efficient investment allocation. The interaction between the stock and currency markets in the wake of unfavourable economic shocks may exacerbate macroeconomic instability and

reduce long-term growth. Stock market development is likely to undermine the existing group banking systems in developing countries, which, despite their many difficulties, have not been without merit in several countries. Moreover, Arestis and Demetriades (1997), applying time series technique, state that in Germany there appears to be unidirectional causality from financial development to real GDP. Stock market capitalization affects real GDP only through the banking system. In contrast, they find insufficient evidence of financial development causing growth of real GDP in the case of United States. On the other hand, there is abundant evidence of the reverse causality, i.e., real GDP positively contributing to both bank system and capital market development.

In spite of the unsettled disagreement, policies have been adopted to foster stock markets in most of the developing countries since 1980s. The stock market in India is no exception to that. As a result, the development is remarkable in terms of the market capitalization and value traded. Therefore, one obvious question that arises is: does the Indian stock market play a role in the process of economic growth? In this regard, the contribution of Nagaraj, Singh, and Nagaishi is significant. Nagaraj (1996) says the huge increase in stock market financing activity is not associated with either a rise in aggregate GDS, or equally significantly, with an increase in the proportion of financial saving. This is basically due to the portfolio substitution by households and institutions from bank deposits towards stock market instruments. He also states that the increase in external finance through the capital markets replaced corporations' internal funds, which could in part be due to a decline in corporate profitability. Moreover, the small non-corporate firms, which did not have access to the stock market funds, were able to grow at a faster rate than the larger corporate firms.

Singh (1997b), in his study with other developing countries, asserts that there is little or no evidence of increase in aggregate savings in India as a result of the growth of the stock markets. Nagaishi (1999), supporting Singh and Nagaraj's argument, states that the functional relationship between stock market development and economic growth is dubious in the Indian context. However, Demetriades and Luintel (1997) state that financial development exhibits a long-run positive association with the level of GDP per capita, the number of bank branches and the real rate of interest in India. They also show that banking sector controls had overwhelmingly negative effects on financial development, both in the short run and in the long run. Moreover, Shah and Thomas (1997) argue that the stock market is more efficient than the banking system in India because it is relatively free of government policies. Therefore, stock market development plays a key role in strongly assisting the reforms in the banking system through the competition between them.

In connection with the major theoretical debates regarding the linkages between stock markets and long-run economic growth, this paper empirically investigates whether the measures of stock market size, liquidity and volatility are robustly related with economic growth in India. In addition, this study also examines the linkages between the banking sector and economic growth. Since not many studies have been undertaken in this line in India, the present study attempts to fill this gap. The organization of the study is: section II outlines the measures of stock market development, bank and economic growth indicators, and section III carries out empirical analysis followed by concluding remarks.

II. Stock Market Development, Bank and Growth Indicators

We begin with market capitalization ratio (MCR) which is considered as a measure of stock market size. The MCR is defined as the value of listed shares divided by GDP. Economically speaking, market capitalization is positively related to the ability to mobilize capital and diversify risk.

Here two measures are used for market liquidity: they are, value traded ratio and turnover ratio. The value traded ratio is equal to the total value of traded shares in the stock market divided by GDP. The total value traded ratio measures the organized trading of the equities as a share of national output and should therefore positively reflect liquidity on an economy-wide basis. The second measure of liquidity is the turnover ratio which equals the value of total shares traded divided by the market capitalization. High turnover is often used as an indicator of low transaction cost. Turnover complements total value traded ratio. Although, total value traded ratio captures trading compared with the size of the economy, the turnover measures the trading relative to the size of the stock market. Thus, a small, liquid market will have a better turnover ratio but a small total value traded ratio. It is important to mention here that the price effect does not influence turnover because stock prices enter the numerator and the denominator, and hence it is held superior to value traded ratio as a liquidity measure.

Volatility is used as the third indicator of stock market development that conceptualizes the asset price movement in a stock market. We use monthly volatility measure which is computed as the 12-month rolling standard deviation estimate that is based on market returns [Schwert (1989)]. This involves the following two steps:

Step 1. A twelfth order autoregression for the returns, including the dummy variable D_{jt} to allow for the different monthly mean returns is estimated as

$$R_t = \sum_{j=1}^{12} \alpha_j D_{jt} + \sum_{i=1}^{12} \rho_i R_{t-i} + \varepsilon_t \quad (1)$$

Step II. Then a twelfth order autoregression for the absolute value of the errors from equation (1) above, including the dummy variables to allow for different monthly standard deviations.

$$|\hat{\epsilon}_t| = \sum_{j=1}^{12} \beta_j D_{jt} + \sum_{i=1}^{12} P_i |\hat{\epsilon}_{t-i}| + v_t \quad (2)$$

The regressand of the above equation is an estimate of the standard deviation of the stock market return for month t . The fitted values of this from equation (2) estimate the conditional standard deviation of R_t given information available before month t .

To examine the relationship between stock market, bank and economic growth, GDP is used as a growth indicator. The relationship between GDP growth and stock market development is extensively examined in literature (Arestis and Demetriades, 1997; Levine and Zervos, 1996). In view of the non-availability of monthly data on GDP, this study uses Index of Industrial Production (IIP) as a proxy for that. Fama (1981) found a strong relation between IIP and stock return.

In the literature, the ties between banks and economic growth have been examined very well (Levine and Zervos, 1998; Arestis and Demetriades, 1997). Traditional researchers use measures of the overall size of the banking sector as a proxy for "financial depth" (e.g., Goldsmith, 1969; McKinnon, 1973 and Demetriades and Luintel, 1997). Moreover, often researchers divide the stock of broad money by GDP to measure financial depth. As noted by King and Levine (1993), however, this type of financial depth indicator does not measure whether the liabilities are those of banks, the central bank, or other financial intermediaries, nor does this financial depth measure identify where the financial system allocates capital. Thus, we use the credit made by commercial banks and other deposit taking banks to the commercial sector divided by GDP, and call this measure *Bank Credit Ratio (BCR)*. This is different from the traditional banking development measures by isolating credit issued by commercial banks or other intermediaries, and by identifying credit to the commercial sector.

III. Empirical Analysis

To investigate the empirical relationship between stock market development, the banking sector and economic growth, we use six variables viz., market capitalization ratio (MCR), Value traded ratio (VTR), Turnover ratio (TOR), Volatility (VOLT), Bank credit ratio (BCR), and Index of industrial

production (IIP), employing monthly data for the period 1991:1-1998:12. The IIP has been used as proxy for the GDP as the latter is not available on a monthly basis. Stock market data are obtained from different issues of *The Stock Exchange Review* published by Bombay Stock Exchange, Mumbai. IIP and bank credit data are obtained from various issues of *Reserve Bank of India Bulletin*. All the variables used in this study are on logarithm levels.

Since data are monthly in nature, empirical examination starts with deseasonalising all the data series. Table 1 presents correlations on the four stock market development indicators, the bank development indicator and economic growth indicator. The correlations are worth highlighting. First, Index of Industrial Production (IIP) is highly and positively correlated with BCR, MCR, and VTR. Second, all the stock market development indicators are highly correlated among themselves except volatility, which suggests that it would not be easier to distinguish between measure of the overall size and liquidity of the equity market. Third, there are high correlations between BCR, MCR and VTR, which also suggest that it will be difficult to distinguish between measures of the overall size and liquidity of the equity market and the banking development indicator. Fourth, the correlations between volatility and all other indicators are very low.

Table 1: Correlations

	IIP	BCR	MCR	VTR	TOR	VOLT
IIP	1.00	0.89	0.73	0.71	0.47	0.04
BCR		1.00	0.79	0.72	0.44	-0.03
MCR			1.00	0.69	0.27	-0.02
VTR				1.00	0.87	0.02
TOR					1.00	0.04
VOLT						1.00

Notes: IIP = Index of Industrial Production; BCR = Credit made by commercial banks and other deposit taking banks to the commercial sector divided by IIP; MCR = Value of listed shares as a share of IIP; VTR = Value of traded shares as a share of IIP; TOR = Value of traded shares as a share of stock market size; and VOLT = Measure of stock return volatility.

The empirical investigation is organized around the three stock market development indicators and level of banking development. Thus, six regressions have been run, where the dependent variable is IIP and independent variables are bank credit ratio and four stock market development measures viz., MCR, VTR, TOR and volatility. First, consider the result on stock market size and

banking development. Both the banking development and the stock market size enter the IIP regression significantly at the 0.05 per cent significance level. Thus, we find from the regression 1 (of table 2) that

Table 2: Regression Results^a

	BCR	MCR	VTR	TOR	VOLT	\bar{R}^2	DW
1	0.717 (16.56)	0.097 (2.01)				0.87	2.36
2	0.797 (114.36)		0.014 (0.98)			0.87	2.31
3	0.808 (108.49)			0.009 (0.56)		0.87	2.31

Notes: IIP = Index of Industrial Production; BCR = Credit made by commercial banks and other deposit taking banks to the commercial sector divided by IIP; MCR = Value of listed shares as a share of IIP; VTR = Value of traded shares as a share of IIP; TOR = Value of traded shares as a share of stock market size; and VOLT = Measure of stock return volatility. Figures in parentheses are respective t-ratios.

^a Corrected for autocorrelation using Cochrane-Orcutt method

both the banking development and the overall size of the stock market have statistically significant relationship with economic growth.

Equation 2 in table 2 indicates that banking development is significantly and robustly correlated with economic growth. But, we do not find any statistically significant link between stock market liquidity and economic growth. This result is consistent with the view that banks facilitate economic growth (Levine, 1991; Holmstrom and Tirole, 1993; Bencivenga *et al.*, 1995; Levine and Zervos, 1998). The result does not support the models that emphasize the negative implications of stock market liquidity (Shleifer and Vishny, 1986; Shleifer and Summers, 1988; Morck *et al.*, 1990).

The same type of regression is reported in equation 3 except replacing VTR with TOR. Once again, the banking development is positively correlated with economic growth, but the relationship is not statistically significant in case of liquidity of the stock market. However, the significant relationship between liquidity and economic growth is not due to the nature of the stock prices – the "Price Effect". This can be inferred from two results. First, the price effect does not influence turnover ratio, and it is not also significantly linked with economic growth. Second, we include market capitalization and value traded

together in the same regression to test whether the price effect is affecting the empirical links between value traded and economic growth. The price effect influences both market capitalization and value traded. If the price effect is affecting the empirical association between value traded and economic growth reported in regression 2, then value traded should not remain insignificantly correlated with the economic growth when we simultaneously include market capitalization and value traded. But, this is not the case here. As reported in equation 4 in table 3, value traded coefficient is still insignificant even when controlling for market capitalization. Thus, the evidence is inconsistent with the view that expectations of future growth, which are reflected in current stock prices, are affecting the empirical relationship between stock market liquidity and economic growth.

Table 3: Regression Results^a

	BCR	MCR	VTR	TOR	VOLT	R ²	DW
4	0.716 (15.74)	0.097 (1.82)	-0.0004 (-0.03)			0.87	2.36
5	0.722 (16.15)	0.094 (1.95)		0.004 (0.29)		0.87	2.35
6	0.806 (236.29)				0.005 (1.02)	0.87	2.31

Notes: IIP = Index of Industrial Production; BCR = Credit made by commercial banks and other deposit taking banks to the commercial sector divided by IIP; MCR = Value of listed shares as a share of IIP; VTR = Value of traded shares as a share of IIP; TOR = Value of traded shares as a share of stock market size; and VOLT = Measure of stock return volatility. Figures in parentheses are respective t-ratios.

^a Corrected for autocorrelation using Cochrane-Orcutt method

The results presented in regressions 4 and 5 indicate a positive association between market capitalization and economic growth at 0.10 per cent level of significance when controlling for liquidity. But, earlier we find from regression 1 that market capitalization is positively correlated with economic growth at 0.05 per cent significance level. Thus, it is found that the level of significance of market capitalization coefficient decreases when controlling for stock market liquidity. As shown in table 3, stock return volatility is not significantly linked with the economic growth. Thus, the result on stock return volatility does not suggest a reliable link to economic growth.

IV. Concluding Remarks

This paper has attempted to assess the empirical relationship between stock market development indicators, banking development and economic growth in India. It is shown that stock market size and banking development are both positively and robustly correlated with economic growth. Of the two, banking development appears to have contributed more to economic growth in comparison to stock market development. However, there is no support for the association between stock market liquidity and economic growth in India. Finally, it is suggested that the empirical relationship between stock market development, banks and economic growth warrants further investigation, specifically, encompassing the impact of financial liberalization on firm financing choices and relationship of stock market and banking sector with other macroeconomic variables.

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