

An Analysis of the Stock Market's Impact on Economic Growth: Insights from an Indian Context

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Abstract:

This research paper investigates the causal link between economic growth and stock market development in India, covering the period from 2003 to 2017. Economic growth is measured using the GDP growth rate, while stock market development is assessed through the Market Capitalization Ratio. The analysis employs a Vector Auto Regression (VAR) framework to explore the causal relationship. The findings indicate a robust connection between economic growth and stock market development. The study provides substantial evidence that the stock market positively influences economic growth, as demonstrated by the positive effects of the market capitalization to GDP ratio and the volume of stocks traded on the country's GDP.

Keywords: Stock Market, Market Capitalization, Economic Growth, Vector Auto Regression (VAR), GDP

Introduction:

The growth and development of the stock market have been remarkable, and this development has caught the attention of policymakers, experts in finance, and economists since it has provided benefits to the real economy. Sometimes, it is also referred to as a barometer for business direction. It is an important element that provides the transfer of funds for economic growth. However, the issue that the market is having a beneficial impact on the economy is complicated. The origin of this issue can be dated back to the earlier twentieth century. This issue has been the reason for many debates between Economists. Extensive research, both empirical and theoretical, has been done in past years and the results found were highly inconsistent. Some of the previous studies (Levin et al., 1998; King et al., 1993 & Demirguc et al., 1996) showed a positive causal impact on financial development concerning the hypothesis of 'supply leading'. Studies also showed the countries which have large and efficient banks and better functioning stock market systems provide funds to financially constraint enterprise and thus lead to good economic growth. In some theories, their views have been challenged where it is shown that countries that are in the early phase of development are impacted more by financial development than the more mature countries.

The stock market of India has been started long back. Indian stock market is the oldest in Asia. From the day of independence until 1980, there were a quite slow rise and fall of the market. Total market capitalization was only 5% of GDP by the stock market of India in 1980. There was a 13% rise by 1990 mainly because of the initiated measures for the liberalization in the period of 1980s. The explosive

growth of the stock market is seen in the role of Dr. Singh's reforms, due to the accelerated pace of liberalization. Market capitalization has been reached 60% of the GDP by the end of 1993. Mutual fund's investors have been increased from 2 million to 40 million in the period from 1980 to 1993. This is the second-highest and the first in the US with 51 million investors. US stock market has 7,671 listed companies in its market. The UK has 2,078 companies, and Germany has 678 companies listed in its market for trading, but the Indian stock market is the largest in the world in terms of listed companies with 7,985 as per 1995 records. Per day turnover for BSE (Bombay Stock Exchange) for the share has been risen from 0.13 billion rupees in 1980-81 to a value of 3.7 billion rupees until 1993-94, it is an almost of thirty-fold increment. On average, the daily volume of trading on the Bombay Stock Exchange market was about 45,000 trades per day, which is very similar to that of London's market in the early 1990s, and during the peak times of trading, this number is doubled. The paper is structured as followed. The next section discusses the review of the literature. The section after that discusses the methodology. The penultimate section discusses the findings. The final section summarises the conclusion.

Literature Review:

The connection between the growth of the economy and the stock market has been analyzed by many economists across various characteristics. Since theory provides us with conflicting results regarding the influence of the development of the market on the growth of the economy, their papers try to provide a better insight on this problem and found that the development of stock markets has a positive impact on the economic growth (Thorsten et al., 2004). Empirical views are provided by Kunt (1996) on the development of the stock market by collecting and collating empirical indicators to analyze the impression of the stock market on the development of the economy. Data from 1986 to 1993 of 44 developing countries have been used to test all the distinct measures of the market like the size of the market, liquidity in the market, volatility, integration, and concentration with the capital markets of the world. They have analyzed and summarized all the information of a wider range of indicators available from the stock market. They also found that indicator has extensive difference when compared with cross-countries.

Levine et al., (1998) also gave an empirical understanding of the stock market. They did an Empirical investigation to find the correlation between the present and future rates of economic growth with the measures of market integration, volatility, size, and liquidity with world capital markets. They used Data from 47 countries from 1976 to 1993. They also examined measures of the rate of growth in the economy, accumulation of capital, growth in productivity, and private savings. Finally, it was found that the liquidity of the stock market has a robust and positive relationship with the contemporaneous and rate of future economic growth. In the case of India, many trials have been done to find the causal relationship between the development in the stock market and the growth of the economy.

Deb (2008) did the same by using techniques such as unit root analysis, long-run Granger non-causality test to find out the relationship between the real GDP growth rate and three proxies of stock market development and found that there exists an influential causal flow from the development of the stock market towards the growth of the economy. They also found the existence of a bi-directional correlation between the growth of the economy and the real market capitalization ratio.

Agrawalla et al. (2007) considered the relationship between the development of the stock market with the growth of the economy, an important issue due to tremendous increase in stock market activities, and found a stable long equilibrium relation between stock market development and the evolution of the

economy. This study suggests that market growth can be more concentrated in the direction of a more mature and transparent exchange market, towards investors rather than catering only to the needs of day traders. (Nauro et al., 1999) considered the most constant debate, whether the economic growth is due to financial development or due to the consequences of increased economic activity and found the linkage between Capitalization of the market over Gross Domestic Product (GDP), Velocity turnover, and Change of the count of listed domestic shares. Over the period, countries with lower income grew faster than the ones with higher income since these markets are seemed to be the richest. In a comparison of fewer free markets, the free stock market seems to progress rapidly. Furthermore, there exists a robust relationship between the stock market activity, growth of the economy in the future in countries with low and lower-middle levels of income. This paper also provides evidence that there exists a beneficial and notable causal relationship between the growth of the stock market and the development of the economy, mainly for not as many upshot countries.

Singh et al. (2010) attempted to know the causal relationship between the index of the stock market and the three important macroeconomic variables. The output of the analysis showed that the rate of exchange, indexes of industrial production, the wholesale price, and the stock market have a unit root and are unified of order one. The result revealed that there exists a bilateral causal relationship only between the industrial production index and Sensex of BSE. It has been noticed that there is a strong correlation of wholesale price index with Sensex but its unilateral causal relationship with Sensex of BSE. From this analysis, it has been concluded that the market is leaning in the direction of efficiency in information for at least two variables of macroeconomics, viz. inflation and rate of exchange. (Arestis et al., 2001) analyzed that the stock market's effect is more powerful to promote economic growth but also says that economic growth may have been altered beyond normal proportions by the contribution of the stock market by utilizing cross- country growth regression.

Hosseini et al. (2011) showed the existence of a relationship between the market indices and macroeconomic variables of China and India. It has been found that the impact on the stock market due to the money supply is negative in India whereas it is positive for China. The effect of inflation is positive in both countries on stock market indices. The concomitant effect on the present Indian stock market by money supply is negative whereas it has been positive for the Chinese stock market. The effect which is contemporaneous due to inflation on indices of current Indian stock is negative and insignificant, but it has been negative and important for lagged effects, in comparison the coexisting impact is positive due to inflation for current Chinese's stock index and also important but lagged effects for one month is positive and insignificant. Padhan et al. (2007) addressed the problem between the stock market and the activities of the economy for causal nexus in a completely different way. The analysis suggested that the well- developed stock market could affect the growth and enhance the activities in the economy and vice versa.

Singal et al. (2000) discusses and examines the risks and benefits related to the opening of the stock market. They make an approximate change in the level and volatility of returns of stocks, inflation, and rates of exchange around the opening of markets. Analysis reveals that the returns determined that the market leaned more towards efficiency. There has been no proof of the increment in inflation or exchange rate appreciation. On the contrary, it seems after the opening of the market, inflation decreases so as inflation's volatility or rates of exchange. Pethe et al. (2000) have researched with inter-relationship of the prices of stocks and the different variables of the macro economy, which includes the rate of exchange of the rupee versus the dollar, prime lending rate, narrow money supply, and industrial

production index. The final output is more towards the context of changes in the macro economy, mainly in the financial sector, which has been taking place in India since the early nineties.

Henry et al. (1997) noticed that the unrivalled growing stock market liberalizations since the governments from Caracas to Kuala Lumpur have made their equity markets open for the non-residents for the first time. Prices of stock for the emerging stock markets gained a boom in this period. It was very clear that the openings in the stock market were the main reason for the increment in the asset's price but for a period of drastic economic reforms, the wave of the opening was concurrent. Then an exhaustive list of major stock market liberalizations and economic reforms occurring in twelve least-developed countries for the decade has been constructed. It made him extricate the stock market opening effect due to the influence of economic reforms. It showed a striking result. The effect due to the liberalization of the stock market is almost two-thirds as big as the results of previous work and the important source for the revaluation of assets is economic reforms. This paper is designed to understand the relationship of growth of the economy with the stock market for India using past 15-year data and to determine the causal linkages between variables.

Methodology:

This study has tried to analyze the relationship between the stock market and economic growth using data from 2003-2017 in India. Indicators of the stock market and economic growth were chosen through extensive research. Data has been downloaded from the World Bank site. For the analysis, the independent parameters have chosen are stock market variables such as stock market capitalization ratio, real effective exchange rate, and stock traded, and the dependent variables are from economic factors such as GDP per capita and inflation rate. Stock market capitalization to GDP ratio gives us an idea about the value of the market concerning the historical average, i.e., whether the market is overvalued or undervalued in comparison to its past. The real effective exchange rate is a parameter used to compare the current value of the currency to currencies of different countries. The factors such as GDP and inflation rate represent the economic status of the country and are useful in determining the prosperity of the nation.

VAR (Vector Auto Regression) model has been used to analyze the time-series data and determine the impact of the stock market parameters on economic growth. The model consists of endogenous and exogenous variables also known as dependent and independent variables respectively. The values of the variables depend on their own lagged values. The model containing one lagged value is called autoregressive of order one and the order of the model can be increased by increasing the lagged values. The VAR is a general form of Auto Regression (AR). In AR the value of a variable e.g., X at time t depends on the previous values of X at t-1, t-2, etc. In VAR the variable x is not a single variable, but it might consist of a vector of variables.

VAR is represented as: $Y_t = c + A_1y_{t-1} + A_2y_{t-2} + \dots + A_p y_{t-p} + e_t$

Results and Findings:

The R^2 tells us how many points in the data fall on the regression line and since the R-squared value is 0.674423, it shows that 67% of values in the data fit the model, so the validity of the model is determined through the R-squared value. From table 1, we can see the significance of each indicator, i.e., the independent variables concerning the GDP per capita. The null hypothesis is assumed that there is no relationship between the dependent and independent variables, and it is rejected if the p-value falls under

10%. Since the significance values of capitalization ratio and stock traded are below 10%, the null hypothesis is rejected, and it is concluded that they have a relationship with the dependent variable, i.e. GDP per capita. The p-value for stock traded and capitalization is 0.02789 and 0.02465 respectively and the coefficients of the stock traded are 0.001823 and for the capitalization ratio, it is 0.044137. The t-statistic values mentioned in the squared brackets also have importance, as large values imply more impact on the dependent variable. Therefore, the capitalization ratio has more impact on economic growth than stock traded.

Table 1: VAR Tests for Economic Growth and Stock Market Development

| VAR tests: Stock Market Development and Economic Growth(H_0 : The stock market does not affect GDP) | |
|--|------------|
| | GDP |
| GDP_PER_CAPITA(-1) | -0.072763 |
| GDP_PER_CAPITA(-2) | -0.514335 |
| STOCK_TRADED | 0.001823** |
| REAL_EFFECTIVE_EX | 0.002867 |
| CAPITALIZATION | 0.044137** |
| R squared | 0.674423 |

Note: ** indicate significance at the 5% level.

Table 2: VAR Tests for Economic Growth and Stock Market Development

| VAR tests: Stock Market Development and Economic Growth(H_0 : The stock market does not affect inflation) | |
|--|-------------|
| | INFLATION |
| INFLATION_RATE(-1) | -0.707785 |
| INFLATION_RATE(-2) | 0.203398 |
| STOCK_TRADED | 0.074944** |
| REAL_EFFECTIVE_EX | -0.174088 |
| CAPITALIZATION | -0.019338** |
| R squared | 0.746916 |

Note: ** indicate significance at the 5% level.

In the analysis in Table 2, the independent variables remain the same but the dependent variable changes to the inflation rate. The R-squared value is 0.746916, which means that 74% of the values fit the model as 74% of the data points fall on the regression line. Since the p-value of capitalization and stock traded is 0.03090 and 0.04250, which are below the required significance level of 10%, we can conclude that these variables affect the given dependent variable, i.e. inflation rate. The coefficient of stock traded is 0.074944, and for capitalization is -0.019338. The negative coefficient and t-static value of capitalization

imply that there is a negative impact of capitalization on the inflation rate of the country. In this case, the t-static value of stock traded is more than the capitalization ratio hence stock traded has more impact than the capitalization ratio.

Discussion:

This study is conducted to determine the causal relationship between the stock market and economic growth and for that purpose, the technique VAR is used to determine which indicators are having a relationship and by how much are they influencing the dependent variable.

The stock market is where the exchange of securities takes place, and the development signifies that there is an increment in the volume, which indicates market capitalization. Therefore, market capitalization can be judged based on the volume traded or changes in the stock market. When the inflow of capital is more than the outflow, there is an improvement in market capitalization. The change in the market capitalization is caused by the development or underdevelopment of the stock market, which has an impact on the individual wealth, performance of firms, etc., and then causing changes in the economic growth of the country. This signifies that with the increase in market capitalization, financial flow in the country also increases, and hence it leads to economic growth in the country. The stock market capitalization to GDP ratio helps us to determine whether the market is undervalued or overvalued. If the result turns out to be between 90% to 115%, the market is said to be overvalued and if the value is close to 50%, then it is said to be undervalued. The market in the range of 50% to 75% is called modestly undervalued and if the value falls between 75% to 90%, it is called fairly valued. The data shows that the market is overvalued for the years 2007, 2009, and 2010 and fairly valued for 2006, 2014, and 2017. For the rest of the years, the market was considered undervalued.

The second identifier used is the stock traded full value (percentage of GDP). The stock traded gives us the total measure of stocks that have been traded for given security for a definite amount of time. This includes the stock, bonds, and different types of commodity exchanges between the buyers and the sellers. The stock traded can be considered as one of the simplest factors used by traders when they are trying to analyze the market trade. The results show the positive effect of trading in stocks on the economic growth of the company. More stock traded implies a healthier stock market, and a healthy stock market has a positive relationship with FDI. A healthy stock market can help to attract more multinational companies, which leads to more companies investing in the corresponding companies, which in the return leads to more economic growth.

The inflation rate is the increase of the prices of general goods and services that leads to the decline of the purchasing power of the country. It signifies the overall change in CPI (consumer price index) which is the weighted average of prices for different products. Since the number of goods and services, consumption, and population changes for the country, the weight of each of the goods also changes from country to country. The changes in the stock market cause changes in the wealth of individuals and firms, which can lead to demand-pull inflation, i.e., when the aggregate demand is higher than the aggregate supply. Since the causes of inflation can have many factors such as the cut in interest rates, increased money supply, increase in taxes, etc. it is difficult to highly correlate the inflation rate and the stock market.

Conclusion:

The issue of the influence caused by stock markets on the growth of the economy can be controversial as

previous studies (Dokmen and Ahmet (2015) have shown conflicting results when it comes to the impact of the stock market on the growth of the economy. This study consists of an examination of the effect of stock market performance on economic growth. The data of India for the last 15 years were extracted from the World Bank website. The data consists of Stock market variables such as market capitalization to GDP ratio, real effective exchange rate, etc., and economic factors like GDP per capita and Inflation rate. The technique used in the study is vector auto regression and the dependent variables taken are GDP per capita and Inflation rate.

The study showed that the contribution of the stock market on the growth of the economy is positive as the variables such as market capitalization to GDP ratio and stock traded have a positive impact on the GDP of the Country. The stock markets are crucial for the flow of funds between the people and firms in a county resulting in increasing the individual wealth or performance of the firms hence contributing to the economy of the country. The study included only three parameters for stock market performance and two parameters for economic performance. Since it is impossible to summarize the Stock market in three parameters and economic growth in two parameters, more variables can be used to increase the accuracy of the study. Understanding and determining the precise causal relationship between inflation and the stock market variables was difficult, hence, a more suitable technique or parameters can be used for further study regarding Inflation.

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