“A Study on Impact of Select Macro Economic factors on Small and Mid Cap Indices of National Stock Exchange”

Mr. P.S. Viswanadh
Assistant professor, SMS, Sreenidhi Institute of Science and Technology

Abstract –

In today’s world scenario, countries’ economic growth is purely depending up on the performance of industrial and service sector. Industrial growth, will not only depends upon the Multi National and high net worth companies, but also on Small and Mid Cap companies. The growth of these companies can be measured by observing the growth rate of Stock market index of these indices such as Mid and Small Cap. These will not only fluctuate due to the fundamentals of the respective stocks, but also due to changes in macro economic variables. Therefore the present study has focused on the impact of select Macroeconomic factors such as currency exchange rate, Foreign Institutional Investors (FII) and rate of Inflation on volatility of Small and Mid Cap Indices of National Stock Exchange, India. The research concludes that exchange of rupee with US Dollar has showed more impact; FII have showed least impact on both Small and Mid Cap indices. The impact of inflation is moderate on both indices.

Key words: Small cap Index, Midcap Index, FII, Rate of Inflation, Exchange Rate, Stationary of the data.

I. INTRODUCTION

In today’s world scenario, countries’ economic growth is purely depending up on the performance of industrial and service sector. Industrial growth, will not only depends upon the Multi National and high net worth companies, but also on Small and Mid Cap companies. The growth of these companies can be measured by observing the growth rate of Stock market index of these indices such as Mid and Small Cap. These will not only fluctuate due to the fundamentals of the respective stocks, but also due to changes in macro economic variables. A Company with a market capitalization of between $300 million and $2 billion will be considered as Small Cap Company. Majority of stock analyst will not track the performance of Small Cap Companies, and that is why, the true value of good small cap stocks will remain undiscovered for long. "Small-cap stocks are like trees that have just been planted. Obviously, they will take a few years to grow and blossom. They can be good bets for the long term." 1

Mid cap stocks are issued by companies with a market capitalization between $2 billion and $10 billion. These stocks were less affected by broader market sentiments and posses lower operational risks when compared to small cap companies. Midcap stocks have higher potential to grow in long run. “The S&P BSE Midcap index rose nearly 30 per cent in the last two years since the Modi government took charge in May 2014, with some components rising as much as 270 per cent during this period” 2. However, some small and midcaps stocks have lost steam slowly in the past 12 months.

---

1 Gokul Raj P, executive director and head, investments, HBJ Capital Services.
2 By Kshitij Anand, ECONOMIC TIMES.COM | Updated: May 27, 2016
But they are still good buying opportunity on dips, feel experts. Investors have to be selective before putting their hard-earned money in these stocks. In this regard the researcher thought to analyze the impact of select macro economic factors on the performance of small and mid cap Indices that are listed in National Stock Exchange.

REVIEW OF LITERATURE

Bhanu Sireesha (2013) has carried out to examine the impact of select macro economic variables on stock, gold and silver returns by using linear regression technique. The behavior of nominal and real returns at various levels of inflation, GDP, IIP and Money Supply is studied. The interdependence of the returns on stock, gold and silver is also identified.

Anubha Shrivastav (2013) concluded that FIIs did have high significant impact on the Indian capital market. FIIs and the movements of SENSEX are quite closely correlated in India and FIIs wield significant influence on the movement of SENSEX FII’s have positive impact on BSE SENSEX and Nifty.

Debesh Bhowmik (2013) has evaluated the multidimensional framework of stock market volatility, and found that Political turmoil or instability or chaos made negative impact on stock market which spurs volatility. The stock market volatility has the negative nexus with the growth rate of a nation i.e. high volatility reduces growth rate. The international trade and stock market volatility is negatively related in the sense that volatility reduces the volume of trade and increases current account and capital account deficits.

Rakesh Kumar (2013) has made a study on relation between Indian Stock markets and macroeconomic variables. It has been established that industrial performance play significant role in influencing the stock market. Though some impact of policy rates cannot be denied but it does not seem sustainable. Market rely more on optimistic macroeconomic environment call for state’s prudent efforts to maintain macro stability.

Pooja Singh (2014) infers that Indian stock market has significant influence of gold prices, inflation, money supply, exchange rates and foreign institutional investments. The gold has adverse effect on Indian Stock market that shows the increasing interest of investors in the precious metal.

Mohanamani & Sivagnanasithi (2014) have examined the relationship between the stock market as proxied by BSE SENSEX and a set of macroeconomic variables. It is observed that in the long run, the stock prices are positively related to interest rate as proxied by call money rate and real economic activity represented by industrial productivity. The whole sale price index has found to be negatively related to BSE SENSEX. The exchange rate between Indian Rupees and US Dollar is also turning out to be a negatively significant determinant of Indian stock market.

M.S.Ramaratnam (2014) has examined the inter-linkage between the net FII investment and stock market by applying linear regression model indicating that there is significant impact of FII’s on the BSE-SENSEX and further the study finds that there is a good relationship between the variables of FII investment made by FII significantly differs in terms of equity and debt segment.

Kantesha Sanningammanavaravaravaravarara, Kiran Kumar, and Rakesh (2014) have studied the relation between Macro economic factors and Indian stock market and concluded that Interest Rate, Market Sentiments, Global factors, performance of company etc which affect the share prices of Indian Stock Market.
Aswini and Mayank Kumar (2014) have said that foreign investments have a great impact on the economy of India. Indian Stock Market, which is one of the indicators of the economic status, is also being affected by the foreign investments made. So this study has been done to validate the null hypothesis that this foreign institution investment being made in India affects the stock market condition and Indian economy as well.

L.K. Tripathi Arpan Parashar and Swati Jaiswal (2014) have studied the long term relationship between selected external macroeconomic variables and different sectoral indices at National Stock Exchange (NSE). The results so obtained reveal high correlation among the variables and suggest that amongst all macroeconomic variables only Foreign Institutional Investment (FII) affects all sectoral indices however rest of the macroeconomic variables selectively affect different sectoral indices in India.

Venkatraja (2014) has shown the impact of macroeconomic variables on Indian stock market. From the study it appears that the combined influence of WPI, IIP, FII, GP and REER on BSE SENSEX is very strong. It is also noted that any variation in the value of WPI, IIP, FII and REER has strong positive influence on the BSE stock market performance. While, an increase in gold price is found causing crash in stock market and vice versa.

Gap Analysis
The above literature has focused on impact of Inflation, GDP, Interest rates, FDI, FII, Rupee Exchange rates, Industrial production index, Money Supply, Treasury bill rates, Market rumors on NIFTY returns and not have focused on small and midcap indices. Therefore the researcher has made an attempt to find the relation and impact of Macroeconomic factors on Small and Midcap indices.

Need for the study
Main aim of this study is to help the investors to understand and analyze the impact of macroeconomic variables on Small and Midcap Indices of National Stock Exchange.

Objective of the study
- To study the relation between select macro economic variables such as foreign institutional investment, Currency exchange rate with US dollar and rate of inflation on Small and Mid cap indices of National stock exchange.
- To analyze the impact of select macro economic variables such as foreign institutional investment, Currency exchange rate with US dollar and rate of inflation on Small and Mid cap indices of National stock exchange.

Hypothesis:
- \( H_0_1 \): Select variables are not stationery.
- \( H_0_2 \): There is no correlation between select macroeconomic variables on small and mid cap indices.
- \( H_0_3 \): There is no impact on volatility of small and midcap indices on select macroeconomic variables.

Scope and Period of the study
This study is focused on the impact of Inflation, FII, Rupee exchange rates on Midcap and Small cap in NSE. Five years monthly data has been collected for the study from 01-April-2011 to 31-March-2016.
Tools and Techniques:

In order to meet the desired objectives of this study the Researcher has used the E-Views software as a tool for calculations, and considered the following techniques:

- **Unit Root Test:** The data used for time series analysis must be stationary, which means the data over the period must be in proper order the same must be useful for time series analysis. One can use the Unit Root Test for understanding whether the data is stationary or not. When the available data is non-stationary at 'level' after making the unit root test then we should convert the same data in to first difference order and conduct the unit root test again, even then the data is non-stationary then we should go for second difference order in order to get the desired data.

  One can analyze the results of Unit root test with the help of probability value. If the probability value is less 5% then we can consider that the data is stationary and if the probability value is greater than 5% then we can consider that the data is not stationary.

- **Correlation Analysis:** Correlation is a statistical technique that can show whether and how strongly pairs of variables are related. Correlation is any of a broad class of statistical relationships involving dependence, though in common usage it most often refers to the extent to which two variables have a linear relationship with each other. Familiar examples of dependent phenomena include the correlation between the physical statures of parents and their offspring, and the correlation between the demand for a product and its price. Correlations are useful because they can indicate a predictive relationship that can be exploited in practice.

- **Regression Analysis:** The regression analysis helps us to measure impact of Independent variables on Dependent variables. The R² value in the regression analysis calculation measure the total impact of Independent variables on dependent variable. The analysis also generates the co-efficient and corresponding probability values. If the probability value is less than 5% of a particular variable then we can consider that the independent variable has a significant impact on the dependent variable. If the probability value is greater than 5% then one can conclude that the corresponding independent variable is not significant to explain the dependent variable.

Limitations of the study

- Data used in the study is limited as the researcher used only five years data.
- Study is restricted to three select macroeconomic factors only.

Data analysis:

The research has made the analysis in three step process, these are as follows:

a. Stationary test for the data using Unit root test
b. Analysis of relationship between select macroeconomic variables and Small and Midcap Indices using Pearson’s Correlation.

c. Studying the impact of above mentioned variables using Regression Analysis.

### a. Unit root Test for Select Variables

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Name of the Variable</th>
<th>P Value for Level Data</th>
<th>P Value for First Difference Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mid cap Index</td>
<td>0.9702</td>
<td>0.00</td>
</tr>
<tr>
<td>2</td>
<td>Small Cap Index</td>
<td>0.8951</td>
<td>0.00</td>
</tr>
<tr>
<td>3</td>
<td>Foreign Institutional Investors</td>
<td>0.0001</td>
<td>NA</td>
</tr>
<tr>
<td>4</td>
<td>Rate of Inflation</td>
<td>0.4644</td>
<td>0.00</td>
</tr>
<tr>
<td>5</td>
<td>Indian rupee Exchange rate with USD</td>
<td>0.7655</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Source: Compiled data

The above table reveals that the chosen variable at level data is not stationery since the Unit Root Test 'P' Value is greater than 0.05 or 5 percent. Therefore we have no evidence to reject H$_{01}$. The chosen variables are stationary at first difference, since the P value is lesser than 0.05 or 5 percent level of significance.

Hence, we can continue our research with first difference data, rather taking level data for the study.

### b. Correlation analysis between Midcap Index and Select Economic Indicators

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Variables</th>
<th>Correlation with Mid cap Index</th>
<th>P Value</th>
<th>Correlation with Small cap Index</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Foreign Institutional Investors</td>
<td>0.44152</td>
<td>0.01</td>
<td>0.5069</td>
<td>0.00</td>
</tr>
<tr>
<td>2</td>
<td>Rate of Inflation</td>
<td>-0.065069</td>
<td>0.07</td>
<td>0.0826</td>
<td>0.087</td>
</tr>
<tr>
<td>3</td>
<td>Indian rupee Exchange rate with USD</td>
<td>-0.501163</td>
<td>0.02</td>
<td>-0.731</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Source: Compiled data

The above table shows the linear relationship between variables with each other. From the selected variables exchange rate (-0.501163) has higher relation between midcap index compared to foreign institutional investments and inflation. Foreign institutional investment (0.44152) has a positive correlation. Inflation (-0.065069) do not have prominent effect on midcap index. Inflation and exchange rate have negative correlation. The P values reveal that, we should reject H$_{02}$ in case of FII and Exchange Rate and accept H$_{02}$ in case of Inflation.
C. Regression analysis

Midcap Index with the Select Economic Indicators

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>87.624</td>
<td>78.44534</td>
<td>1.117</td>
<td>0.268</td>
</tr>
<tr>
<td>D(exchange)</td>
<td>-154.37</td>
<td>60.37</td>
<td>-2.557</td>
<td>0.01</td>
</tr>
<tr>
<td>FII</td>
<td>0.006</td>
<td>0.0042</td>
<td>1.408</td>
<td>0.16</td>
</tr>
<tr>
<td>D(inflation)</td>
<td>-28.415</td>
<td>56.287</td>
<td>-0.505</td>
<td>0.615</td>
</tr>
</tbody>
</table>

R-squared | 0.282015 | Mean dependent var | 92.78 |
Adjusted R-squared | 0.242852 | S.D. dependent var | 468.83 |
S.E. of regression | 407.9495 | Akaike info criterion | 14.925 |
Sum squared resid | 9153255 | Schwarz criterion | 15.066 |
Log likelihood | -436.3038 | Hannan-Quinn criter. | 14.980 |
F-statistic | 7.201093 | Durbin-Watson stat | 2.084 |
Prob(F-statistic) | 0.000367 |                        |      |

Source: Compiled data

The R-square value in the above table reveals that the independent variables such as D(Exchange), FII and D(Inflation) together can predict the MIDCAP at the rate of 28.20 percent, and the rest of 71.8 percent of variations were dependent on other factors that are not included in this study. We have enough evidence to reject the null hypothesis (H₀).

The above table also reveals that for every change in one unit of Inflation, FII, Exchange rate leads to -28.415, 0.006 and -154.375 points of change on MIDCAP.
## Small cap Index with the Select Economic Indicators

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-49.92</td>
<td>42.93</td>
<td>-1.16</td>
<td>0.25</td>
</tr>
<tr>
<td>D(exchange rate)</td>
<td>39.922</td>
<td>24.331</td>
<td>1.641</td>
<td>0.107</td>
</tr>
<tr>
<td>FII</td>
<td>0.006483</td>
<td>0.002292</td>
<td>2.828</td>
<td>0.006</td>
</tr>
<tr>
<td>D(Inflation)</td>
<td>65.080</td>
<td>35.54251</td>
<td>1.831</td>
<td>0.072</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Mean dependent var</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>R-squared</td>
<td>0.1829</td>
<td></td>
<td>24.25</td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.1383</td>
<td></td>
<td>273.9</td>
<td></td>
</tr>
<tr>
<td>S.E. of regression</td>
<td>254.24</td>
<td>Akaike info criterion</td>
<td></td>
<td>13.98</td>
</tr>
<tr>
<td>Sum squared resid</td>
<td>355514</td>
<td>Schwarz criterion</td>
<td>14.12069</td>
<td></td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-408.40</td>
<td>Hannan-Quinn criter.</td>
<td>14.03482</td>
<td></td>
</tr>
<tr>
<td>F-statistic</td>
<td>4.1043</td>
<td>Durbin-Watson stat</td>
<td>1.810</td>
<td></td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0.0106</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Compiled data

The R-square value in the above table reveals that the independent variables such as D(Exchange), FII and D(Inflation) together can predict the SMALL CAP at the rate of 18.29 percent, and the rest of 81.71 percent of variations were dependent on other factors that are not included in this study. We have enough evidence to reject the null hypothesis (H0).

The above table also reveals that for every change in one unit of Inflation, FII, Exchange rate leads to 65.080, 0.006 and 39.922 points of change on SMALL CAP.

### Findings and Conclusions

**Findings**

- Exchange rate has higher relation with Midcap (-0.501163) and Small Cap (-0.731336) Indices as compared to other select macro economic variables.
- Foreign institutional investment has a positive correlation with Mid cap (0.44152) and small cap (0.506931).
- Inflation rate do not posses prominent relation with small (-0.065069) and Mid cap Indices (0.082587).
Rupee Exchange rate, Foreign institutional investment and Inflation together can predict the Midcap at the rate of 28.20 percent, and the rest of 71.8 percent of variations were dependent on other factors that are not included in this study.

Rupee Exchange rate, foreign institutional investment and Inflation together can predict the Small cap at the rate of 18.29 percent, and the rest of 81.71 percent of variations were dependent on other factors that are not included in this study.

Conclusion
The study concludes that the exchange of rupee with US Dollar has showed greater impact; Foreign Institutional Investors have showed least impact on both Small and Mid Cap indices. Whereas the impact of inflation is moderate on both indices.

Bibliography
Web Sites
https://www.cdsllndia.com/publications/FIIFPIYrWiselnvstmntDtls.aspx
http://in.investing.com/indices/cnx-Small cap-historical-data
http://www.investopedia.com/terms/s/small-cap.asp#ixzz4DtGWNKB6
http://www.investopedia.com
http://dbie.rbi.org.in/DBIE/dbie.rbi

Text Books
• Deepak Chawla and Neena Sondhi, 2011, Research Methodology, Vikas publishing house pvt,ltd, New Delhi.


An empirical relationship between selected indian stock market indices and macroeconomic indicators by Pooja Singh Research Scholar, Faculty of Commerce, Banaras Hindu University


Impact of FII on the Indian stock market: study with special reference to BSE -SENSEX by M.S.Ramaratnam, R.Jayaraman and V. Krishnamoorthy Abhinav national monthly refereed journal of research in Commerce & Management


Impact of Macroeconomic Variables on Sectoral Indices in India Pacific Business Review International Volume 6, Issue 12, June 2014 by Dr. L.K. Tripathi, Arpan Parashar, Swati Jaiswal