

IMPACT OF SELECTED MACROECONOMIC INDICATORS ON S&P BSE SME IPO INDEX

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ABSTRACT

The prime objective of this research is to examine the impact of the selected macroeconomic variables on S&P BSE SME IPO index. Correlation, Multiple regression and Granger casualty tests have been used to estimate the relationship and impact. The variables selected for this study is average monthly closing price of S&P BSE SME IPO and macroeconomic indicators like; Index of Industrial production (IIP), Gross Domestic Product (GDP), Interest Rate (IR), Foreign Direct Investment (FDI), Inflation Rate (IF), Exchange Rate (ER), and Crude oil Price (CP). An average monthly data over a period of three years are taken, starting from January 2013 to December 2015. The result shows that, Interest rate and Inflation rate have a significant positive impact on stock market index. Whereas, Exchange rate shows a negative significant impact. Granger causality results reveals a unidirectional relationship between SME IPO Index and Crude Oil price, GDP, FDI and Interest rate.

Keywords: *Macroeconomic Indicator, S & P BSE SME IPO index, Correlation, Multiple Regression, Granger Causality.*

Introduction:

Indian stock market plays a vital role in the growth and development of the country. Similarly, stock market also has developed in the sense that more number of stock exchanges and intermediaries have emerged. Financial markets play a crucial role of developing an economy by facilitating the capital formation. This capital formation is enhanced by the vibrant financial markets which are channelizing the savings into investments. Investment increases the productivity of the country and creates employment opportunities to the people across the country. Thus capital markets which are the part of financial markets playing a significant role in the development of an economy. Among the capital market, stock market is the most important market which has two segments viz, new issue and secondary market. If the secondary market is vibrant it would be providing liquidity to

investors and will act as price determining mechanism of the existing equity instruments. In the secondary market, Micro Small and Medium Enterprises (MSMEs) have sufficient role in the capital formation. This leads to the development of an exclusive platform for MSMEs to rise equity capital. BSE SME Exchange is the first SME platform in India initiated by BSE in the year 2012. In recent days, MSMEs segment frequently registered higher growth compared to overall industrial units in India. Therefore analyzing the performance of the secondary market in the MSMEs sector has become one of the fascinating areas of financial research domain. Keeping this in view, the present study had tried to identify the impact of macroeconomic indicators on the value of S&P BSE SME IPO index.

BSE SME Exchange – An Overview :

SME Exchange is a platform for small and medium scale entrepreneurs to mobilize equity finance for future growth and expansion. In India, companies having post paid up capital less than 25 crores can be listed into SME exchange. BSE SME exchange launched by BSE on 12th March 2012. This segment is a part of BSE Ltd and scrips are listed in M and MT groups of BSE BOLT system. All the existing members of BSE are become the members of this exchange by default. Trading time starting from 09:00 am to 03:30 pm. At present 120 companies are listed, among these, 13 companies are migrated into main board therefore, total 107 companies are eligible for trading. These companies are mobilized equity capital more than 5720.14 cr rupees from the market. To follow the performance SME IPOs in secondary market BSE had launched S&P BSE SME IPO index in 14th December 2012. The index is calculated by using free float method. The no of scrips included in the index are variable, and a minimum of ten companies should be maintained in the index. The base date of the index is 16th August 2012 and base value is Rs 100, now it is lifted up to Rs 825.85(As per 29/02/2016).

The remaining part of this paper is arranged in the following structures. Next part exclusively deals with the extensive literature review, then research gap and objectives of the study is identified, after that, methodology of the study is explained, next part for analysis and interpretation of the study and the paper ending with discussion and conclusions.

Review of Literature:

Market index being the barometer gauging the performance of an economy, the impact of various macroeconomic indicators and their effect were reviewed through various research works and to bridge the gap in SME index with respect to Indian stock market.

Pooja Singh (2014) has identified that, Gold prices, Inflation rate, Money supply, Foreign Institutional Investments, and Exchange rate have significant impact on Indian stock market than Industrial production index, Interest rate, Trade deficit, Wholesale price index, and Crude oil price index. Gold price has a negative effect on stock market indices during the period of the study. Whereas, Money supply and FII exposes a positive impact on stock market, that means larger money circulation and flow of foreign capital leads to value addition in stock market. Researcher suggests that, government should take initiative to reduce the conception of gold and strive to retain the foreign investors. **Liu and Shrestha (2008)** conducted a study to examine the relationship of Chinese stock market indices with various selected macroeconomic variables like

Inflation rate, Money supply, Exchange rate, Industrial production, and Interest rate by using heteroscedastic co-integration analysis. The study reveals that, there is a long-term relationship between macroeconomic variables and stock market indices. Industrial production and Money supply are positively associated with stock market and the remaining variables are negatively related. Therefore, the study suggested that, investors can prefer long-term investment than short-term. A study is conducted to investigate the effect of macroeconomic factors on Istanbul stock market return by **Nil Gonsel et.al (2009)**, the result shows a significant relation between market return and macroeconomics variables like Inflation, Money supply, Interest rate and Risk premium. However, findings show a weak explanatory power among these variables. Therefore, researcher argued that, the other macroeconomic variables are affecting Istanbul's stock market return than the tested variables used by them in the study. **Coleman and Tettey (2008)**, have conducted a case study to examine how macroeconomic factors are affecting the performance of Ghana's stock market. The finding reveals that, Treasury bill has a positive effect but statistically it shows a weak effect on the performance of the stock market. Inflation rate shows an adverse effect on the performance of the market. Researcher suggests that, in order to avail a full advantage of macroeconomic variables, interest rates and inflation rate should reduce. **Pal and Mittal (2011)** have concluded their study by stating that, changes in Indian stock market indices are not only affected by selected macroeconomics variables like Exchange rate, Inflation rate, Interest rate on treasury bills and GDP but also other macroeconomic dimensions. **Hamzah et.al (2004)** have initiated a study to identify the long-term association of various macroeconomic variables with Singapore stock market index and Singapore exchange sector indices viz; Hotel index, Finance index and Property index. Singapore stock market index and Property index have a co-integrating association with short term as well as long-term changes in Interest rate, Price levels, Money supply, Industrial production, and Exchange rate. **Yu Hsing (2011)** had concluded his study by suggesting that, to promote performance of stock markets, concerned authority should maintain an economic growth, fiscal discipline, moderate increase in the Money supply, Currency appreciation, and a relatively low Interest rate or expected Inflation rate.

Having reviewed various studies on the impact of macroeconomic indicators, the present study intends to throw light on the BSEs SME index.

Research Gap:

In the fundamental analysis, the impact on macroeconomic indicators plays crucial role in determining the stock market values. This study may

help the stockholders to understand the role of macroeconomic factors in the stock market index. Hence, the researcher felt that, there is a need to analyze the impact of macroeconomic indicators on the S&P BSE SME IPO index returns. The findings of the study will be a revelation to investors to tune their investment in a profitable way.

Objectives of the Study:

- To examine the degree of linear relationship between the S&P BSE SME IPO index and selected macroeconomic indicators and
- To identify the causal relationship between BSE S&P SME IPO Index and the selected macroeconomic indicators.

Methodology:

The present study is fully analytical in nature. It is carried out by using secondary data. The variables are selected for the study is average monthly closing price of S&P BSE SME IPO index and macroeconomic indicators like Inflation rate (IF), Interest rate(IR), Foreign Direct Investment (FDI),Crude oil price (CP), Exchange rate (ER), Gross Domestic Product (GDP) and Index of Industrial Production (IIP). Log values of average monthly closing prices are used. The data relating BSE S&P SME IPO is collected from www.bseindia.com and macroeconomic variables data are collected from the database of Reserve Bank of India (RBI) for a period of three years starting from January 2013 to December 2015. Statistical tools like; Correlation, multiple regression and granger causality test have been used for analyzing the impact of macroeconomic indicators on BSE S&P SME IPO index.

Table 1: Description of Variables Used

Name of Variables	Symbols	Proxy Used
Stock Index	S & P SME IPO	Closing price of BSE SME IPO index
Index of Industrial Production	IIP	Monthly index of industrial production
Interest Rate	IR	Money market rate
Inflation Rate	IF	Consumer price index
Gross Domestic Product	GDP	Average monthly GDP value
Foreign Direct Investment	FDI	Average monthly FDI value
Crude Oil price	CP	Average monthly crude oil price
Exchange Rate	ER	Average monthly Rupees per unit of US \$

The proposed model for the study is as follows:

$$\ln(\text{S\&P BSE SME IPO})_t = \alpha_0 + \beta_1 \ln(\text{IIP})_t + \beta_2 \Delta \ln(\text{IR})_t + \beta_3 \Delta \ln(\text{IF})_t + \beta_4 \Delta \ln(\text{GDP})_t + \beta_5 \Delta \ln(\text{FDI})_t + \beta_6 \Delta \ln(\text{CP})_t + \beta_4 \Delta \ln(\text{ER})_t + \epsilon$$

α_0 = Constant ϵ = Error term
 $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6,$ and β_7 are co-efficients of independent variables of the IIP, IR, IF, GDP, FDI, CP, and ER respectively. The dependent variable is average closing price of S&P BSE SME IPO Index.

Analysis and Interpretation of the Study:

Unit Root Test:

Unit root test is used to test the stationary of the data. In the case of time series data, first step is to test the stationary. Augmented Dickey-Fuller (ADF) is the most commonly used test to analyze stationary in the time series.

Table 2: Unit Root Test Result

Variable	At level		At first Difference	
	ADF Statistics	P value	ADF Statistics	P value
SME IPO	-3.178135	0.0299*	-	-
CP	0.179039	0.9673	-3.762352	0.0076*
ER	-2.216089	0.2044	-5.947320	0.0000*
FDI	0.204748	0.9691	-3.777171	0.0071*
IIP	-4.478786	0.0011*	-	-
IR	-1.308544	0.6146	-4.583884	0.0008*
IF	-1.992070	0.2884	-4.303622	0.0022*
GDP	-0.334032	0.9096	-6.717945	0.0000*

Source: Computed; (*) Significant at 5% level

The above Table describes that, out of eight variables are tested, P value of SME IPO and IIP are less than 0.05 at level and the remaining five variables are significant at first difference at 5% level of significance. Therefore, we can conclude that, SME IPO and IIP are stationary at level where as CP, ER, FDI, IR and IF are stationary at first difference

Granger Causality Test:

The Granger’s causality test is used to test the direction of causation existing among the variables. In this study, we are going to test, is there any causal relationship between SME IPO index and selected macroeconomic variables. There may be three type of relationship among the variables viz unidirectional, bidirectional and no relationship. The results of granger causality test are shown in Table 3.

Table 3: Granger Causality Test Results

Null Hypothesis	Observation	F Statistics	P	Result	Relation
IIP does not Granger Cause SME	34	0.8585	0.9180	Accepted	No relation
SME does not Granger Cause IIP	34	0.80435	0.4571	Accepted	
D(CP) does not Granger Cause SME	34	1.56588	0.2261	Accepted	Unidirectional relation
SME does not Granger Cause D(CP)	34	3.47571	0.0443*	Rejected	

Null Hypothesis	Observation	F Statistics	P	Result	Relation
D(GDP) does not Granger Cause SME	34	0.49232	0.6162	Accepted	
SME does not Granger Cause D(GDP)	34	2.61546	0.0903**	Rejected	Unidirectional relation
D(ER) does not Granger Cause SME	34	0.90227	0.4167	Accepted	No relation
SME does not Granger Cause D(ER)	34	0.44117	0.6475	Accepted	
D(FDI) does not Granger Cause SME	34	1.55876	0.2275	Accepted	Unidirectional relation
SME does not Granger Cause D(FDI)	34	3.53030	0.0424*	Rejected	
D(IF) does not Granger Cause SME	34	1.27418	0.2949	Accepted	No relation
SME does not Granger Cause D(IF)	34	1.08304	0.3519	Accepted	
D(IR) does not Granger Cause SME	34	3.80128	0.0342*	Rejected	Unidirectional relation
SME does not Granger Cause D(IR)	34	0.45484	0.6390	Accepted	

Source: Computed {(*) Significant at 5% level and (**) Significant at 10% level}

The table discloses that, among the selected variables; Crude Oil price, GDP, FDI and Interest rate have a unidirectional relationship with SME IPO index. SME index granger causes to Crude Oil price, GDP and FDI, it means that, SME index can helps the prediction of the values of CP, GDP and FDI. Interest rate granger causes to SME index, means that, Interest rate can be used to predict the value of SME index.

Correlation Analysis:

The linear relationship between variables can identified through Pearson’s co-efficient of correlation. Below Table shows the result of Pearson’s correlation between BSE S&P SME IPO Index and selected macroeconomic variables.

The below Table 4 shows that, Inflation Rate, Gross Domestic Product, and Exchange Rate have a high positive correlation (0.833, 0.651 & 0.864) with BSE S&P SME IPO Index. Whereas the Crude oil price and Industrial production are (-0.450 & -0.451) negatively correlated with BSE S&P SME IPO Index.

Multiple Regression Analysis:

The impact of macroeconomic variables on BSE S&P SME IPO Index can explain by using the regression analysis. Multicollinearity among predictor variables are checked by using VIF (Variance Inflation Factor) in EViews8. Crude Oil price, GDP, and FDI are showing severe collinearity (VIF value is high). Therefore, CP, GDP and FDI are drop out from the

model. The result of multiple regression analysis of the study is given in the Table 5.

Table 5: Multiple Regression Analysis Result

Variables	Standardized coefficient		t	Significance
	B	Std. error		
Constant	-	5.888116	-	0.0000
IIP	49.136565	1.395107	8.345041	0.3394
ER	0.863664	1.395107	0.970272	0.3394
IF	-3.109639	1.395107	-	0.0332*
IR	11.97443	1.518816	7.884055	0.0000*
	2.435617	0.773160	3.150209	0.0036*
R2				0.824043
Adjusted R ²				0.801332
F Statistical				36.29480
Significance				0.000000

Source: Computed (*) Regression is Significant at 5% level

The above Table reveals that, Inflation rate has a positive significant impact on SME index (P value < 0.05). It means that, larger money circulation in the market has a favorable impact on stock index. This result is confirming with the findings of (Pooja Singh, 2014). Interest rate has a significant positive impact on SME IPO Index (P<0.05 at 5% level of significant), whereas, Exchange rate has a significant negative impact on SME IPO index (P<0.05 at 5% level of significant). It signifies that, when the value of Indian currency appreciated the stock market will shows a bullish trend. This result is corroborating with earlier results of (Pooja Singh 2014, Doong et al, 2005, and Liu and Shrestha 2008). Yet, IIP influencing SME Index positively, but it is not statistically significant.

Discussion and Conclusion:

The responsibility of Indian stock market in the economy is to increase the capital and also to create and exploit certain funds in most profitable way. This empirical study executed to analyze the impact of macroeconomic indicators on S&P BSE SME IPO Index value. Correlation, Multiple Regression and Granger Causality tests are used to examine the impact and relationship. Findings of the study show that, Inflation rate and Interest rate have a significant positive impact on SME IPO index. It is not a good indication to increase Inflation and Interest rate to the Indian economy. Therefore, the regulatory authority should try to maintain a healthy Inflation and Interest rate by controlling repo and reverse repo rate. The negative impact of exchange rate indicates that, SME market will decline due to decrease in the value of Indian

rupee against US dollar and appreciation in the value of rupee will facilitate bullish trend in SME market.

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Table 4: Correlation Matrix Result

Variables	BSE SME	CP	ER	FDI	GDP	IIP	IF	IR
BSE SME	1							
CP	-0.4509	1						
ER	0.6512*	-0.4436	1					
FDI	-0.4517	0.9999	-0.4493	1				
GDP	0.8235*	-0.7949	0.7053	-0.7053	1			
IIP	0.1769	-0.4290	-0.0087	-0.0087	0.3067	1		
IF	0.8640*	-0.6607	0.8406	0.8406	0.9489	0.1222	1	
IR	0.0953	0.6980	0.0171	0.0171	-0.2411	-0.1735	-0.1147	1

Source: Computed * Correlation is significant at the level of 5 % (2 tailed)
