

A Study on Select Economic Factors and their impact on BSE

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Abstract

Financial markets play a crucial role in the foundation of a stable and efficient financial system of an economy. Numerous domestic and international factors directly or indirectly affect the performance of the stock market. This study takes into consideration four economic factors: oil prices, interest rates (repo rates & reverse repo rates), inflation rate and industrial growth rate.

Keywords: Economic factors, BSE Sensex, Correlation, economic growth.

Introduction

Indian capital market has undergone tremendous changes since 1991, when the government has adopted liberalization and globalization more seriously than ever before. As a result, there can be little doubt about the growing importance of the stock market from the point of view of the aggregate economy. It has been observed that Indian capital market has been evolved as a major source of raising resources for Indian corporate.

Financial markets play a crucial role in the foundation of a stable and efficient financial system of an economy. Numerous domestic and international factors directly or indirectly affect the performance of the stock market. Stock market plays a crucial role in any country's economic growth and development. It is one of the major economic reflectors. Indian economy is currently emerging as a global super power. Due to low labour cost and skillful manpower sectors like textile, garments, manufacturing, banking and insurance has made a significant contribution to foster the growth potentials of the economy but there are several factors which directly or indirectly affect the performance of BSE Sensex such as inflation, exchange rate, IIP, crude oil, interest rate structure, gold price etc. Not only has the stock market increased relative to the real economy, but also it appears that the inter-relationship between them has strengthened.

Macroeconomic variables have a bearing on the stock market returns. The market responds to Information, news or developments in the real economy. This connects with the Efficient Market Hypothesis, which suggests that there exists informational symmetry and that the prices of the stocks reflect all the available information in the market. Some macroeconomic variables such as inflation, exchange rates, industrial production, crude oil prices etc. would be expected to have a bearing on the market fluctuations. Fundamental analysts essentially study the impacts of such macroeconomic variables on the stock markets. A proper analysis of such macroeconomic factors and their interrelations with the market returns would

provide deep insights for the market analysts, portfolio managers and also retail investors to make prudent decisions.

Need for the Study

The movement of BSE Sensex will fluctuate from time to time due to various factors which includes foreign exchange rates, interest rates, currency fluctuations, us fed interest rates, inflation rates, international situations, industrial growth rates, GDP, etc., so the present study focuses to analyze how the various macro-economic factors influencing the BSE Sensex.

Objectives of the Study

- To understand the concept of stock market and its various economic factors.
- To analyze how the select economic factors (industrial growth rate, oil price, repo rate, reverse repo rate, bank rate and inflation rate) are influencing on the BSE Sensex.
- To examine the impact level of economic factors on BSE Sensex using correlation.

Scope of the Study

A time span of ten years from April 2008 to March 2018 has been chosen for the research. The monthly data against the yearly and quarterly data were employed to depict a larger prospect of the relationship between macroeconomic variables and BSE –SENSEX. The economic indicators taken for the study includes industrial growth rate, oil prices, interest rates (repo, reverse repo and bank rate) and inflation rate.

Research Methodology

The secondary data used for the analysis and interpretation is from annual report of the BSC. There secondary forms of data. The information is collected through secondary sources which include books, websites and articles during the project preparation respectively. No survey is undertaken or observation study is conducted by evaluating the stock market performance on BSE.

Correlation technique was used to calculate the data.

Techniques of Data Analysis

To find out the impact levels of macro-economic factors on BSE Sensex. Correlation technique was used. Pearson's correlation coefficient is the covariance of the two variables divided by the product of their standard deviations. Measure of the linear correlation between two variables X and Y. it has a value between +1 and -1.

$$r = \frac{\sum(x - \bar{x})(y - \bar{y})}{\sqrt{\sum(x - \bar{x})^2 \sum(y - \bar{y})^2}}$$

Where, \bar{X} = mean of X variable
 \bar{Y} = mean of Y variable

X=Industrial growth rate.

Y=BSE Sensex.

Data Analysis

Correlation between Reporate and BSE Sensex Returns

YEAR	REPORATE	BSC SENSEX RETURNS	$x=(x-\bar{x})$	$y=(y-\bar{y})$	$x^2=(X-\bar{X})^2$	$y^2=(y-\bar{y})^2$	$\Sigma(x-\bar{x})(y-\bar{y})$
2008	7.92	9647.31	1.03636364	-13438.3	1.074049587	180588859.8	-13927.0022
2009	5.08	17464.81	-1.8036364	-5620.84	3.253104132	31593791.21	10137.94322
2010	5.62	20509.09	-1.2636364	-2576.56	1.59677686	6638638.01	3255.829165
2011	7.53	15554.92	0.64636364	-7530.73	0.41778595	56711825.87	-4867.587089
2012	8	19426.71	1.11636364	-3658.94	1.246267769	13387808.66	-4084.702489
2013	7.55	21170.68	0.66636364	-1914.97	0.444040496	3667092.692	-1276.063344
2014	8	27499.42	1.11636364	4413.775	1.246267769	19481405.74	4927.377402
2015	7.31	26117.54	0.42636364	3031.895	0.18178595	9192384.535	1292.689583
2016	6.34	26426.46	-0.5436364	3340.815	0.295540496	11161041.83	-1816.188271
2017	6	34056.83	-0.8836364	10971.18	0.780813223	120366890.3	-9694.537617
2018	6.37	36068.33	-0.5136364	12982.68	0.263822314	168550098	-6668.37888
N=10	6.883636364	23085.64545			10.80025455	621339836.7	-22720.62052

$r = -0.27736$

Correlation between Reverse reporate and BSE Sensex Returns

YEAR	REVERSE REPO RATE	BSE SENSEX RETURNS	$x=(x-\bar{x})$	$y=(y-\bar{y})$	$x^2=(X-\bar{X})^2$	$y^2=(y-\bar{y})^2$	$\Sigma(x-\bar{x})(y-\bar{y})$
2008	6.5	9647.31	0.5155	-13438.335	0.265693	180588859.8	-6926.85109
2009	3.75	17464.81	-2.235	-5620.8355	4.993193	31593791.21	12560.01232
2010	4.33	20509.09	-1.655	-2576.5555	2.737521	6638638.01	4263.028116
2011	6.53	15554.92	0.5455	-7530.7255	0.297521	56711825.87	-4107.66843
2012	7	19426.71	1.0155	-3658.9355	1.031148	13387808.66	-3715.48264
2013	6.55	21170.68	0.5655	-1914.9655	0.319739	3667092.692	-1082.82592
2014	7	27499.42	1.0155	4413.77455	1.031148	19481405.74	4481.987425
2015	6.31	26117.54	0.3255	3031.89455	0.105921	9192384.535	986.7438612
2016	5.87	26426.46	-0.115	3340.81455	0.013121	11161041.83	-382.675121
2017	5.87	34056.83	-0.115	10971.1845	0.013121	120366890.3	-1256.69932
2018	6.12	36068.33	0.1355	12982.6845	0.018348	168550098	1758.563634
N=10	5.98455	23085.6455			10.82647	621339836.7	6578.132827

$r = 0.080204$

Correlation between Bank Rate and BSE Sensex Returns

YEAR	BANK RATE	BSC SENSEX RETURNS	$x=(x-\bar{x})$	$y=(y-\bar{y})$	$x^2=(X-\bar{X})^2$	$y^2=(y-\bar{y})^2$	$\Sigma(x-\bar{x})(y-\bar{y})$
2008	6	9647.31	-0.989	-13438.34	0.97740186	180588859.8	13285.6271
2009	6	17464.81	-0.989	-5620.835	0.97740186	31593791.21	5556.962324
2010	6	20509.09	-0.989	-2576.555	0.97740186	6638638.01	2547.276415
2011	6	15554.92	-0.989	-7530.725	0.97740186	56711825.87	7445.149029
2012	9.5	19426.71	2.511	-3658.935	6.30694731	13387808.66	-9188.917448
2013	8.5	21170.68	1.511	-1914.965	2.28422004	3667092.692	-2894.209153
2014	9	27499.42	2.011	4413.775	4.04558368	19481405.74	8877.70562
2015	6	26117.54	-0.989	3031.895	0.97740186	9192384.535	-2997.441198
2016	6.875	26426.46	-0.114	3340.815	0.01291322	11161041.83	-379.6380165
2017	6.25	34056.83	-0.739	10971.18	0.54558368	120366890.3	-8103.715857
2018	6.75	36068.33	-0.239	12982.68	0.05694731	168550098	-3098.14063
N=10	6.989	23085.65			18.1392045	621339836.7	11050.65818

r=0.10409

Correlation between Inflation and BSE Sensex Returns

YEAR	INFLATION	BSC SENSEX RETURNS	$x=(x-\bar{x})$	$y=(y-\bar{y})$	$x^2=(X-\bar{X})^2$	$y^2=(y-\bar{y})^2$	$\Sigma(x-\bar{x})(y-\bar{y})$
2008	8.32	9647.31	0.601	-13438.34	0.36109	180588859.8	-8075.2179
2009	10.83	17464.81	3.111	-5620.835	9.67776	31593791.21	-17485.908
2010	12.11	20509.09	4.391	-2576.555	19.2801	6638638.01	-11313.421
2011	8.87	15554.92	1.151	-7530.725	1.32459	56711825.87	-8667.1804
2012	9.3	19426.71	1.581	-3658.935	2.49927	13387808.66	-5784.4443
2013	10.92	21170.68	3.201	-1914.965	10.2458	3667092.692	-6129.6303
2014	6.37	27499.42	-1.35	4413.7745	1.82005	19481405.74	-5954.5831
2015	5.88	26117.54	-1.84	3031.8945	3.38226	9192384.535	-5575.9297
2016	4.97	26426.46	-2.75	3340.8145	7.5575	11161041.83	-9184.2029
2017	2.49	34056.83	-5.23	10971.185	27.3434	120366890.3	-57369.321
2018	4.85	36068.33	-2.87	12982.685	8.23168	168550098	-37248.502
N=10	7.71909	23085.645			91.7235	621339836.7	-172788.34

r= -0.72378

Correlation between Industrial Growth Rate and BSE Sensex Return

YEAR	GROWTH RATE	BSE SENSEX RETURNS	$x=(x-\bar{x})$	$y=(y-\bar{y})$	$x^2=(X-\bar{X})^2$	$y^2=(y-\bar{y})^2$	$\Sigma(x-\bar{x})(y-\bar{y})$
2008	4.8	9647.31	-0.9	-13438.3	0.81	180588860	12094.502
2009	9.3	17464.81	3.6	-5620.84	12.96	31593791.2	-20235.01
2010	9.7	20509.09	4	-2576.56	16	6638638.01	-10306.22
2011	4.8	15554.92	-0.9	-7530.73	0.81	56711825.9	6777.6529
2012	3.1	19426.71	-2.6	-3658.94	6.76	13387808.7	9513.2322
2013	0.9	21170.68	-4.8	-1914.97	23.04	3667092.69	9191.8342
2014	3.1	27499.42	-2.6	4413.775	6.76	19481405.7	-11475.81
2015	5.6	26117.54	-0.1	3031.895	0.01	9192384.53	-303.1895
2016	7.4	26426.46	1.7	3340.815	2.89	11161041.8	5679.3847
2017	7.5	34056.83	1.8	10971.18	3.24	120366890	19748.132
2018	6.5	36068.33	0.8	12982.68	0.64	168550098	10386.148
N=10	5.7	23085.65			73.92	621339837	31070.653

r=0.14498

Correlation between Oil prices and BSE Sensex Returns

YEAR	OIL PRICE/ BARREL	BSE SENSEX RETURNS	$x=(x-\bar{x})$	$y=(y-\bar{y})$	$x^2=(X-\bar{X})^2$	$y^2=(y-\bar{y})^2$	$\Sigma(x-\bar{x})(y-\bar{y})$
2008	2549	9647.31	-1597.9	-13438	2553313.5	180588859.8	21473238.39
2009	2946	17464.81	-1200.9	-5620.8	1442182.6	31593791.21	6750112.396
2010	3538	20509.09	-608.91	-2576.6	370770.28	6638638.01	1568888.04
2011	5015	15554.92	868.091	-7530.7	753581.83	56711825.87	-6537354.31
2012	4927	19426.71	780.091	-3658.9	608541.83	13387808.66	-2854302.29
2013	5989	21170.68	1842.09	-1915	3393298.9	3667092.692	-3527540.46
2014	6001	27499.42	1854.09	4413.77	3437653.1	19481405.74	8183539.26
2015	3116	26117.54	-1030.9	3031.89	1062773.6	9192384.535	-3125607.65
2016	2703	26426.46	-1443.9	3340.81	2084873.5	11161041.83	-4823832.49
2017	3559	34056.83	-587.91	10971.2	345637.1	120366890.3	-6450059.13
2018	5273	36068.33	1126.09	12982.7	1268080.7	168550098	14619683.04
N=10	4146.91	23085.65			17320707	621339836.7	25276764.81

r=0.24365

Findings

The study and analysis which has carried out for a period of 10 years to find out the impact level of economic factors on BSE Sensex by correlation technique.

- It has been found that, the selected factors which have been taken for the study are showing positive and negative influence on the BSE Sensex.

- It has been noticed that among all the economic factors the crude oil price is highly positively correlated with Sensex with a correlation of 0.24365
- It has been noticed that out of all factors industrial production growth rate is influencing Sensex with a correlation of 0.14498 next to crude oil price.
- It has been found that the next factor influencing on Sensex is bank rate with a correlation of 0.1040913
- It has been analyzed that the reverse repo rate is showing positive effect on Sensex with a correlation of 0.080204 respectively.
- It has been noticed that the repo rate is showing negative impact on Sensex which is -0.27736
- It has been noticed that inflation is showing negative impact on Sensex which is -0.72378.

Suggestions

It is suggested that the investors can rely upon the fundamental economic factors such as Reverse repo rate, crude oil prices, industrial growth rate, Bank rate for the investment in stocks as there is positive co-relationship between the factors selected for the study and stock index.

It is suggested that the investors cannot rely upon the fundamental economic factors such as Repo rate and inflation for the investment in stocks as there is a negative co-relationship between the factors selected for the study and stock index.

Conclusion

Based on the annual data from 2008 to 2018 of different economic factors, the results of the study showed that the influence of reverse repo rate, bank rate, crude oil prices are influencing more on the performance of BSE Sensex than repo rate, industrial production growth rate, inflation rate. Therefore, it has been concluded that all the selected factors showed positive impact on BSE Sensex.

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