

A STUDY OF RELATIONSHIPS BETWEEN S&P BSE-SENSEX AND ECONOMIC GROWTH RATES

**DR. S.D. VASHISHTHA*;
DR. UMED SINGH**; RAJESH KUMAR*****

* DEAN AND PROFESSOR,
FACULTY OF COMMERCE,
M.D. UNIVERSITY, ROHTAK

** ASSOCIATE PROFESSOR OF COMMERCE,
BLJS (PG) COLLEGE, TOSHAM

*** RESEARCH SCHOLAR,
DEPTT. OF COMMERCE,
M.D. UNIVERSITY, ROHTAK

ABSTRACT

This research was an attempt to understand the impact of economic growth rates on capital market movements. In this study monthly average data of various indices (selected under the study) were analyzed with the help of descriptive statistics and Karl Pearson's Coefficient of Correlation.

KEYWORDS: Growth Rates, Capital Market, Index of Industrial Production, Wholesale Price Index and S&P BSE SENSEX

Introduction

A financial market plays key role in the economic development of the country. This market transfers the financial resources from supply (household sector and provider of financial resources) to demand side (industrial sector, govt., and user of financial resources). According to the structure, it is classified into money market and capital market. Money market provides finance for short-run and capital market provides for long-run. In this way, capital market provides the foundation for the building of economic development and affects directly and indirectly the rate of investment, employment, gross domestic product, poverty, and etc. On other hands, various growth rates also affect the capital market which generates fluctuations in the market. Investors fear to invest due to fluctuations and resultantly capital formation goes down. Here, questions are how these fluctuations may be controlled or reduced? How can investors take wisely investment decisions?

Conceptualization of the Study

Growth rates are the measure of economic growth in percentage term from one period to another, these are:

Index of Industrial Production (IPP): it is an index which measures the general level of industrial activities and growth in industrial production. It is calculated by the Central Statistical Organisation (CSO).

Wholesale Price Index¹ (WPI): it is an indicator which shows the changes in the prices of goods.

S&P BSE SENSEX²: is also known as The Barometer of the Indian Capital Markets. The base year of this index was taken as 1978-79 with base index value of 100. Now-a-days, it is calculated on the basis of free-float market capitalization methodology.

Review of Literature

Naka et. al. (1998), examined the relationships among macroeconomic variables and Indian stock market. To examine the relationship among the variables, the related data were analyzed with the help of Vector Error Correction Model. On the basis of the results of this study researchers suggested that domestic inflation was the most deterrent to Indian stock market performance and domestic output was its predominant driving force.

Ahmed (2008), tried to explore the nature of causal relationships between stock prices and the economic variables. In this study, researchers collected quarterly data of index of industrial production, exports, foreign direct investment, money supply, exchange rates, interest rate, NSE-Nifty and BSE-Sensex in India. Johansen's approach of Cointegration and Toda and Yamamoto Granger causality test were applied to explore the long-run relationships while BAVR modeling for variance decomposition and impulse response functions were applied to examine the short-run relationships

The study revealed that the movement of stock prices was not only the behavior of the key macroeconomic variables but it was also one of the causes of movement in macro dimension in the economy.

Geetha et.al. (2011), studied the relationships between inflation and stock returns. Researchers revealed that there were no long-run relationships between expected and unexpected inflation with stock returns and there was also no short-run relationships between the variables for Malaysia and US but it existed for China.

Dasgupta (2012), make a study to examine the long-run and short-run relationships between BSE-Sensex and macroeconomic variables like Wholesale Price Index (WPI), Index of Industrial Production (IIP), Exchange Rate and Call Money Rate. In this study, to examine the relationships between variables monthly data from April, 2007 to March, 2012 were analyzed with the help of various analytical tools like descriptive statistics, ADF Test, Granger Causality Test and Johansen & Juselius Cointegration Test.

Johanson & Juselius Cointegration Test pointed out at least one Cointegration vector and long-run relationship between BSE-Sensex with IIP and Call Money Rate. The Granger Causality Test found no short-run unilateral or bilateral causal relationship between BSE-Sensex and macroeconomic variables. It was also concluded by the researcher that Indian stock market had no informational efficiency.

¹ Definition of 'Wholesale Price Index - WPI' retrieved from- <http://www.investopedia.com/terms/w/wpi.asp>

² **What is the S&P BSE SENSEX®?** retrieved from- <http://www.bseindia.com>

Objective of the study

The present study has been conducted to study the relationships between economic growth rates and Indian capital market sensitivity.

Research Methodology

Research Design: the present study has been conducted to find out a solution for the problem of estimation of movements in stock prices which play key role to increase or decrease capital formation in the country. Thus, an applied-cum-analytical research design has been used in this study.

Sample Design: two growth rates (IIP and WPI) and S&P BSE SENSEX have been selected non-randomly for the purpose of the study.

Procedure of Data Collections:

Analysis of every research work is based on relevant data and it can be collected by two ways: by way of primary data collection and by way of secondary data collection. Primary data are that data which are collected afresh and for the first time, and thus happen to be original in character. It may be collected by observation, interview, and mail questionnaires, through schedules etc. Secondary data are that data which have been already collected by someone else and which have already been passed through the statistical process. It may be collected from published or unpublished sources.

In this research work, secondary data relating to selected variables have been collected from different sources, these were:

(A) News papers:-

- (i) The Economic Times, and
- (ii) Business Standard.

(B) Website:-

- (i) Website of Bombay Stock Exchange of India – <http://www.bseindia.com>
- (ii) Website of Reserve Bank of India-<http://www.rbi.org.in>

Data collected from all the sources were matched in the manner of consistency and finally the data collected from the website of Bombay Stock Exchange of India (BSE) and the website of Reserve Bank of India (RBI).

Data Analytical Tools

To meet the objective of the study, raw data were treated with different kinds of analysis. For carrying out the analysis the different types of statistical tools and techniques were used like, arithmetic mean, standard deviation and Karl Pearson's Coefficient of Correlation. The following are the procedures and formulas for the different tests:

Arithmetic Mean:

The central tendency was measured by using arithmetic mean. The arithmetic mean was obtained by adding the observations and dividing by the number of observations. The steps were:

- (i) Compute N (number of observations)
- (ii) Compute $\sum X$ (sum of all the items of data)
- (iii) To get mean apply formula :-

$$\text{Mean } (\bar{x}) = \frac{x_1 + x_2 + x_3 + \dots + x_n}{N} = \frac{\sum X}{N}$$

Standard Deviation:

The standard deviation is the square root of the variance of a series. The steps were:

- (i) First compute \bar{x} (mean) of data
- (ii) Take deviations of data from actual mean
- (iii) Ensure that $\sum(x - \bar{x}) = \text{Zero}$
- (iv) Square the deviations, i.e., dx^2 or $(x - \bar{x})^2$ and add it to find $\sum dx^2$
- (v) Divide $\sum dx^2$ by number of items in the data and take under root to find standard deviation or

$$\text{S.D.} = \sqrt{\frac{\sum dx^2}{N}}$$

Time Period

Every research work is always limited by shortage of time and resources. Therefore, under the study, a period of five years from April, 2006 to March, 2011 has been taken to carry out the study.

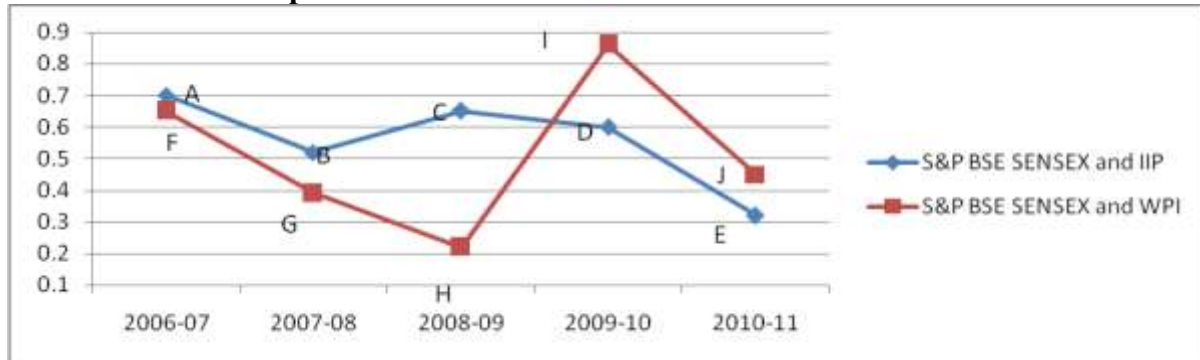
Analysis and Explanations

Table-1: Correlation between Selected Indices.

Years \ Indices	2006-07	2007-08	2008-09	2009-10	2010-11
S&P BSE SENSEX and IIP	0.7	0.52	0.65	0.6	0.32
S&P BSE SENSEX and WPI	0.65	0.39	0.22	0.86	0.45

Source: Self Calculated.

Chart-1: Relationships between Selected Indices.



Source: Based on Table-1.

The monthly average prices of growth rates (IIP and WPI) and S&P BSE SENSEX were analyzed with the help of averages, standard deviations and Karl Person's Coefficient of Correlation. Moderate relationships were found between S&P BSE SENSEX and IIP growth rate during the study period but S&P BSE SENSEX and WPI were highly correlated (0.86) in the year 2009-10, little correlated (0.22) in the year 2008-09 and moderately correlated in the rest of the years.(the values of Karl Person's Coefficient of Correlation are given in the Table-1).

These relationships were also presented by graph mode (Chart-1). The points of correlation between the variables were indicated by the chart of statistics. The chart also portrays the inverse relationship between the correlation of S&P BSE SENSEX with IIP and BSE SENSEX with WPI (as indicated by points C, H, I and D).

Some Important Suggestions

This was an attempt to understand the roles of growth rates in prediction of capital markets. Here, authors suggest some important points which may be helpful for the investors in decision-making about their investment game. These are:

- Investors should not believe in some fundamental aspects only because capital markets are driven by number of factors.
- Reliable tools and techniques should be applied to predict the market. If one or more tools are not reliable than complementary tools should also be applied.

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