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TO STUDY THE RELATIONSHIP BETWEEN INDEX BASED COMPANIES AND INDIAN STOCK MARKET

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ABSTRACT

There are many global and national issues that affect the indices of different stock markets. The global economic meltdown, demonetization, GST has influenced all the sectors of the Indian economy. Its impact is more visible on the capital market and the indices. This paper studies the relationship between Index based companies and Indian stock market. The monthly data have been collected from secondary sources such as official websites of Indian stock market, journals etc. from January 2017 to December 2017. The beta coefficient explains that half of BSE30 securities are less volatile and half of BSE30 securities are more volatile with respect the Indian stock market. The Karl Pearson Correlation Coefficient explains that there is positive and negative correlation of BSE Sensex and Indian based companies during the research period.

Keywords: BSE Sensex, Coefficient of Correlation, Beta Coefficient

INTRODUCTION

Stock Market:

Stock Market is an investment intermediary and facilitates economic and industrial development of a country. It performs various functions and offers useful services to investors and borrowing companies. It is an organized market for buying and selling corporate and other securities. Here, securities are purchased and sold out as per certain well-defined rules and regulations. It provides a convenient and secured mechanism or platform for transactions in different securities. Such securities include shares and debentures issued by public companies which are duly listed at the stock exchange and bonds and debentures issued by government, public corporations and municipal and port trust bodies.

Bombay Stock Exchange (BSE):

It is the first stock exchange in the country to obtain permanent recognition in 1956 from the Government of India under the Securities Contracts (Regulation) Act, 1956. Bombay Stock Exchange Limited is the oldest stock exchange in Asia with a rich heritage. It is known as "BSE", it was established in 1875. The Exchange's pivotal and pre-eminent role in the development of the Indian capital market is widely recognized and its index, SENSEX, is tracked worldwide. SENSEX is not only scientifically designed but also based on globally accepted construction and review methodology. First compiled in 1986, SENSEX is a basket of 30 constituent stocks representing a sample of large, liquid and representative companies. The base year of SENSEX is 1978-79 and the base value is 100. The index is widely reported in both domestic and international markets through print as well as electronic media.

REVIEW OF LITERATURE

Whaley argues that an increased demand-to-buy index affects the level of the volatility index, and thus, the change in the volatility index is expected to rise at a higher absolute rate when the stock market falls than when it rises. Empirical evidence supports the volatility index as more a barometer of investors' fear of the downside than as a barometer of investors' excitement (greed) in a market rally.

(Khaled Hussainey et. al, 2010) studied the factors which were responsible for the existence of any link between share profitability and the volatility of stock prices. The regression model of multivariate factors was used to analyse the profitability and variability in the past years. It was found in the study that the there was strong regression evidence to prove a significant relationship between profitability and volatility of the associated stock assets. It was also found that the capital structure of the company is a very significant function of share price changes and other variables such as management, market outlook, competition, etc.

(Kumar, 2012) and **(Bagchi, 2012)** studied the India VIX (Volatility Index) and its relationship with the Indian stock market returns. While **(Kumar ,2012)** shows the negative association between the India VIX and stock market returns and the presence of leverage effect significantly around the middle of the joint distribution, **(Bagchi ,2012)** constructs value-weighted portfolios based on beta, market-to-book value and market capitalisation parameters, and reports a positive and significant relationship between the India VIX and the returns of the portfolios.

(David R., 2013) studied the behaviour of stock market, pricing of stock assets and ultimately the resulting returns. The major objective of the study was to identify the influence of cognitive factors on the final call or positions of the investors. It was evident from the study that such empirical studies do help investors to create and break their general conception.

RESEARCH METHODOLOGY

Research Statement

"To Study the Relationship between Index Based Companies and Indian Stock Market"

Research Objectives

- To study the relationship between Index based companies and Indian stock market.
- To study the volatility of index based companies with respect to the Indian stock market.

Research Design

For this research, Descriptive Research Design has been used because; in this research design the researcher has got very specific objectives, clear-cut data requirements. The recommendation/findings in a descriptive research are definite.

Data Collection Method

For this research, Secondary source of data has been used; these data are those, which have been gathered earlier for some other purpose. Secondary Data have been collected from official websites of Bombay stock exchange, journals, magazines, books etc.

Sample

In order to fulfil the objectives of this study the samples such as BSE Sensex and BSE-30 securities such as Adani, Asian Paints, Axis Bank, Bajaj Auto, Bharti Airtel, BHEL, Coal India, Dr. Reddy, HDFC, HDFC Bank, Hero Motocorp, HUL, ICICI Bank, Indusind Bank, Infosys, ITC, Kotak Mahindra Bank, L&T, M&M, Maruti, ONGC, NTPC, RIL, SBI, Sun Pharma, Tata Motors, Tata Steel, TCS, Wipro, Yes Bank have been considered.

Sample Period

Monthly data of all samples have been collected during year January-2017 to December-2017.

Statistical Tools

Statistical tools used in this study are Karl Pearson Coefficient of Correlation and beta coefficient by using Eviews7 and Microsoft Excel.

Limitations of the Study

- This study is purely based on the secondary data collection method. So any problem with this data can lead to huge change in the above said.
- This study is limited to one year time period only.

DATA ANALYSIS & INTERPRETATION

Unit Root Test or Stationary Test

Before conducting any test the basic requirement is that the time series data should be stationary at level zero I(0). Therefore stationarity is checked for each variable under the study for whole sample period by using Augmented Dickey Fuller Test (ADF).

Augmented Dickey Fuller Test

An augmented Dickey-Fuller test (1979) is a test for a unit root in a time series sample. An augmented Dickey-Fuller test is a version of the Dickey-Fuller test for a larger and more complicated set of time series models.

The Hypothesis is

Null Hypothesis: H0: $\delta=0$ (unit root)

Alternative Hypothesis: H1: $\delta<0$

The result of ADF test is as below:

Table 1.1 ADF test for BSE Sensex & BSE30 Securities

Series	At Level I(0) P value	At 1st Diff Level I(1) P value	At 2nd Diff Level I(1) P value
BSE Sensex	0.6690	0.0037	-
Adani	0.6972	0.0200	-
Asian Paints	0.0007	-	-
Axis Bank	0.3614	0.0023	-
Bajaj Auto	0.9528	0.1588	0.0403
Bharti Airtel	0.9987	0.0052	-
BHEL	0.7918	0.0185	-
Coal India	0.4394	0.1176	0.0064
Dr. Reddy	0.2170	0.0291	-
HDFC	0.3817	0.1293	0.0085
HDFC Bank	0.0903	0.0319	-
Hero Motocorp	0.4926	0.0100	-
HUL	0.8514	0.0078	-
ICICI Bank	0.1545	0.0036	-
Indusind Bank	0.2629	0.0574	0.0070
Infosys	0.1169	0.0133	-
ITC	0.4636	0.0686	0.0033
Kotak Mahindra Bank	0.0070	-	-
L&T	0.4824	0.2386	0.0331
M&M	0.2415	0.1140	0.0118
Maruti Suzuki	0.9990	0.4454	0.0012
NTPC	0.7600	0.0018	-
ONGC	0.5425	0.0018	-
RIL	0.4979	0.0029	-
SBI	0.8193	0.0026	-
Sun Pharma	0.3919	0.0042	-
Tata Motors	0.2629	0.0001	-
Tata Steel	0.9940	0.2984	0.0001
TCS	0.9922	0.6589	0.0001
Wipro	0.3170	0.0013	-
Yes Bank	0.2593	0.0093	-

Interpretation

From the above table 1.1 it can be seen that at level I(0), the ADF test for all samples except Asian Paints and Kotak Mahindra Bank is statistically not significant at 5% level of significance as the p value is more than 0.05. So the null hypothesis cannot be rejected at level I(0). This mean that all samples except Asian Paints and Kotak Mahindra Bank have unit root problem and it is considered as non stationary series. Therefore, it is checked at first difference level.

It can be seen from the above table that at first difference level I(1), the ADF test is statistically significant at 5% level of significance as the p value is less than 0.05 for the samples such as BSE Sensex, Adani, Axis Bank, Bharti Airtel, BHEL, Coal India, Dr. Reddy, HDFC Bank, Hero Motocorp, HUL, ICICI Bank, Infosys, NTPC, RIL, SBI, Sun Pharma, Tata Motors, Wipro, Yes Bank.

It can be seen from the above table that at second difference level I(1), the ADF test is statistically significant at 5% level of significance as the p value is less than 0.05 for the samples such as Bajaj Auto, HDFC, Indusind Bank, ITC, L&T, M&M, Maruti, ONGC, Tata Steel, TCS.

Karl Pearson Coefficient of Correlation:

In a bivariate distribution we may be interested to find out if there is any correlation or covariation between the two variables under study. If the change in one variable affects a change in the other variable, the variables are said to be correlated. If the two variables deviate in the same direction, that is if the increase (or decrease) in one results in a corresponding increase (or decrease) in the other, correlation is said to be direct or positive. But if they constantly deviate in the opposite directions, that is if increase (or decrease) in one results in corresponding decrease (or increase) in the other ,

correlation is said to be inverse or negative. If the variables are independent, there cannot be any correlation and the variables are said to be zero correlation.

According to Karl Pearson 1896, the Pearson Correlation above 0.75 indicates a strong relationship and that below 0.50 is adopted as weak relationship. The Pearson Coefficient of Correlation between 0.50 and 0.75 is considered as a moderate relationship.

Beta Coefficient:

Beta coefficient is a measure of sensitivity of a share price to movement in the market price. It measures systematic risk which is the risk inherent in the whole financial system. A beta coefficient of 1 suggests that the stock carries the same risk as the overall market and will earn market return only. A coefficient below 1 suggests a below average risk and return (less volatility) while on the other hand a coefficient higher than 1 suggests an above average risk and return (high volatility).

The result of Correlation and Beta coefficient is as below:

Table 1.2 Correlation between BSE Sensex & BSE30 securities and Beta Coefficient

Samples	Correlation with BSE Sensex	Beta Coefficient (Volatility)
Adani	0.94	1.71
Asian Paints	0.87	1.07
Axis Bank	0.87	0.39
Bajaj Auto	0.72	
Bharti Airtel	0.89	2.29
BHEL	-0.68	3.19
Coal India	-0.59	0.27
Dr. Reddy	-0.80	-0.38
HDFC	0.86	0.57
HDFC Bank	0.96	0.54
Hero Motocorp	0.81	0.31
HUL	0.96	0.75
ICICI Bank	0.76	1.80
Indusind Bank	0.91	0.37
Infosys	0.15	1.58
ITC	-0.02	0.55
Kotak Mahindra Bank	0.94	0.97
L&T	-0.53	-0.37
M&M	-0.24	1.03
Maruti Suzuki	0.94	0.47
NTPC	0.51	0.29
ONGC	-0.29	1.21
RIL	0.96	4.24
SBI	0.74	2.86
Sun Pharma	-0.70	0.07
Tata Motors	-0.69	1.32
Tata Steel	0.88	0.18
TCS	0.83	1.55
Wipro	-0.69	3.03
Yes Bank	0.42	3.67

Interpretation

From the above table 1.2, there is strong positive correlation of BSE Sensex with Adani, Asian Paints, Axis Bank, Bajaj Auto, Bharti Airtel, HDFC, HDFC Bank, Hero Motocorp, HUL, ICICI Bank, Indusind Bank, Kotak Mahindra Bank, Maruti, RIL, SBI, Tata Steel, TCS, as their correlation is more than 0.75. The correlation of BSE Sensex with Infosys, NTPC and Yes Bank is 0.15, 0.50 and 0.42 respectively which shows weak positive relation. The correlation between BSE Sensex and Dr. Reddy is -0.80 which shows strong negative relation. There is weak negative correlation of BSE Sensex with BHEL, Coal India, ITC, L&T, M&M, ONGC, Sun Pharma, Tata Motors, and Wipro.

The beta coefficient of Axis Bank, Coal India, Dr. Reddy, HDFC, HDFC Bank, Hero Motocorp, HUL, Indusind Bank, ITC, Kotak Mahindra Bank, L&T, Maruti, NTPC, Sun Pharma, and Tata Steel is less than 1 which shows less volatility with respect to the BSE Sensex.

The beta coefficient of Adani, Asian Paints, Bajaj Auto, Bharti Airtel, BHEL, ICICI Bank, Infosys, M&M, ONGC, RIL, SBI, Tata Motors, TCS, Wipro, and Yes Bank is greater than 1 which shows high volatility with respect to the BSE Sensex.

CONCLUSION

It is concluded from the data analysis that there is positive correlation of BSE Sensex with Adani, Asian Paints, Axis Bank, Bajaj Auto, Bharti Airtel, HDFC, HDFC Bank, Hero Motocorp, HUL, ICICI Bank, Indusind Bank, Kotak Mahindra Bank, Maruti, RIL, SBI, Tata Steel, TCS, NTPC and Yes Bank, whereas there is negative correlation of BSE Sensex with BHEL, Coal India, ITC, L&T, M&M, ONGC, Sun Pharma, Tata Motors, Wipro and Dr. Reddy during the research period. It is also concluded that half of BSE30 securities are less volatile and half of BSE30 securities are more volatile with respect the Indian stock market. The investors who seek to invest in index based securities should consider the relationship and volatility of securities with respect to the Indian stock market.

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