Project report

The Influence of daily share price movements of equity stocks of Infosys,TCS, Tata motors, SunPharma, Axisbank, ICICIbank, ITC and AsainPaints, on daily movements of Bombay Stock Exchange -SENSEX.

Submitted to

Prof.Sameer Mathur

Marketing Professor

Indian Institue of Management(IIM), Lucknow.

Report Prepared by

Sambasiva Rao Kambala

M.B.A (Finance & Marketing)

Former Systems Engineer, Infosys

June 16th, 2017

Declaration

I hereby declare that the project report entitled “The Influence of daily share price movements of equity stocks of Infosys,TCS, Tata motors, SunPharma, Axisbank, ICICIbank, ITC and AsainPaints, on daily movements of Bombay Stock Exchange –SENSEX, has been prepared by me during the period May 15th, 2017 to 10th June 2017 in partial fulfillment of requirement for the internship of **"Data Science and Analytics using R, with Managerial Applications"** under the guidance of Professor Sameer Mathur.

I assure that this project report is the result of my own effort and that it has not been submitted to any other university or person for the award of any degree or diploma.

Place: Vijayawada Sambasiva Rao Kambala

Date: June 16th, 2017

Acknowledgement

It is my pleasure to convey heartiest regards to Professor Sameer Mathur, Marketing professor, Indian Institute of Management(IIM) Lucknow, for giving me an intership opportunity in **"Data Science and Analytics using R, with Managerial Applications"** and guiding me in successfully completing this internship and final project with in time.

Place: Vijayawada,

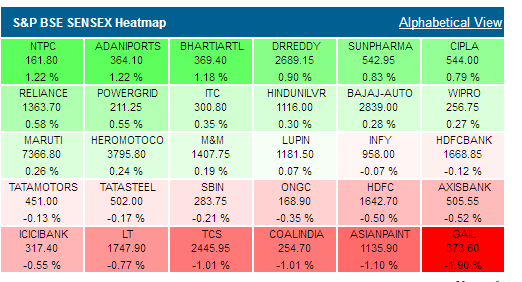
Date: June 16th, 2017 Sambasiva Rao Kambala

**The Influence of daily share price movements of equity stocks of Infosys,TCS, Tata motors, SunPharma, Axisbank, ICICIbank, ITC and AsainPaints, on daily movements of Bombay Stock Exchange -SENSEX.**

1. **Introduction**

The S&P BSE SENSEX (S&P Bombay Stock Exchange Sensitive Index), also-called the BSE 30 or simply the SENSEX, is a [free-float market-weighted](https://en.wikipedia.org/wiki/Capitalization-weighted_index) [stock market index](https://en.wikipedia.org/wiki/Stock_market_index) of 30 well-established and financially sound companies listed on [Bombay Stock Exchange](https://en.wikipedia.org/wiki/Bombay_Stock_Exchange). The 30 component companies which are some of the largest and most actively traded stocks, are representative of various [industrial sectors](https://en.wikipedia.org/wiki/Industry) of the Indian economy. Published since 1 January 1986, the S&P BSE SENSEX is regarded as the pulse of the domestic stock markets in India. The base value of the S&P BSE SENSEX is taken as *100* on 1 April 1979, and its base year as *1978–79*. On 25 July 2001 BSE launched DOLLEX-30, a dollar-linked version of S&P BSE SENSEX. As of 21 April 2011, the market capitalization of S&P BSE SENSEX was about ₹29,733 billion (US$462 billion) (47.68% of market capitalization of BSE), while its free-float market capitalization was ₹15,690 billion (US$244 billion).

List of 30 BSE index stocks:



**2. Overview of the Study**

Our field of study concerns with the impact of daily share price movements of eight major companies in list of BSE-SENSEX index on the SENSEX movement. To study this impact, we have picked up eight major stocks from different Industries namely IT services, Banking, Pharmacy, FMCG, Automobile and Furniture, Furnishing and paints. We want to study the movement of these prices bring how much change in the whole index and fit a model using regression techniques to predict the future behavior of the Sensex.

For this study, we collected the three years of data from 1st January,2014 to 1st January 2017.This three data is daily closing stock prices data on each day. In the same way, we have collected the daily closing points of Sensex on all trading days for these three years. This data set consists of 738 records and 10 columns.

The major eight stocks are

Infosys –INFOSYS.BO

TCS –TCS.BO

Tata motors-TATA MOTORS.BO

SunPharma-SUNPHARMA.BO

Axisbank-AXISBANK.BO

ICICIbank-ICICIBANK.BO

ITC-ITC.BO

AsainPaints-ASIANPAINTS.BO

Sensex is labeled as SENSEX.BO

**3. An empirical field study**

**3.1 Overview**

The main objective of this study is to find out the influence of the daily price movements of the eights stock price movements on the entire index which is constructed based on the weighted averages of 30 Indian companies. But to make things simple, we have confined our study to three independent variables which are TCS.BO,ICICIBANK.BO and ASIANPAINTS.BO

**Hypothesis H1:** *There is a significant change in the sensex average due to the change in the average prices of stocks TCS,ICICIBANK and ASIAN PAINTS.*

**3.2 Data**

To carry out this study, I collected the data from the yahoo finance. The url for this is

<https://in.finance.yahoo.com/> .Yahoo finance has a database of price movements of all the major stocks and stock indices of the globe. But, these are coded differently from the local names. The index Sensex is named as SENSEX.BO ‘BO’ indicates Bombay. In the same way all the other eight stocks used for this study are labeled .BO at the end to indicate that these are prices of those stocks on Bombay Stock Exchange. These eight stocks are Infosys, TCS, Tata motors, SunPharma, Axisbank, ICICIbank, ITC and AsainPaints. For this study, I have collected the three years daily price movements of these eight major stocks and along with the daily movements of the sensex for the period starting from 1st January 2014 to 1st January 2017.

I considered closing day prices for this study ignoring other prices as such as opening price, day high, day low etc. I removed 9 records as there were no price captures on those dates due to unknown reasons. Finally, I am left with a data set of 738 records of 10 columns (First column being the date).

Infosys –INFOSYS.BO: This variable collects the closing day price of stock Infosys on Bombay stock exchange on a specific date.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Min | 1st Qu. | Mean | Median | 3rd Qu. | Max. |
| 0 | 1084 | 2002 | 1229 | 3202 | 4367 |

TCS –TCS.BO: This variable collects the closing day price of stock TCS on Bombay stock exchange on a specific date

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Min | 1st Qu. | Mean | Median | 3rd Qu. | Max. |
| 0 | 2293 | 2367 | 2472 | 2558 | 2776 |

Tata motors-TATA MOTORS.BO: This variable collects the closing day price of stock Tata motors on Bombay stock exchange on a specific date

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Min | 1st Qu. | Mean | Median | 3rd Qu. | Max. |
| 0 | 377.0 | 414.4 | 433.2 | 503.6 | 605.1 |

SunPharma-SUNPHARMA.BO: This variable collects the closing day price of stock Sun Pharma on Bombay stock exchange on a specific date

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Min | 1st Qu. | Mean | Median | 3rd Qu. | Max. |
| 0 | 706.7 | 763.6 | 798.5 | 856.8 | 1168.5 |

Axisbank-AXISBANK.BO: This variable collects the closing day price of stock Axis Bank on Bombay stock exchange on a specific date

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Min | 1st Qu. | Mean | Median | 3rd Qu. | Max. |
| 0 | 0.0 | 1696.4 | 474.5 | 580.1 | 10115.8 |

ICICIbank-ICICIBANK.BO: This variable collects the closing day price of stock ICICI Bank on Bombay stock exchange on a specific date.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Min | 1st Qu. | Mean | Median | 3rd Qu. | Max. |
| 0 | 258.3 | 608.5 | 308.3 | 1077.9 | 1793.1 |

ITC-ITC.BO: This variable collects the closing day price of stock ITC on Bombay stock exchange on a specific date.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Min | 1st Qu. | Mean | Median | 3rd Qu. | Max. |
| 0 | 314.0 | 321.4 | 327.8 | 349.9 | 399.6 |

AsainPaints-ASIANPAINTS.BO: This variable collects the closing day price of stock Asian paints on Bombay stock exchange on a specific date

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Min | 1st Qu. | Mean | Median | 3rd Qu. | Max. |
| 0 | 585.9 | 736.5 | 814.7 | 882.1 | 1212.9 |

Sensex - SENSEX.BO: This variable collects the closing day points of Sensex on specific date.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Min | 1st Qu. | Mean | Median | 3rd Qu. | Max. |
| 0 | 25202 | 25803 | 26456 | 27811 | 29682 |

**3.3 Model**

In order to test Hypothesis 1, we proposed the following model:

We established a model which can study the impact of the three independent variables TCS.BO,

ICICIBANK.BO and ASIANPAINTS.BO on the dependent variable SENSEX.BO.using linear

least squares.

**3.4 Results:**

We found empirical support for H1.The average price change in the share of TCS.BO has brought siginificant change in the sensex and the regression analysis using Ordinary Least Squares yielded >0, with p<0.05.Similarly The average price of a ICICI BANK has brought siginificant change in the value of sensex movement as <0, with p<0.05 and so does the Asain Paints share.

**4. Conclusion**

This study was motivated by the fact that stocks which considered for this study are having greater influence on the movements of SENSEX when the individual stock prices either rise or fall. So, I conclude that there is an influence of the stocks TCS,ICICIBANK and ASIANPAINTS on the index SENSEX and this can be measured by using the prediction equation.

SENSEX.BO = 20447.3564 + 1.9586 \* TCS. BO - 0.9677 \* ICICIBANK .BO + 1.7753 \* ASIANPAINTS.BO

**Table 1:** Summary statistics of the data.

|  |  |  |
| --- | --- | --- |
| Variable | Sample (N) | Price in INR  Mean (SD) |
| TCS.BO | 738 | 2367.91 (445.87) |
| ICICIBANK.BO | 738 | 608.47(518.20) |
| ASIANPAINTS.BO | 738 | 736.54(278.952) |
|  |  |  |
| SENSEX.BO | 738 | 25802.5(3585.124) |

**Table 2:** Regression Analysis

|  |  |  |  |
| --- | --- | --- | --- |
|  | Β | SE | t-statistics |
| Intercept | 20447.3564 | 712.8694 | 28.683 |
| TCS.BO | 1.9586 | 0.2916 | 6.717 |
| ICICIBANK.BO | -0.9677 | 0.2602 | -3.719 |
| ASIANPAINTS.BO | 1.7753 | 0.5017 | 3.539 |

Residual standard error: 3355 on 734 degrees of freedom

Multiple R-squared: 0.1278, Adjusted R-squared: 0.1243

F-statistic: 35.86 on 3 and 734 DF, p-value: < 2.2e-16

**5. References**

[**https://en.wikipedia.org/wiki/BSE\_SENSEX**](https://en.wikipedia.org/wiki/BSE_SENSEX)

[**https://in.finance.yahoo.com/**](https://in.finance.yahoo.com/)

<https://courses.edx.org/courses/course-v1:ColumbiaX+CSMM.102x+2T2017/courseware/72447618dfce491584fb7c45f709e99a/428689a35172423f9fd4c5c31ccf8bd9/?activate_block_id=block-v1%3AColumbiaX%2BCSMM.102x%2B2T2017%2Btype%40sequential%2Bblock%40428689a35172423f9fd4c5c31ccf8bd9>

<https://www.udemy.com/courses/>

<https://www.r-bloggers.com/>