

# IMPACT OF GST ON SELECTED COMPANIES OF AUTOMOBILE SECTOR IN NSE

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**Abstract:** Goods and Service Tax is an iconic Indirect Tax framework intended to assist and improve the economic development of India. It has been one of the most discussed subject area since its initial talks about implementing it in India. The study focuses on the impact of the announcement and implementation of GST in Indian Financial System on selected stocks of NSE and to analyze the sectorial implications in Automobile sector, also testing the semi-strong form of the Indian Stock Market. The efficiency of the market and its reactions provides us a response from the economy. The reactions of the investors is presumed to alter the stock prices

**IndexTerms -** GST, NSE, Event Study, Abnormal Return, CAR, AAR, CAAR

## I. INTRODUCTION

The Goods and Services Tax (GST) is a large concept that streamlines the huge tax structure by encouraging and improving the economic growth of a country. GST is an in depth tax levy on production, the sale made and utilization of goods and services at a countrywide usage. By implementing GST there was a unification of Central and State taxes into a sole tax payment system. It had improved the position of India in both, national as well as global market.

GST is a considerable move towards the Indian Indirect Taxes merging many Central and State indirect taxes into a single tax. The situation of a double taxation is eliminated and thus delivering a common countrywide market. The main advantage to consumers after the execution of GST is the decrease in tax payment of 25% to 30% before the execution of GST and a smaller amount of time and funds spent on settlement of taxes. From the point of view of Producers, the benefit is free mobility of Goods and Services through the state borders without having to pay additional taxes and lesser paper work.

Within this structure, the consumer pays the tax but a reliable input tax credit technique ensures that there is no cascade of taxes- tax on tax paid on inputs that go into production of goods. "In order to prevent the payment of numerous taxes such as excise duty and service tax at Central level and VAT at the State level, GST would unify these taxes and create a uniform market throughout the country. Integration of various taxes into a GST system will bring about an effective cross-utilization of credits. The current system taxes production, whereas the GST will aim to tax consumption". (Dani, 2016)

The Capital Market perceptions and the response of stock prices to different events and information and facts has been a topic of study for over a long period of time. The Indian Stock market is meticulously analysed, in context to the different changes throughout the economy, and the sensitivity of the market is noticed, as it assists as the indicator of the economy. Experts have carried out several research on Efficient Market Hypothesis to look for the efficiency of stock markets.

The Goods and Services Tax (GST) had been a much looked forward to tax framework change in India. It was essential to remove the ill outcomes of the previous tax structure. With the beginning of GST era, we can anticipate a tax structure free from cascade effects and several tax levy. The execution of GST had put an end to the previous tax strategy of VAT and subsume many other indirect taxes like service taxes and also excise duties. The execution of GST had been an area of discussion since it was suggested by Mr. P. Chidambaram the Union Finance Minister then, in his budget speech for the year 2006-07 (Roy, 2017). The GST rates had been announced on 19<sup>th</sup> May, 2017 and the implementation of GST with effective from 1<sup>st</sup> July, 2017. A great deal of discussions were definitely had, relating to its effects on the overall economy both favourably and adversely. These ramifications were assumed to be noticed first on the response of stock market return. The actual shifts in stock prices would assist us to comprehend if the investors respond to the GST rates and in due course the execution of GST as "a pro" or "a con".

Several studies have been carried out on stock market responses to news impressions such as monetary and economic policies, union budget, stock split, mergers and acquisitions and have tested the short term efficiency of the Indian stock market. Major studies have studied the movements and volatility of stock market indices during the event window (Kutch, 2012) (Floros, 2010). A semi strong market is one in which all the publicly available information is incorporated into the stock prices without giving the investors an opportunity to make any abnormal returns (Fama, 1991). The present article aims to test the semi-strong efficiency of the Indian stock market and study the reactions of financial investors towards the announcement of the rates of GST on 19th May 2017 by examining the movements and volatility of sectorial and thematic indices of NSE instead of just one stock market index (B & Alex, 2018).

The period of study had been taken from 1<sup>st</sup> January 2017 to 15<sup>th</sup> July 2017, in order to analyse the effect of the news of announcement and implementation of GST on the stock prices of selected stocks of NSE.

## II. REVIEW OF LITERATURE

(Schweitzer, 1989) enumerates how the investor expect the stock prices to react to special events in the course of time. It demonstrates how unexpected events can change the stock prices of a firm by changing the profit potential or riskiness of the firm, thus explaining how if the stock prices can change before and after the event takes place and continues to influence it for some time thereafter. It talks about the different methodologies of event study and what we can learn from an event study such as announcement of capital structure change, mergers and acquisitions, bank regulatory changes etc., and how an event study proves the impact of news on the stock prices with examples.

(Glenn & Henderson, 1989) conceptualizes about how event studies are a popular research paradigm in several fields of business research; and how they have been cited in insurance literatures. The article enumerates the steps common to all event studies and discusses the guidance that has been provided by the others for the problems encountered at each of those steps. They conclude by stating that the similarities between all event studies is greater than that of the differences between them and quotes that it is a classic design to chronologically frame a methodology.

(Mackinlay, 1997) evaluates the effects of an economic event on the firm. Accounting and Finance researches have applied event studies to analyze the effects of an economic wide event or even as specific as a firm. The paper talks about the procedure of how an event study is conducted and also shows the example of how an event study is done. Later in the article it talks about the different models that are used to normal Performance like Constant mean return, Market Model, other statistical models and Economic Models. Then it shows how an abnormal return is measured and analyzed. Thus explaining the tools that are used for conducting an event study.

(Bowman, 2006) imparts the importance of event study as a methodological approach to market based empirical research in finance and accounting. This approach is used to study the announcements of annual accounting earning, accounting principle changes, large block trades and corporate mergers. The author defines the structure of an event study in which a particular event is identified, then the stock prices reactions are recorded. From which the excess abnormal returns are estimated; after which the results are estimated. He also discusses about the types of event study such as information content, market efficiency tests, model evaluation and metric explanation.

(Dani, 2016) is about the impact of Goods and Service Tax on the Indian economy. It mainly focuses on the different advantages; and disadvantages of GST and the positive and adverse effects that it has on the country as a whole. It analyses the implications of GST sector wise and talks about those sectors such as petroleum, real estate and liquor sectors that does not come under the tax structure of GST. The paper concludes by suggesting the government to refrain from implementing GST as a unified tax framework until the consensus over the issue of threshold limit and revenue rates.

## III. OBJECTIVE OF THE STUDY

To find if there was a significant impact on the Stock Prices of the selected companies in Automobile sector that are listed on the National Stock Exchange (NSE) due to the event of GST implementation.

## IV. DATA COLLECTION

The data was collected from the official National Stock exchange website. The closing prices of 10 selected companies from Automobile sector was collected for trading days from 1<sup>st</sup> January 2017 to 15<sup>th</sup> July 2017. A total of 133 trading days has been considered for the study.

## V. RESEARCH METHODOLOGY

Event studies evaluates the extent of impact on the stock prices on specific firms or industries before and after the announcement and implementation of a specific special event – in this case GST. In a sense the stock prices reflect the publically available information concerning the future of a firm or industry.

The available literature about the estimation of abnormal returns uses the event study methodology originated by (Fama, Fisher, Jensen, & Roll, 1969), who uses it to evaluate the market's efficiency with respect to a stock split.

### 5.1 Returns

In this study the Market Model and Ordinary Least Square method is used to determine the abnormal returns (Schweitzer, 1989), from which the average abnormal returns per day during the event window is calculated.

The return series is calculated using the formula:

$$R_{it} = 100 * \ln(P_{it} | P_{it-1}) \quad (1)$$

Where,  $R_{it}$  is the Return of company  $i$  at period  $t$ ,  $P_{it}$  is the stock price at period  $t$ ,  $P_{it-1}$  is the stock price at period  $t - 1$ .

The return series is tested for Stationarity using the Augmented Dickey-Fuller test (Unit root test). It is also tested for normality using Jarque-Bera test in order to check if all the variables in the data are in the same specific range.

### 5.2 Estimation and Event Window

The data is divided into periods (windows):

Estimation window: 1<sup>st</sup> January, 2017 to 18<sup>th</sup> June, 2017 (114 daily observations)

Event window: 19<sup>th</sup> June, 2017 to 15<sup>th</sup> July, 2017 (19 daily observations)

In order to determine the range of impact of GST on the stock prices of the selected sectors: as the date of implementation of GST 1<sup>st</sup> July, 2017 was known in advance a larger event window of 19 trading days is taken into consideration

In the event window the GST implementation day is considered as Event Day (day 0) i.e. 1<sup>st</sup> July, 2017 and the event window extends from 9 trading days prior to the event date (-9, to -1) and 9 trading days post the event date (1 to 9).

### 5.3 Estimation of Normal Returns and Market Model

The Market Model assumes that there is a stable relation between the market return and the return of the stock price of the company i.

The Market model of the estimation window is estimated using the ordinary least Square method to obtain the equation for the expected return of company i at a period t. The expected (normal) return is calculated using the formula:

$$E(R_{it}) = (\alpha_i + \beta_i R_{mt}) \quad (2)$$

Where,

$\alpha_i$  is the intercept,  $\beta_i$  is the beta coefficient, and  $R_{mt}$  is the return of the market at period t.

### 5.4 Abnormal Returns (AR)

The Abnormal returns are calculated as the difference between the actual return and the expected (normal) return.

$$AR_{it} = R_{it} - E(R_{it}) \quad (3)$$

Where,

$AR_{it}$  is the abnormal return of the company i at period t,

$R_{it}$  is the Return of company i at period t,

$E(R_{it})$  is the expected (normal) return of company i at period t

### 5.5 Cumulative Abnormal Return (CAR)

The Cumulative Abnormal Returns are calculated in order to observe the magnitude of abnormal returns of a company over the entire event window.

$$CAR_t = CAR_{t-1} + AR_t \quad (4)$$

Where,  $CAR_t$  is the cumulative abnormal return at time t,  $CAR_{t-1}$  is the cumulative abnormal return at time t – 1 and  $AR_t$  is the abnormal return at time t.

### 5.6 Average Abnormal Return (AAR)

The Average Abnormal Return is calculated by taking the average of all the selected companies in the sector at a particular time t.

$$AAR_t = \frac{1}{n} \sum_{i=1}^n AR_{it} \quad (5)$$

Where,  $AAR_t$  is the average abnormal return for time t,  $AR_{it}$  is the abnormal return of company i at a time t, n is the sample size (in this case the number of companies in the sector).

### 5.7 Cumulative Average Abnormal Return

The Cumulative Average Abnormal Returns are calculated in order to observe the magnitude of abnormal returns overall (in this case the selected sector) over the entire event window.

$$CAAR_t = CAAR_{t-1} + AAR_t \quad (6)$$

Where,  $CAAR_t$  is the cumulative average abnormal return at time t,  $CAAR_{t-1}$  is the cumulative average abnormal return at time t – 1 and  $AAR_t$  is the average abnormal return at time t

### 5.8 Significance of AAR and CAAR

In order to ascertain the significance of the average abnormal returns for each day in the window period, testing is done using t-statistics

$$t_{AAR} = \frac{AAR_t}{\sigma_{AAR} / \sqrt{n}} \quad (7)$$

Where,  $t_{AAR}$  is t-statistics,  $AAR_t$  is the average abnormal return for time t,  $\sigma_{AAR}$  is the standard deviation of average abnormal return at time t and n is the sample size

In order to ascertain the significance of the cumulative average abnormal returns or the overall abnormal return for each day in the window period, testing is done using t-statistics

$$t_{CAAR} = \frac{CAAR_t}{\sigma_{CAAR} / \sqrt{n}} \quad (8)$$

Where,  $t_{CAAR}$  is t-statistics,  $CAAR_t$  is the cumulative average abnormal return for time t,  $\sigma_{CAAR}$  is the standard deviation of cumulative average abnormal return at time t and n is the sample size

## VI. EMPIRICAL RESULTS AND INTERPRETATION

### 6.1 Augmented Dickey-Fuller test (Unit root test)

The data collected is tested for unit root using the Augmented Dickey-Fuller test in order to determine whether the data is stationary or not.

$H_{01}$ : (Null Hypothesis) The closing prices have a Unit Root.

$H_{A1}$ : (Alternate Hypothesis) The closing prices does not have a Unit Root.

Table 1: Unit Root Test

Null Hypothesis: RMT has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=12)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-10.99666	0.0000
Test critical values:		
1% level	-3.480818	
5% level	-2.883579	
10% level	-2.578601	

\*MacKinnon (1996) one-sided p-values.

From the above table we can infer the t value = -10.99666 which is crater than the critical value of -3.480818 which means that the t value is significant; we reject null hypothesis and **accept the alternate hypothesis  $H_{A1}$  : The closing prices does not have a Unit Root**; which means that the data is stationary.

## 6.2 Jarque-Bera test

The data is tested for normality using Jarque-Bera test in order to check if all the variables in the data are in the same specific range.

$H_{02}$ : (Null Hypothesis) The data is not normally distributed.

$H_{A2}$ : (Alternate Hypothesis) The data is normally distributed.

Table 2: Descriptive Statistics

	RMT
Mean	0.143579
Median	0.105653
Maximum	1.795426
Minimum	-1.021788
Std. Dev.	0.533063
Skewness	0.479334
Kurtosis	3.678673
Jarque-Bera	7.588040
Probability	0.022505
Sum	18.95240
Sum Sq. Dev.	37.22452
Observations	132

The probability value from the Jarque-Bera test is 0.022505 which is less than 0.05 at 5% significance, so we reject null hypothesis and **accept alternate hypothesis  $H_{A2}$  : The data is normally distributed**. Thus showing that all variables come under same timeframe or range

## 6.3 Impact of GST on Automobile Sector

The Indian vehicle industry is one of the biggest on the planet. The business represents 7.1% of the nation's Gross Domestic Product (GDP). The Two Wheelers portion with 80% of the overall industry is the pioneer of the Indian Automobile showcase

attributable to a developing working class and a youthful populace. Also, the developing enthusiasm of the organizations in investigating the country showcases additionally supported the development of the part. The general Passenger Vehicle (PV) portion has 14% of the pie. Also India is a noticeable auto exporter and has solid fare development desires for the not so distant future. General automobile trades grew 13.01% year-on-year between April-December 2017.

The 10 selected companies in the automobile sector are Autolite (India) Ltd, umax Industries Ltd, Tata Motors (DRV) Ltd, Mahindra and Mahindra Ltd, Bajaj Auto Ltd, Maruti Suzuki India Ltd, Bosch Ltd, MRF Ltd and CEAT Ltd.

**H<sub>0 3</sub>**: (Null Hypothesis) There is no significant impact of GST on the stocks of Automobile Sector.

**H<sub>A 3</sub>**: (Alternate Hypothesis) There is a significant impact of GST on the stocks of Automobile Sector.

The Abnormal Returns of the 10 companies for the event window were calculated using the Event Study methodology adopted; and from which the AAR and CAAR of the automobile sector were calculated.

From Figure 1 we can see that there had been a sharp fall in the CAAR right before the event date (0) which means that the investors had anticipated an increase in the tax rate in the automobile sector, but just before the event day the CAAR rose till the 2nd post event day. After the implementation of GST on July 1st, 2017 the tax rates of the automobiles had gone up; so the impact on the company can be observed by a down fall in the CAAR continuously for the rest of the event window. Overall there has been a fall in the stock prices of companies in the automobile sector due to the event – GST.

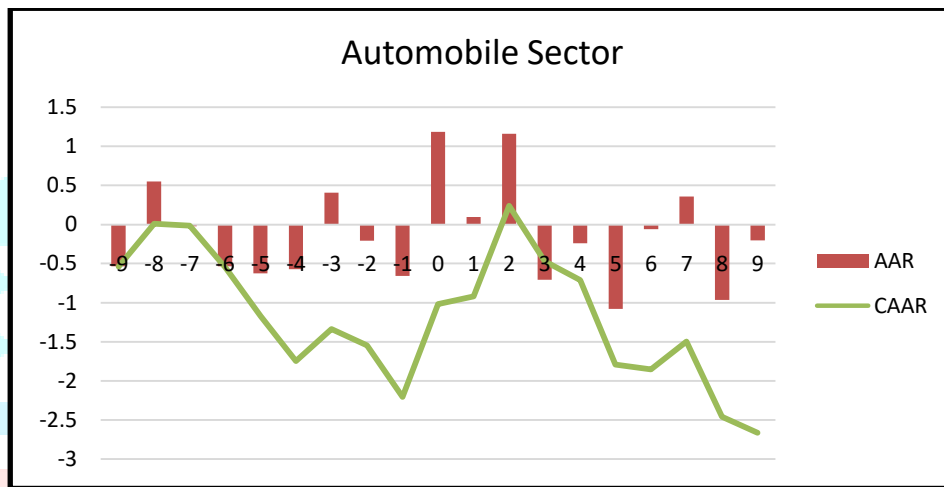


Figure 1 AAR and CAAR Graph for Automobile Sector

In order to test the significance of the average abnormal return (AAR) and overall abnormal return (CAAR) t-statistics was used. Since the t statistics was significant at 5% i.e. t value >|t\*| ; here |t\*| is the critical value, for AAR it is 1.96 and CAAR is 2.00. From the table 3 we can see that 13 days out of 19 days in the event window and also on the event day the t value is more than the critical value so we reject null hypothesis and **accept alternate hypothesis H<sub>A 3</sub>: There is a significant impact of GST on the stocks of Automobile sectors.**

Table 3t-statistics of AAR and CAAR in Automobile sector

Event	AAR	t (AR)	CAAR	t CAAR
-9	-0.5369	-3.63781	-0.5369	-3.63781
-8	0.548389	3.715624	0.011485	0.055026
-7	-0.02467	-0.16713	-0.01318	-0.05156
-6	-0.53427	-3.61994	-0.54745	-1.85462
-5	-0.62496	-4.23444	-1.17241	-3.55252
-4	-0.57071	-3.86686	-1.74312	-4.82163
-3	0.407417	2.760464	-1.3357	-3.42061
-2	-0.20907	-1.41653	-1.54477	-3.70051
-1	-0.65721	-4.45294	-2.20198	-4.97318
0	1.185836	8.034663	-1.01614	-2.17719
1	0.097084	0.657795	-0.91906	-1.87754
2	1.159018	7.852958	0.239962	0.469348
3	-0.70771	-4.79508	-0.46774	-0.87898
4	-0.24069	-1.63083	-0.70844	-1.28286
5	-1.08147	-7.32751	-1.7899	-3.13132
6	-0.06006	-0.40695	-1.84997	-3.13362

7	0.356006	2.412131	-1.49396	-2.45503
8	-0.96482	-6.5372	-2.45878	-3.9267
9	-0.20295	-1.37507	-2.66173	-4.13743

## VII. CONCLUSION

From the event study conducted on the selected companies of the automobile sector the findings are that the data collected was normal and stationary. The event on 1st July, 2017 - implementation of GST had an impact on the stock prices of companies in the automobile sector can be proved by the t statistics test done to identify the significance of the abnormal return. Also there is a significance in the negative abnormal returns that is seen before the event date which is mainly due to the anticipation by the investors as a result of the announcement of GST rates prior to the implementation date. But eventually there was an abnormal. But after the event day the stock prices began to fall, this is mainly due to the increase in the GST rates with respect to automobile sector.

## VIII. LIMITATIONS OF THE STUDY

The sample size of the data collected for the event study is relatively smaller.  
Relevance of an event study over a longer period of time is preferable.  
Other factors about the stock market affecting the price movement.

## IX. SCOPE FOR FURTHER RESEARCH

The research can be conducted for companies in other sectors to identify the impact of GST  
Research can also be done for companies that are listed on other stock exchanges  
Other models of event study can be tested.  
A long term effect of GST on the economy can be identified

## REFERENCES

- [1] B, L., & Alex, R. J. (2018). EFFECT OF GST RATE ANNOUNCEMENT ON SECTORIAL INDICES OF NATIONAL STOCK EXCHANGE. *Indian Journal of Commerce & Management Studies*, 9(1), 29-36.
- [2] Bowman, R. G. (2006). Understanding and Conducting Event Studies. *Journal of Business Finance & Accounting*, 561-584.
- [3] Dani, S. (2016). A Research Paper on an Impact of Goods and Service Tax (GST) on Indian Economy. *Business and Economics Journal*, 7(4).
- [4] Fama, E. (1991). Efficient Capital Markets II. *Journal of Finance*, 46(5), 1575- 1617.
- [5] Fama, E. F., Fisher, L., Jensen, M. C., & Roll, R. (1969). The Adjustment of Stock Prices to New Information. *International Economic Review*, 10(1), 1-21.
- [6] Floros, C. (2010). The impact of the Athens Olympic Games on the Athens Stock Exchange. *Journal of Economic Studies*, 647-657.
- [7] Glenn, V., & Henderson, J. (1989). Problems and Solutions in Conducting Event Studies. *The Journal of Risk and Insurance*, 282-306.
- [8] Kutch, V. (2012). Testing Semi-Strong Efficiency Of Indian Stock Market - A Study On Effect Of Union Budget 2012 On Six Select Sectoral Stocks. *Journal of Arts, Science & Commerce*, 3(3(2)), 74-81.
- [9] Mackinlay, A. C. (1997). Event Studies in Economics and Finance. *Journal of Economic Literature*, 13-39.
- [10] Roy, A. (2017). GST in India : a Layman's Guide. *Journal of Commerce & Management Thought*, 8(2), 219-233.
- [11] Schweitzer, R. (1989). How do Sock Returns React to Special Events? *Business Review*, 17-29.