

## Week of the day Impact on Share market - reference to Automobile Industry

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### Abstract

This study investigates week of the day (DOW) irregularity in the NIFTY and stocks of Auto Mobile sector. The authors have used regression model to study the effect and t-test for testing the hypothesis. The study shows that the day of the week effect is present in both return of auto sector and volatility of the sector. The uppermost and lower returns are experimental on two days that is (Wednesday and Tuesday) on Nifty stock and Thursday and Monday respectively in auto sector. The uppermost and lower volatility are observed on Tuesday and Friday on Nifty stocks and Wednesday and Tuesday on auto sector. These relations and trend can prove to be of great importance in making the decision of trading on particular calendar day in the market

**Keywords:** Regression, Week of the day impact, AUTO mobile companies, Risk and returns.

### Introduction

The week of the day effect persist to be interesting one in stock market irregularity to learn because the reality of important of day effects would be very helpful for rising profitable trading strategies. Investors could purchase stocks on days with fewer returns and sell stocks on days with high return. Several practical studies have conducted the phenomena of schedule special effects in markets, where returns tend to show higher (or lower) than average returns is specific calendar periods. Schedule effects are irregularity in returns that associate to the schedule, such as the day, the month. Such anomalies cast doubts to the "efficient market hypothesis. The current study is paying attention solely on day of the week effect. The original understanding of DWE was formulated in as evidence of large stock market decrease between the Friday close and the Monday close. By contrast, it is suggested in that returns on Tuesday are lower and highest on Wednesday. Finally, DWE according to is simply that weekdays differ in their returns.

### Literature Reviews

This section covers review of literature from some of the important research papers, studies and articles as published by different authors.

1. **Weekday effect and intraday seasonality: evidences in Brazilian stock market by Kelmara Mendes Vieira, Paulo Sergio Ceretta, Maximiliano Krueh, y Fernando Casarin, Recibido on 23-03-2011 – Aprobado, 05-06-2011:** By analyzing high frequency data from Bouvspa, this study is to examine the effects and intervals of the week in the Brazilian market. Sessions from April to October 2009 were considered 5 times each share in 5 minutes intervals. The analysis panel was used using the data method. Monday is the day with high returns and fewer returns on Tuesday. Liquidity is the

same throughout the week. Results for the weather show that, on average, the return in the morning period is almost zero and liquidity is less. In the afternoon, there has been an increase in liquidity after the improvement in liquidity.

2. **The Day of the week effect on Stock Market Volatility, Journal of Economics and Finance, Hakan Berument And Halil Kiyamaz, Volume 25, Summer 2001:** This study tests the existence of the week's effect on volatility in the stock market, using the S & P 500 market index during the period January 1973 and October 1997. Conclusions show that the day of effect of the week is present in both instability and withdrawal equation. While the highest and lowest returns are seen on Wednesdays and Mondays, the highest and lowest instability is seen on Friday and Wednesday respectively. Further investigations of sub-time strengthen our findings that volatility patterns are statistically (JEL G10, G12, C22) throughout the week.
3. **Stock Market Volatility – An International Comparison, M. T. Raju, Anirban Ghosh, SEBI, Working Paper Series No. 8, April 2004:** Volatility estimates are important for many reasons and different people in the market. Pricing of securities should depend on the volatility of each asset. In this letter, we not only extend the period of the earlier paper, but also expand the expanse in terms of the number of countries and statistical techniques. Mature markets / developed markets provide long-term high returns with low volatility. In emerging markets except India and China, all other countries have shown less returns (sometimes negative returns with high volatility), with a long history and history of China, both of them give high returns in the form of the US and UK markets. But both countries have fluctuations. The third and fourth positions display large disparities in some

developed markets. Comparatively, there is a lack of deficiency in the Indian market and the reduction of curtosis. In the Indian markets, it has started to become informative more efficient. Contrary to popular belief in recent times, instability has not increased. Interchange instability is also under very much control and has come down compared to the previous years.

4. **Stock Market Anomaly: Day of the Week Effect in Dhaka Stock Exchange, international Journal of Business and Management, Md. Lutfur Rahman, May 2009:** This letter examines the presence of the week on the Dhaka Stock Exchange (DSE). Many concepts have been prepared; Dummy variable regression and GARCH (1, 1) model were used in the study. The result indicates that returns on Sunday and Monday are negative and on Thursday only positive returns are statistically significant. The result also shows that between two consecutive days for Monday-Tuesday, Wednesday-Thursday and Thursday-Sunday couples, meaning is important daily. The result also shows that the average daily return on every weekday is not statistically similar. The Dummy Variable Regression result shows that on Thursday only positive and statistically significant coefficient is. The results of the GARCH (1, 1) model show statistically significant negative coefficients for Sunday and Monday and statistically significant positive coefficients for Thursday Dummy. The closing of all the findings is that the important day of week's impact on DSE

#### Objectives of the Study

1. To identify on which day there are most fluctuations in the automobile sector as well as in the share market.
2. To identify day specific fluctuation (Trend analysis) in volume of automobile sector and in share market.
3. To identify on which day there is maximum trading of automobile sector and share market.

#### Methodology

**Regression:** Regression analysis is a statistical tool for the investigation of relationships between variables. Regression analysis means the estimation or prediction of the unknown value of one variable from the known

value of the other variable. The variable for which prediction is made is known as dependent variable. The word regression was first used by **Sir Francis Galton** at the end of nineteenth century while studying the relationship between heights of fathers and heights of sons.

In most of the cases the independent and depended variable can be easily decided. For the study of income and expenditure of families income is independent variable, while expenditure is depended. Similarly in this research study, days are taken as independent variable and nifty and automobiles markets are taken as depended variable.

$$b_{xy} = \frac{\varepsilon (x - x')(y - y')}{(y - y')^2}$$

**T-Test:** A *t*-test is any statistical hypothesis test in which the test statistic follows a Student's *t* distribution if the null hypothesis is supported. It can be used to determine if two sets of data are significantly different from each other, and is most commonly applied when the test statistic would follow a normal distribution if the value of a scaling term in the test statistic were known. When the scaling term is unknown and is replaced by an estimate based on the data, the test statistic (under certain conditions) follows a Student's *t* distribution. This test, also known as Welch's *t*-test, is used only when the two population variances are assumed to be different (the two sample sizes may or may not be equal) and hence must be estimated separately. The *t* statistic to test whether the population means are different is calculated as:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{s_{\bar{X}_1 - \bar{X}_2}}$$

Where,

$$s_{\bar{X}_1 - \bar{X}_2} = \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$$

#### Empirical Findings and Discussion

This paper has tried to examine the day of the week effect on Indian stock market with special reference to Automobile Industry and Nifty 50.

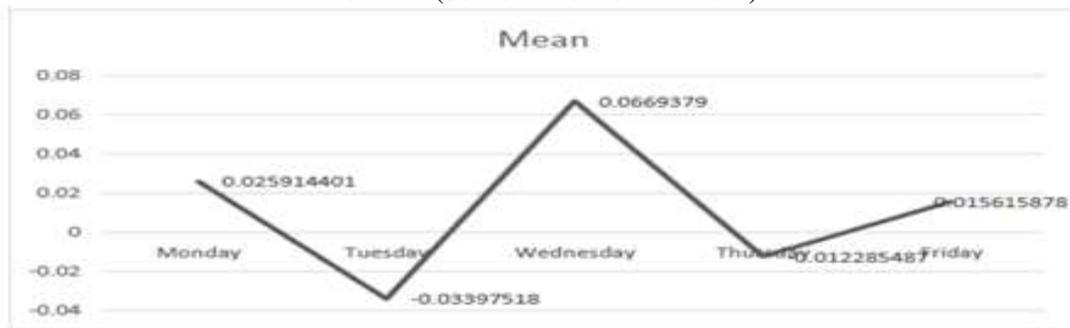
**Table 1: Weekdays return and variance for Nifty**

	All	Monday	Tuesday	Wednesday	Thursday	Friday
Observations	1235	247	250	243	250	245
Mean	0.011232175	0.025914401	-0.03397518	0.0669379	-0.01228549	0.015615878
S.D	0.075103853	0.110439066	0.089995636	0.093630317	0.057637767	0.176045835
Variance	0.005640589	0.012196787	0.008099215	0.008766636	0.003322112	0.030992136
volume	5.18734E+14	5.05068E+14	6.03543E+14	6.05205E+14	4.71316E+14	3.95339E+14
bxy	-	0.754798834	0.358721154	1.108093268	0.536471877	2.293035508

(Source: Summary Statistics for Indian Nifty Stocks)

**Return**

**Chart 1 (Source: Excel Calculations)**

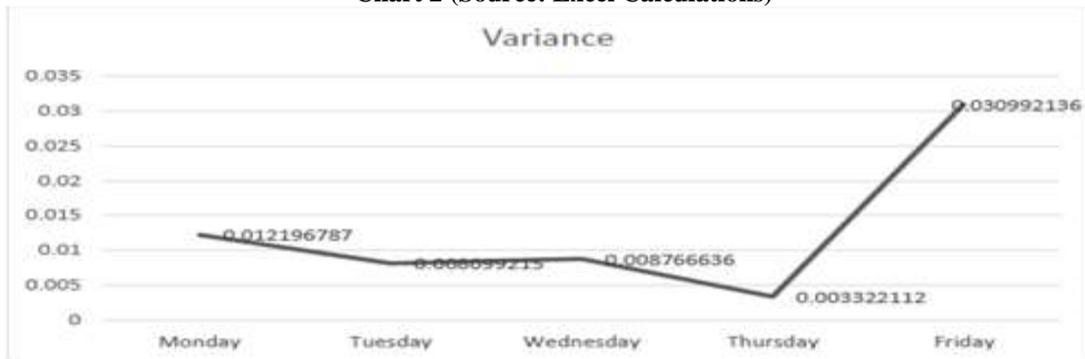


Above graphs shows the mean returns of Nifty of the different days of week. From the graph it can be interpreted that the highest mean return of Nifty during last 5 years achieved on Wednesday and least return was detected on Tuesday. As shown in the Graph, the mean on Wednesday is highest, which means that Wednesdays gives highest returns among all days of the week.

Tuesdays gives lowest return among all days of the week. Returns on Tuesdays are negative. That is decrease in the value of investment on Tuesdays.

**Volatility in Return**

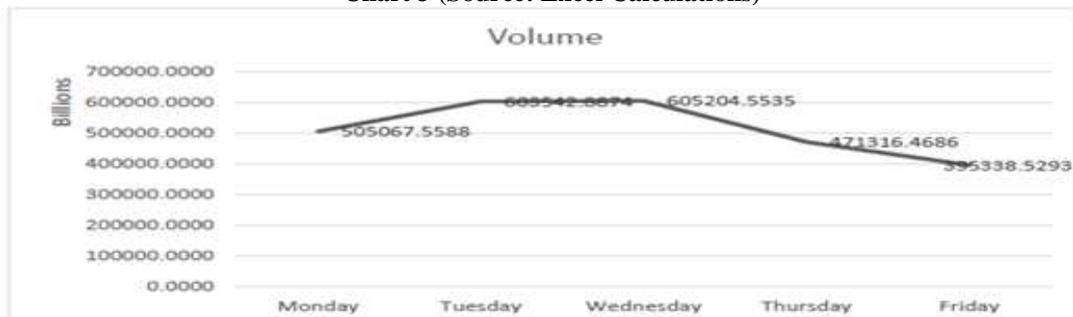
**Chart 2 (Source: Excel Calculations)**



Above chart shows volatility in mean returns of nifty week of last five years. Variance is highest on Fridays, thus market returns are most volatile on Fridays. The returns on Fridays can't be predicted with accuracy. Volatility on Thursdays is lowest, and even the market returns are lowest. Thus Thursdays give consistent low returns every time. Thus it is advisable not to invest on Thursdays.

**Volume**

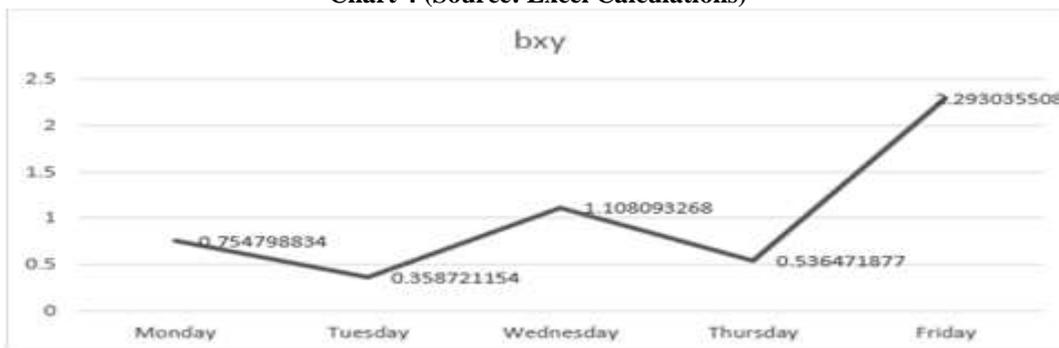
**Chart 3 (Source: Excel Calculations)**



Volume in above chart shows volatility on stock market. High volatility states high trading of stocks and low volatility states less trading of market. Friday has low trading which means Friday have stable market compare to other days while Tuesday and Wednesday are having highly volatile market which states high trading of stocks. It has been observed that there has been decline in the volume of shares traded from Monday to Friday during the study period (2009-2013). The decline in volume is found to be 21.73%.

**Regression**

**Chart 4 (Source: Excel Calculations)**



The regression between returns on any day of the week and average return of the week is highest on Friday. It is more than two times. That is, whatever is the return of that week, the returns on Fridays would be more than two times. Even if the returns are negative for any week, the returns on Fridays would be twice negative. Tuesdays have the lowest regression with returns of the week. It is less than half. Thus returns on Tuesday are less sensitive to the market returns of that week.

**AUTO**

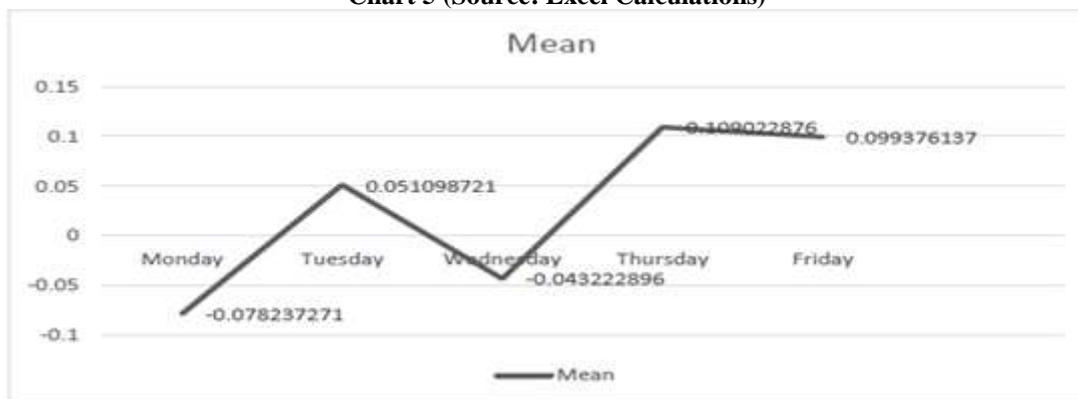
**Table 2: Weekdays return and variance for Auto Sector**

	All	Monday	Tuesday	Wednesday	Thursday	Friday
Observations	495	101	101	93	101	99
Mean	0.02813161	-0.0782373	0.05109872	-0.04322290	0.109022876	0.099376137
S.D.	0.075343796	0.00809569	0.11680529	0.246452948	0.008928347	0.058541628
Variance	0.005676688	0.00007	0.01364348	0.060739055	0.00008	0.003427122
volume	11073068773242.8000	9703119053730.3300	2780282464152.8500	22118852156973.7000	14908764689543.7000	20118056164658.1000
bxy	-	-0.1074500	1.55029738	3.27104501	-0.11850142	0.776993347

(Source: Excel Calculations)

**Return**

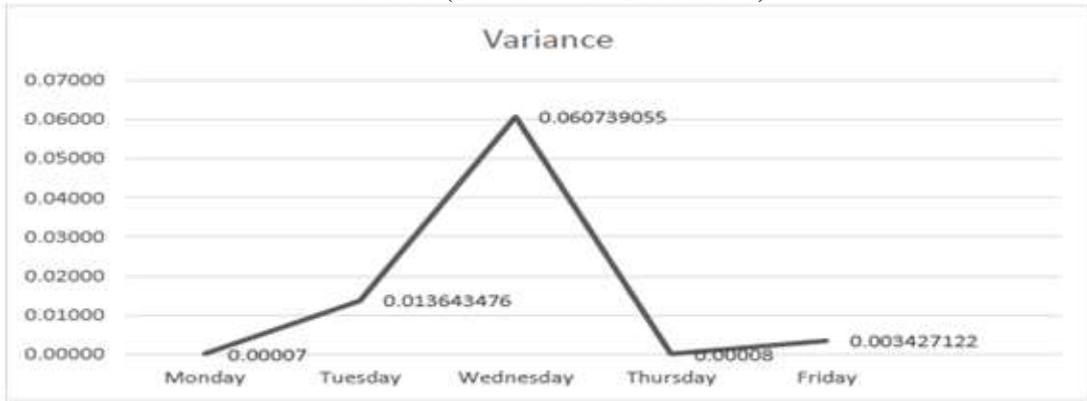
**Chart 5 (Source: Excel Calculations)**



From the Graph, it is observed that the returns on the Thursdays are highest, and on Mondays it is lowest. Thus investing in the market on Mondays would yield good returns.

**Volatility in Return**

**Chart 6 (Source: Excel Calculations)**



Variance on Wednesday is highest. That is returns are most volatile on Wednesdays. Mean is negative on Wednesdays and the variance are highest. That is most of the on Wednesdays the market returns are negative and also unpredictable. On Thursdays, the returns are highest and the Variance are lowest. Thus Thursdays give consistently positive returns.

**Volume**

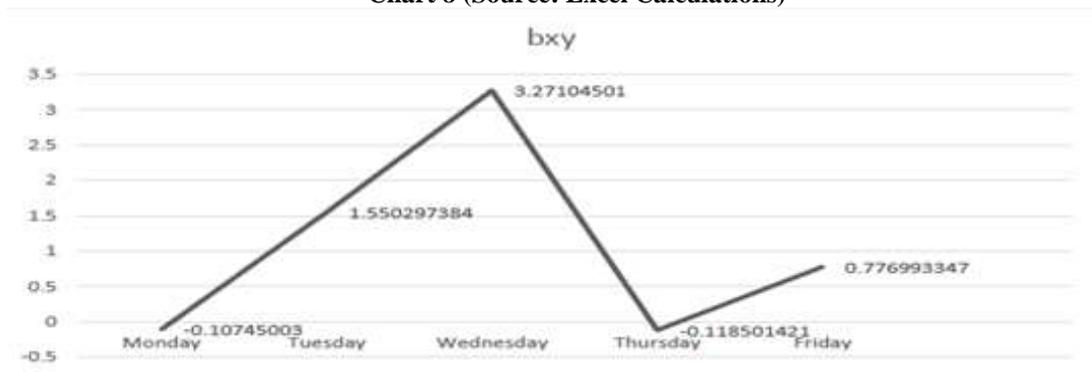
**Chart 7 (Source: Excel Calculations)**



From above graph it can be interpreted that auto market is highly volatile on Wednesday which means auto stocks are having good trade on Wednesday and Tuesday have low volatile market. The graph of return is almost opposite of the graph of share volatility which means high volatile market gives low returns and high returns comes when market is less volatile.

**Regression**

**Chart 8 (Source: Excel Calculations)**



From the graph of regression is has been observed that the regression ratio is highest on Wednesdays. That is the returns on the Fridays are most sensitive to the returns of the week.

### Hypothesis

**Table 3**

Sr. No.	Null Hypothesis
1	There is impact on average stock market return by average Monday return
2	There is impact on average stock market return by average Tuesday return
3	There is impact on average stock market return by average Wednesday return
4	There is impact on average stock market return by average Thursday return
5	There is impact on average stock market return by average Friday return
6	There is impact on average auto stock market return by average Monday return
7	There is impact on average auto stock market return by average Tuesday return
8	There is impact on average auto stock market return by average Wednesday return
9	There is impact on average auto stock market return by average Thursday return
10	There is impact on average auto stock market return by average Friday return

### Result of hypothesis for NIFTY

**Table 4**

Sr. No.	Null Hypothesis	T - Calculated	T - Tabulated	Accept / Reject
1	There is impact on average stock market return by average Monday return	0.122908	1.8945	Accept
2	There is impact on average stock market return by average Tuesday return	-0.43119	1.8595	Accept
3	There is impact on average stock market return by average Wednesday return	0.51887	1.8595	Accept
4	There is impact on average stock market return by average Thursday return	-0.2777	1.8945	Accept
5	There is impact on average stock market return by average Friday return	0.0256	2.015	Accept

### Result of hypothesis for AUTO Mobile stocks

**Table 5**

Sr. No.	Null Hypothesis	T - Calculated	T - Tabulated	Accept / Reject
1	There is impact on average auto stock market return by average Monday return	-1.9851	6.313	Accept
2	There is impact on average auto stock market return by average Tuesday return	0.23367	2.9199	Accept
3	There is impact on average auto stock market return by average Wednesday return	-0.3915	6.3137	Accept
4	There is impact on average auto stock market return by average Thursday return	1.5077	2.9199	Accept
5	There is impact on average auto stock market return by average Friday return	1.055	2.9199	Accept

### Findings & Conclusion

- Wednesday is contributing highest return to the Nifty stock. It is also observed as highest volatile day of the week. Which means it is fruitful to invest on this particular day.
- Friday is giving highest volatility in returns to the Nifty stocks compare to other days of the week because of which return on Friday can't be predicted accurately. It also have highest influence on the nifty stocks.
- Thursday is observed with highest trading of shares and lowest returns and thus it is advisable not to invest on Thursday.
- It has been detected that there has been decline in the volume of shares traded (21.73%) from Monday to Friday during the study period (2009-

2013). Thus it is risky and is suggested not to invest for long term in Nifty Market. One can take earn profit by investing for short period till Wednesday.

- Acceptance of all the null hypothesis in  $t_{jV}$  test proves that days of the week have its impact on Nifty Stock Market as well as on Auto Sector.
- In Auto Sector, chart of percentage return and chart of share volatility are totally opposite to each other which means that in Auto Sector, market return and volatility have pure inverse relationship.
- Monday is observed with low return and low fluctuation on return and Thursday is found with highest return in Auto Sector.
- Thursday, having the high volatility of stocks and high fluctuations in returns, have major impact on the Auto Sector.
- Observing increase in the return of the Auto Sector from Monday to Friday, we can say that it is a profitable sector and as volume of shares of the same from Monday to Friday is also increasing which states high confidence level of investors.

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