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Impact of US election results on Indian stock market: An event study approach

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Abstract

The purpose of the present study is to show the impact of the results of US elections on Indian Stock Market; the emphasis is on IT sector, BFSI and logistics which to a great extent get affected by US policy. Investors are more susceptible to psychological biases while making investment decisions in financial markets. To identify the immediate effect of such an event, a study is conducted taking the period of 30 days prior to the news and 30 days after the results got announced taking NIFTY as the indicator.

Keywords: Event Studies, US Elections, Stock Market, Sector, NIFTY, Indicator

1. Introduction

Indian stock market is an emerging market. A capital market is said to be informational efficient when stock prices fully reflect all available information. In an efficient market, when a new information item is added to the market its impact instantaneously gets incorporated in the share prices and no one can make abnormal return based on prior knowledge or better understanding of information or any event happening in the recent past.

A number of factors – both internal and external to the organization can cause changes in the returns of the securities. Investors who are active often react to these factors, thus a study of these factors and the resulting influence on security returns have infused substantial interest to all the stake holders of the capital market.

In today's modern competitive world, the outlook of finance has changed entirely. Earlier, financial decisions were taken by using the traditional models. But now they are replaced by the complex quantitative models. The Economists have started agreeing with the rule of "efficient market hypothesis." According to this markets are very efficient and transparent in nature. They say that the entire market moves and adjusts itself quickly as per the changes and the market thereby comes to equilibrium thus proving that all stocks are efficiently priced.

Efficient Market Hypothesis (EMH) which developed gradually from a Ph.D. dissertation by Nobel Laureate Eugene Fama in 1960's, states that at any given time and in a liquid market, security prices fully reflect all available information. There are various forms of EMH based on the information set: weak, semi-strong and strong.

Efficient Market is the one in which market price of a security is an unbiased estimate of its intrinsic value. It does not imply that the market price equals intrinsic value at every point of time. Errors in the market prices are unbiased. Share prices fully reflect all available information and prices are equal to their intrinsic, or fundamental or fair values. New information comes into the market and it will be reflected into share price instantly and constantly. Since information will come randomly, price will move randomly around the intrinsic or fair values. Thus, this theory holds that because markets are efficient and all information gets reflected in current prices. Thus, an attempt to outperform the market and generate consistent abnormal returns is basically a game of chance and not of skill and knowledge.

The weak form of EMH popularly called Random Walk Hypothesis assumes that current stock prices fully reflect all currently available security market information. It holds that past price and volume data have no relationship with the future direction of security prices. It concludes that excess returns cannot be achieved using technical analysis.

A random walk means successive prices are independent of past and are identically distributed.

Prices can deviate from the intrinsic value but deviations are random and uncorrelated with any observable variable. Current market price reflects all information of past history of security price. It should not be possible to make consistent excess returns on securities by using the past history of share price movement.

Information Set ϕ = Past Information

The semi-strong form of EMH assumes that current stock prices adjust rapidly to the release of all new public information. It holds that security prices have incorporated all available market and non-market public information. It concludes that excess returns cannot be achieved using fundamental analysis. Current prices instantly and fully reflect all publicly available information.

It is not possible to make consistent excess returns on securities by using publicly available information.

Information Set ϕ = Past as well as Publicly Available Information

The strong form of EMH assumes that current stock prices fully reflect all public and private information. It contends that market, non-market and inside information gets incorporated and factored into security prices.

Current market prices instantly and fully reflect all information (Past, Public and Private).

Even directors or insider with access to privileged inside information should not be able to make consistent excess returns.

Information Sub-Set ϕ = Past, Public and Private Information

US Economy and its policy has great influence on other economy world over specifically emerging economies like India. Apart from other events like changes in tax structure, changes in interest rates, (other macroeconomic changes) any major changes in FED Policies, significantly has an impact on our economy including capital markets. Thus US Presidential Election results have been chosen as an event of significance for study.

Review of Literature

Researchers around the world have focused on the effect of various corporate announcements like quarterly earnings, bonus issue, rights issue, stock split, mergers, buy back of stocks etc. There are even various other events which affect the price of the stocks like Demonetization, US Presidential Elections results, Fiscal Budget Announcement etc. The standard methodology used to evaluate the reaction of share prices to these public announcements is conducting an *event study*, which was conducted as early as by. The *event* is what the investigators would like to study, and it conveys information that potentially influences the stock prices.

The random-walk theory presumes that stock price is uncorrelated with historical prices. It assumes that there is no trend visible in stock price movements and they are independent. Therefore, the EMH theory suggests that historical prices have no predictive capacity over the future prices. Thus, subsequent price shift should be random. The event study methodology is one of the most used tool in economics, accounting and financial research. The first event study documented in the financial literature was by James, cited in in his article Event Studies in Economics and Finance. John Dolley tried to explore how share prices react

to various announcements and found that there was an impact to the extent of 60 percent.

Later many researchers have employed this methodology for example MacKinlay (1997) ^[7]. But, what event study methodology are we following today was outlined by Ball & Brown (1968) and Fama *et al.* (1969) ^[2].

In simple words, event study methodology examines the behaviour of corporates' stock and bond prices (returns) around specific events. Later, the concept of the EMH has been tested in numerous studies over the years.

According to an event is an informational announcement of any kind which occurrence is assumed to be unexpected by the market. In financial literature majority of the empirical studies tried to investigate the impact of an event on the stock returns (abnormal returns), however, several other studies tried to explore trading volume and even volatility of the returns when certain event occurs.

According to EMH the market is said to be efficient, if the stock prices react quickly and efficiently to the new information or event without any bias. Therefore, the abnormal returns signal the market reaction to the unforeseen event. Stock market attitude during general elections was examined by researchers, for example.

However, created the first political business cycle. In this pioneering study he deliberated the various issues like the political decisions pertaining to the current or future welfare.

In an empirical study by documented that political confusion or uncertainty affects the stock market. Similar view was held by. In a study by documented that returns on the TASE following political actions are more intense than returns on days that do not follow political actions. In an empirical study documented that the stock market is highly volatile on event day as compared to ordinary trading days in Tel Aviv Stock market.

In an investigation by documented that the US election process generates uncertainty in stock market, similar view was documented by. In an empirical study by with an intention to understand the effect of the general elections on the return of the stock market in Kenya concluded that investors should carefully plan and carry out investments during and after the periods of the general elections as the returns could have positive or negative effect.

A study by documented that when the ruling party is republican the fixed securities had fetched significantly higher returns, however, under democrats the small cap stocks experiences the excess returns.

In a study by, found that the investors treat election information and the government policy asymmetrically. In the twentieth century, intensive empirical studies of the events like terrorists' attack and its impact on stock market became quite popular. For example, empirical studies done by Anh Phuong Nguyen and found the evidence.

The issue of influence of announcement of result of recent US Presidential Election and its impact on the stock markets are not available in the literature, therefore the current study has been undertaken to investigate the impact of latest US Presidential Election result announcement on Indian stock markets.

Objectives of the study

a. To study the stock price reaction to the results of US Presidential Election.

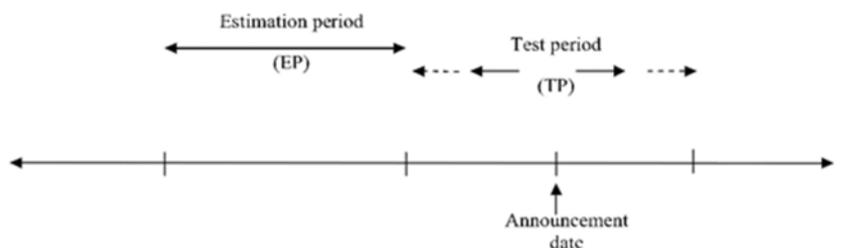
b. To draw conclusion on efficient market hypotheses with regard to Indian stock market.

Hypotheses

- a) Null Hypothesis: Result of US Presidential Election does not significantly influence return (market price) of share.
- b) Alternative Hypothesis: Result of US Presidential Election significantly influences return (market price) of share.
- c) The Abnormal Returns around the event dates are close to zero. (Semi-strong form of EMH holds good)

Methodology

Event study methodology, which tries to measure the effect of an event and how quickly these events get reflected in stock prices, is used to analyse the effect of the event that is the announcement of results of US Presidential Election. The analysis centres on the “Event Window” or test period when evidence of abnormal behaviour in market is sought.



Source: Understanding Event Study taken from Dr. Thitima Sitthipongpanich’s Research paper.

The process of analysing the influence is taken up first for each company by computing the abnormal return generated during the prior and post announcement.

For computing the abnormal return, the return generated is computed as $E_{i,t} = R_{i,t} - E(R_i)$
 where $R_{i,t}$ = actual return
 and $E(R_i) = \alpha_i + \beta_i R_m$

For finding alpha and beta for each of the stocks, the daily stock prices and returns were considered for the past three years for regression to arrive at expected return.

The sectors which are considered are IT, Banking and Logistics. From previous study, it was observed that these sectors were influenced significantly by US policies.

Stocks of Infosys and TCS were selected for IT sector, SBI for banking sector, and VRL for logistics sector.

Abnormal Return of security i during period t
 $AR_{it} = R_{it} - ER_{it} \dots\dots (1)$

R_{it} is the actual return of security i during period t. Market prices of these stocks were taken for arriving at actual returns during our period of study,

The daily returns for each sample company as depicted in Annexure -1 have been computed for the event window period and the equation for the same is

$$R_{it} = (P_{it} - P_{it-1}) / P_{it-1} \dots\dots (2)$$

Where, P_{it} and P_{it-1} are respective daily prices of company i at time t and t-1. Expected return (ER_{it}) is the return expected on security i during period t and is calculated using the Sharpe’s model of Characteristic Regression Line for estimating returns on each security by taking the actual returns on the market model and NSE NIFTY is used for the market portfolio. The market model, which is used for

In this study, we have considered the event window as 30 days prior to the event (announcement) date and 30 days post the event.

Total event window is 60 days and it is in line with many other event studies. All the companies in NSE index forms the population. From the total population, the sample set related to sectors which easily impacted through the policy changes in US has been chosen and the companies from IT, BFSI and Logistics have been considered for the study. The reasons for choosing sectors need to be specified.

Data collected for the study are:

- a) Share price of 4 companies Infosys, SBI, TCS, and VRL (logistics) for 3 years for arriving at the expected return based on Sharpe’s Characteristic Regression Line.
- b) NSE index for 3 years.
- c) Market Prices of chosen stocks for study 30 days (21 trading days) prior to the occurrence of event and 30 days (21 trading days) after the occurrence of the event.

evaluating the expected return, is mathematically expressed as:

$$ER_{it} = \alpha_i + \beta_i R_{mt} + e_{it} \dots\dots (3)$$

R_{mt} is the market’s rate of return at time t (NSE). α_i is the average rate of return the stock would realize in a period with a zero market return. This is the estimate of the intercept of a straight line or alpha coefficient of i’th security. β_i measures the stock sensitivity to the market return which is the slope of a straight line or Beta coefficient of ith security. e_{it} is known as residual which is the stock’s return over and above what one would predict presumably due to the event in question. Hence the above equation provides a decomposition of expected return into market and firm specific factors. There is an assumption inherent in the market model that e_{it} is unrelated to the overall market and has an expected value of zero. The estimates of the constant and coefficient obtained from the regression are then used to generate a time series of return predictions and, ultimately, a time series of excess returns, which are then divided by the prediction to compute the standardized excess return. The abnormal returns are computed using the following model:

$$AR_{it} = R_{it} - ER_{it} \dots\dots (4)$$

R_{it} = Actual Returns of the ith security during time t. β and α of the companies having the announcement were calculated for each event window, by solving the regression equation,

$$ER_{it} = \alpha_i + \beta_i R_{mt} \dots\dots (5)$$

As indicated in the frame work of analysis, the abnormal returns of individual securities are averaged for each day before and after the event day in the event window and the Average Abnormal Return (AAR) are obtained

$$AAR_{it} = \frac{\sum_{t=1}^N AR_{it}}{N} \dots\dots (6)$$

Cumulative Average Abnormal Return (CAAR) is found out for the confirmation of Objective 'b' of our study. It is done by cumulating the individual AAR's over a period of study. If the value of CAAR obtained is close to zero, it means that the announcement of US Presidential Election result has not significantly influenced the stock price.

Research Design – Descriptive Research and Causal Research

Sample Design – Purposive Sampling

Sample Size – 42 trading days

Data Collection – Secondary data from NSE Nifty for the 42 trading days chosen

For AAR calculation, daily returns for the past three years for the chosen companies' stocks.

Tests/Tools used for analysis: (Average Returns, paired t test, Cumulative Average Abnormal Return) - Advanced Excel version 2016.

CAAR- Computation enclosed in Annexure (Table 2)

Analysis

The mean of average abnormal return before the announcement of the result of US Presidential Election is 0.05% which reduces to -0.07% after the announcement. Average abnormal returns in both the cases is very close to zero.

Table 1: The results of test summary using Excel is depicted in the table below:

Particulars	Variable 1 (Pre-test)	Variable 2 (Post-test)
Average Returns	0.05%	-0.07%
Observations (in days)	21	21
t-stat	.5535	
Critical Value (t)	2.085	
P Value	0.586	
CAAR	-0.0046	

As is clear from this, not much of a difference in returns could be gauged pre and post announcement of results.

But to further ascertain and confirm whether this difference in abnormal return is significant or not, t-test was conducted.

The paired sample *t*-test, also referred to as the dependent sample *t*-test, is a statistical tool used to determine whether the average difference between two sets of observations is close to zero. Here, each subject or entity is measured twice, resulting in *pairs* of observations.

Here we wanted to determine the difference in aggregate returns before and after the announcement of an event.

To statistically arrive at a conclusion for our first objective, the paired *t* test is used.

The test results indicate that the difference in price before and after the US Presidential Election result announcement is not significant at 5 percent level of significance.

Cumulative Average Abnormal Return (CAAR) has been found to be negative .0046 which confirms that the event that is the announcement of US presidential results has no significance influence on the performance of stock in the Capital Market. The details of calculation of CAAR is shown in the Annexure Table 2.

Thus, it can be concluded that result information has no significant impact on price of shares and investor cannot consistently earn abnormal return by trading after the release of this information. So, it is evident that US Presidential Election result information has no significant impact on price of shares. Thus semi-strong of EMH holds good.

Conclusion

Hence it can be concluded based on our sample study that the announcement of US Presidential Election result has not significantly influenced the stock price of the companies selected for study.

The analysis clearly reveal that the information release of US Presidential Election does not influence the security returns in any significant manner. Thus, the investor cannot earn abnormal returns upon the release of result information, irrespective of the nature of such information. As regards the informational efficiency of the market, the results of the

study suggest that the Indian stock market tends to indicate semi strong form of efficiency.

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Annexures

Table 2: (CAAR Calculation)

Date	Infosys	SBI	TCS	VRL	Average Aggregate Return (AAR)
07-Oct-16	0.95%	-2.55%	-0.95%	0.02%	-0.63%
10-Oct-16	-1.70%	1.27%	1.60%	-1.95%	-0.20%
13-Oct-16	-2.42%	1.27%	-2.22%	0.36%	-0.75%
14-Oct-16	2.93%	1.10%	2.11%	-0.28%	1.47%
17-Oct-16	0.38%	-1.61%	-1.39%	0.83%	-0.45%
18-Oct-16	-1.51%	2.66%	1.76%	-1.84%	0.27%
19-Oct-16	-0.31%	-1.45%	-0.51%	-3.05%	-1.33%
20-Oct-16	0.53%	-1.50%	0.32%	1.44%	0.20%
21-Oct-16	-0.24%	-1.60%	1.04%	0.01%	-0.20%
24-Oct-16	0.79%	-0.32%	0.12%	0.56%	0.29%
25-Oct-16	0.94%	1.59%	-0.60%	-0.33%	0.40%
26-Oct-16	0.35%	-0.62%	-0.07%	1.32%	0.25%
27-Oct-16	0.99%	0.96%	0.75%	1.30%	1.00%
28-Oct-16	0.18%	0.11%	-0.69%	6.56%	1.54%
30-Oct-16	-0.59%	0.00%	0.58%	-2.75%	-0.69%
01-Nov-16	1.06%	2.80%	-1.47%	2.03%	1.10%
02-Nov-16	1.05%	-0.92%	-1.53%	1.57%	0.04%
03-Nov-16	1.59%	-0.24%	0.18%	-0.57%	0.24%
04-Nov-16	-0.84%	-1.29%	0.13%	-0.32%	-0.58%
07-Nov-16	-0.40%	0.58%	-1.40%	-0.27%	-0.37%
08-Nov-16	-1.31%	-1.65%	-0.46%	1.44%	-0.50%
09-Nov-16	1.77%	0.51%	-3.13%	-1.24%	-0.52%
10-Nov-16	1.96%	-1.82%	0.88%	-3.74%	-0.68%
11-Nov-16	1.76%	0.70%	-2.53%	1.91%	0.46%
15-Nov-16	-0.26%	1.12%	1.24%	4.14%	1.56%
16-Nov-16	-2.44%	1.41%	3.29%	0.94%	0.80%
17-Nov-16	1.44%	-1.07%	-1.16%	0.65%	-0.04%
18-Nov-16	1.15%	0.21%	-1.17%	-2.58%	-0.60%
21-Nov-16	0.69%	-0.21%	0.12%	1.46%	0.52%
22-Nov-16	0.20%	3.09%	0.69%	0.05%	1.01%
23-Nov-16	-0.64%	2.45%	-0.24%	0.83%	0.60%
24-Nov-16	-1.06%	1.28%	1.40%	0.15%	0.44%
25-Nov-16	-4.79%	-3.92%	5.00%	-1.82%	-1.38%
28-Nov-16	-0.37%	0.24%	-1.44%	0.10%	-0.37%
29-Nov-16	0.32%	-2.82%	-0.72%	-1.27%	-1.13%
30-Nov-16	-0.17%	-8.20%	1.61%	-2.98%	-2.43%
01-Dec-16	0.03%	3.12%	-0.89%	0.51%	0.69%
02-Dec-16	0.96%	0.14%	-1.94%	3.49%	0.66%
05-Dec-16	0.81%	-1.83%	-1.26%	-0.83%	-0.78%
06-Dec-16	-0.47%	0.65%	-1.36%	1.29%	0.03%
07-Dec-16	-0.34%	0.05%	-1.38%	-0.18%	-0.46%
08-Dec-16	-1.72%	0.61%	2.67%	-1.39%	0.04%
			CAAR -		-0.46%