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A Study on Impact of General Elections on Performance of Stock Exchanges in India

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Abstract
History has demonstrated that stock market (financial system) plays important role in economy for economic growth. Stock market is also reflects the country's status. Stock exchanges are more volatile as any changes (political, economic, etc.,) in country will have effect on stock markets. The objectives of the study is to analyse the effect of general elections on both NSE and BSE returns in pre-elections and post- elections period and to analyse and compare the volatility i.e. variance of daily returns in the stock market for short term (10 days), medium term (20 days) & long term (30 days) in pre-elections and post- elections period. T test and f test are used for to analyse the data. The daily closing prices of NIFTY & SENSEX index have been collected from the yahoo finance website for a period from 1998 to 2014 which includes a total of 5 Lok Sabha. Hence it is observed that Election has more effect in short term, less in medium term and it diminishes in the long term after the Election announcement retaining the H2 hypothesis.

Key words: *NSE, BSE, elections, lok sabha, t test, f test.*

Introduction

History has demonstrated that stock market (financial system) plays important role in economy for economic growth. Stock market is also reflects the country's status[1]. Now days, stock market has been impacted by many factors which are political, weather condition etc., we are in technological world where news could be spread all over the world within a short span of time. Because of this, everywhere news could be reached to the public so that investors could analyse news which is related to stock market. So stock market fluctuation is based on news. The news which is related to economy, political events weather conditions and relationship between countries could impact on stock market fluctuations comment[2].

We have taken an event which has been an important reason of stock market fluctuations in India. The event is Lok Sabha Election in India 2014. Political events usually have great impact on the stock market. In many cases, the stock market fluctuates because of political announcements such as regulation promulgation, law amendments and national elections.

This study discusses the impact of Lok Sabha elections on stock market. BSE and NSE Index have been taken for the analysis. Events study has been conducted in this paper. The events are 12th to 16th Lok Sabha election and the previous elections result date is 16th may 2014.

The present study analyses the reaction of stock market on the announcement of elections. The previous researches suggest that immediate response can be considered important after the elections announcement and markets can also be given some time to digest the information. In the light of this effect, elections impact has been studied on 10 days (short term), 20 days (medium term) and 30 days (long term). The study will help investors to invest cautiously and act as guidance on their investment decision around the elections pre and post period. The investors are able to understand volatility in the market due to announcement of elections in a particular financial year. It helps the investors to minimize their overall risk and maximize returns of their investment during this period. There certainly is little or no doubt that politician, sometimes intentionally and sometimes not, affect stock markets. The ongoing national crisis is a Perfect example when politicians, through ad hoc adopted policies, try to send Reassuring signals to national markets. Their ability to affect stock markets systematically is however far more questionable. After all, efficient market hypothesis, one of the cornerstones of modern national implies that such behaviour, perhaps once repeated a few times, should be expected by investors and priced accordingly. This paper tries to and answers to these two emerging. Questions firstly, do incumbent policymakers have power to systematically. Affect stock markets and, secondly, does such a power, if exists, necessarily imply market inefficiency? The interest in studying the relationship between stock markets and politics is among researchers for a long time. The electoral cycle, which is driven by opportunism of incumbent politicians who are keen to remain in the office and are willing to manipulate economy in order to achieve better results biased before elections. The partisan cycle, on the other hand, is based on difference in ideologies of policymakers whose policies then impact stock markets differently. The relationship between observed cycles and volatility of stock returns as a basic measure of risk must be analyzed to assess market efficiency. The analysis of political cycles in stock market returns should not be seen only as a proof of market (in) efficiency, it also may be beneficial for investors who want to be protected from political risks as well as for those who want to profit on them.

This report explains the impact of Lok Sabha election on different economic factors like stocks. Working with this data from 1970 to 2014, we have found out that there is no particular pattern in these economic variables before and after the election. Before 2000, India was going through various ups and downs in the economic growth in addition to major political changes happening in the country. In almost every year there is a state election that is happening in India which along with the other factors could have been the reasons that we don't find political business cycles or political budget cycles in India. As the Indian economy shows steady growth in future, it is possible to have political budget cycles as it is present in most of the developed countries. This paper was undertaken to; To analyze the impact of general elections on both NSE and BSE returns in pre-elections and post- elections period and to To analyze and compare the volatility i.e. variance of daily returns in the stock market for short term (10 days), medium term (20 days) & long term (30 days) in pre-elections and post- elections period

Hypothesis

The following hypotheses have been framed:

H0: There is no significant impact of elections on both NSE and BSE returns.

H1: The difference in the volatility when comparing all the post elections periods with long term pre elections period for both NSE and BSE, is insignificant.

H2: Volatility in short term period (10 days) is more than medium (20 days) & long term period (30 days) during post-elections session.

Testing tools

T-test

Definition of 'T-Test' A statistical examination of two population mean's. A two-sample t-test examines whether two samples are different and is commonly used when the variances of two normal distributions are unknown and when an experiment uses a small sample size.

F- test

An F-test is any statistical test in which the test statistic has an F-distribution under the null hypothesis. It is most often used when comparing statistical models that have been fitted to a data set, in order to identify the model that best fits the population from which the data were sampled. Exact "F-tests" mainly arise when the models have been fitted to the data using least squares

Methodology

The daily closing prices of NIFTY & SENSEX index have been collected from the yahoo finance website for a period from 1998 to 2014 which includes a total of 5 Lok Sabha. The time period of the study has been classified into pre-elections and post elections period. A total of 60 trading days' data around the Lok Sabha elections period has been taken. The event window is divided into short term (10 days), medium term (20 days), long term (30 days) before and after the declaration of the Lok Sabha elections.

The secondary data have been analysed using the following statistical tools:

- First, the logarithmic daily returns have been found over the previous day's closing value during the entire 5 year period.

- Second, the average returns in pre-elections and post-elections period, during the previous and the next 10, 20 and 30 days are calculated.

  The Return is calculated using logarithmic method as follows.

  Rt = log (Pt/ Pt-1)

  Rt = Market return at the period t
  Pt = Closing Price of index at day t
  Pt-1 =Closing Price of index at day t-1
  log = Natural log

- Third, the standard deviation and variances during the previous and next 10, 20,and 30 days of the elections is calculated.

- After this, the statistical tools, a paired T-test using SPSS have been applied on average returns.

- F-test has been applied over the variability of returns of SENSEX and NIFTY over different periods.

  The test statistic F is calculated as follows:

  F=σ(X1) 2 /σ(Y1) 2 ,

  Where: σ(X1) ^2 = ∑(Rx1 – RX1) ^2 / (n1 -1)

  Ϭ(Y1) ^2=∑(Ry1 – Ry1) ^2 / (n2-1)

Here, X1, Y1 are two sample time periods, and σ(X1)^2 and σ(Y1)^2 being the sample return variances and n1 and n2being their respective number of observations

Results

Table 1:- Daily Average Return in Nifty Index

YEAR	Election Dates	X3	X2	X1	Y1	Y2	Y3
		LAST 30 DAYS	LAST 20 DAYS	LAST 10 DAYS	NEXT 10 DAYS	NEST 20 DAYS	NEXT 30 DAYS
1998	Feb-March	0.023	0.022	0.013	0.036	0.026	0.026
1999	5th Sep- 3rd Oct	0.017	0.016	0.013	0.047	0.05	0.049
2004	20th Apr-May 10th	0.018	0.023	0.015	0.345	0.187	0.136
2009	16th Aprl-13th May	0.048	0.035	0.024	0.341	0.182	0.137
2014	7th -16th May	0.004	0.005	0.003	0.008	0.007	0.007

Table 2 :- Daily Average Return in Sensex Index

YEAR	Election Dates	X3	X2	X1	Y1	Y2	Y3
		LAST 30 DAYS	LAST 20 DAYS	LAST 10 DAYS	NEXT 10 DAYS	NEST 20 DAYS	NEXT 30 DAYS
1998	Feb-March	0.02	0.02	0.02	0.03	0.03	0.02
1999	5th Sep- 3rd Oct	0.02	0.01	0.02	0.01	0.03	0.04
2004	20th Apr-May 10th	0.02	0.02	0.02	0.26	0.14	0.1
2009	16th Aprl-13th May	0.06	0.04	0.02	0.34	0.17	0.13
2014	7th -16th May	0.005	0.004	0.005	0.009	0.007	0.007

Table 1 and Table 2 represent the average daily returns given by NIFTY, SENSEX and during various periods around the Lok Sabha Election. The estimates indicate that an individual Election has maximum impact (positive or negative) in the short-term (10 days post Election), which diminishes in the medium-term (20 days post Election) and further reduces in the long-term (30 days post Election) in comparison to the pre-Election period.

Table 3:- Shows Paired t-test for Nifty Index

	X3 & Z	X2 & Z	X1 & Z	Y1&Z	Y2&Z	Y3&Z
Actual	-1.213396	-1.216333	-1.228762	-0.949026	-1.081857755	-1.122480837
Table value(5%)	2.78	2.78	2.78	2.78	2.78	2.78

Table 4:- Shows Paired t-test for Sensex Index

	X3 & Z	X2 & Z	X1 & Z	Y1&Z	Y2&Z	Y3&Z
Actual	0.31780871	0.0272538	-0.641754651	0.582771517	1.003644083	1.237447649
Table value(5%)	2.78	2.78	2.78	2.78	2.78	2.78

Table 5 :- Impact of Election on Nifty

	Short term period			**Medium term period**			**Long term period**		
	X3 & Y1	X2 & Y1	X1 & Y1	X3 & Y2	X2 & Y2	X1 & Y2	X3 & Y3	X2 & Y3	X1 & Y3
Actual	-1.842102204	-1.847632564	-1.907158177	-1.965095397	-1.983937608	-2.105461248	-2.100664601	-2.1298	-2.3036
Table value (5%)	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78

Table 6:- Impact of Election on SENSEX

	Short term period			**Medium term period**			**Long term period**		
	X3 & Y1	X2 & Y1	X1 & Y1	X3 & Y2	X2 & Y2	X1 & Y2	X3 & Y3	X2 & Y3	X1 & Y3
Actual	-0.670	-0.621	-1.261	-0.807	-0.788	-1.154	-0.854	-0.892	-1.151
Table value (5%)	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78

30 DAYS

A paired sample t test has been conducted to evaluate whether a statistically significant difference exist between the returns of 30 days pre-Election and post-Election period. The result of the paired sample t test were not significant, indicating that there is a significant increase in the returns from the pre-Election period to the post-Election period. The research retained the null hypothesis. The analysis has accepted the null hypothesis H0, so there is no impact of Election on the returns of long term period in CNX NIFTY and SENSEX.

20 DAYS

A paired sample t test has been conducted to evaluate whether a statistically significant difference exist between the returns of 20 days pre-Election and post-Election period. The result of the paired sample t test were not significant, indicating that there is a significant increase in the returns from the pre Election period to the post-Election period. The research retained the null hypothesis. There is no significant impact of Election on the returns of medium term period as the analysis has accepted the null hypothesis H0.

10 DAYS

A paired sample t test has been conducted to evaluate whether a statistically significant difference exist between the returns of 10 Days pre-Election and post-Election period in CNX NIFTY returns. The result of the paired sample t test were not significant, indicating that there is a significant increase in the returns from the pre-Election period to the post-Election period The research retained the null hypothesis. The null hypothesis H0 has been accepted by the research so there is no significant impact of Election on the returns in short term period of CNX NIFTY.

Table 7:- Variance of returns in nifty index

YEAR	Election Dates	X3	X2	X1	Y1	Y2	Y3
		Last 30 days	Last 20 days	Last 10 days	Next 10 days	Nest 20 days	Next 30 days
1998	Feb-March	0.0144	0.0128	0.0007	0.0117	0.0058	0.0059
1999	5th Sep- 3rd Oct	0.0172	0.0223	0.0411	0.039	0.0185	0.0132
2004	20th Apr-May 10th	0.0131	0.0179	0.022	0.0203	0.0186	0.0124
2009	16th Aprl-13th May	0.0033	0.0046	0.0134	0.0007	0.0157	0.011
2014	7th -16th May	0.0062	0.0067	0.0129	0.0096	0.0062	0.0042

Table 8:- Variance of returns in sensex index

YEAR	Election Dates	X3	X2	X1	Y1	Y2	Y3
		Last 30 days	Last 20 days	Last 10 days	Next 10 days	Nest 20 days	Next 30 days
1998	Feb-March	0.0138	0.0131	0.006	0.0132	0.0055	0.006
1999	5th Sep- 3rd Oct	0.0173	0.0205	0.0302	0.0384	0.064	0.0112
2004	20th Apr-May 10th	0.0119	0.0166	0.0188	0.0189	0.0164	0.0112
2009	16th Aprl-13th May	0.0036	0.005	0.0149	0.0668	0.0081	0.0078
2014	7th -16th May	0.0061	0.0062	0.0123	0.0082	0.0058	0.0038

Table 7 and Table 8 represent the variance of returns in CNX NIFTY & SENSEX. A cursory glance at it shows decreased volatility over the long term compared to the medium term and short term in pre-Election period and also a decreased volatility over the long term compared to the medium term and the short term in post-Election period in most of the cases. It implies that volatility & its impact always reduces as we look forward to the long term.

Table 9: F-test Results Comparing Variance among the Returns *(Post-Election) of NIFTY with One Another*

YEAR	Actual values	Table value	Actual values	Table value	Actual values	Tble value
	Y1 & Y2		Y2 & Y3		Y3 & Y1	
1998	2.017241379	3.74	1.017241379	2.31	1.983050847	3.32
1999	2.108108108	3.74	1.401515152	2.05	2.954545455	3.32
2004	1.091397849	3.74	1.5	2.05	1.637096774	3.32
2009	22.42857143	19.42	1.427272727	2.05	15.71428571	19.46
2014	1.548387097	3.74	1.476190476	2.05	2.285714286	3.32

Table 10: F-test Results Comparing Variance Among the Returns (Post-Election) of SENSEX with One Another

Year	Actual values	Table value	Actual values	Table value	Actual values	Tble value
	Y1 & Y2		Y2 & Y3		Y3 & Y1	
1998	2.4	3.74	1.090901	2.31	2.2	3.32
1999	1.66667	19.42	5.817423	2.05	3.42857143	3.32
2004	1.1524	3.74	1.4642582	2.05	1.6875	3.32
2009	8.24691	3.74	1.038461	2.05	8.56410256	3.32
2014	1.41379	3.74	1.526315	2.05	2.15785	3.32

The findings of Table 7 & 8 have been further statistically tested by F-test. Table 9 &10 reveals F-test values for the test that compare the variance among the returns during short-term, medium-term and long-term period after the Election with one another. All the results are non-significant which shows that volatility does not generally increase in a post-Election situation as time period increases. As volatility in short-term period is more than medium & long term period during post-Election session, so this test have retained the H2 hypothesis.

Table 11:- F-test Results Comparing Variance among the Returns during Post-Election Periods with Long-Term Pre-Election Period of NIFTY

Year	Actual values	Table value	Actual values	Table value	Actual values	Table value
	X3 & Y1		X3 & Y2		X3 & Y3	
1998	1.230769	19.46	2.482758621	2.31	2.440677966	1.86
1999	2.267442	3.32	1.075581395	2.05	1.303030303	1.86
2004	1.549618	3.32	1.419847328	2.05	1.056451613	1.86
2009	4.714286	19.46	4.757575758	2.05	3.333333333	1.86
2014	1.548387	3.32	1	2.31	1.476190476	1.86

Table 12:- F-test Results Comparing Variance among the Returns during Post-Election Periods with Long-Term Pre-Election Period of SENSEX

Year	Actual values	Table value	Actual values	Table value	Actual values	Tble value
	X3 & y1		X3 & y2		X3 & y3	
1998	1.045455	19.46	2.509091	2.31	2.3	1.86
1999	2.219653	3.32	3.699422	2.05	1.544642857	1.86
2004	1.588235	3.32	1.378151	2.05	1.0625	1.86
2009	18.55556	3.32	2.25	2.05	2.166666667	1.86
2014	1.344262	3.32	1.051724	2.31	1.605263158	1.86

Table 11 and Table 12 shows specifically the F-test values that compares the variances of returns during short-term, medium-term and long-term post Election periods with that of the long-term pre-Election period.

It indicates that in 2013 medium term and long term period after the Election were more volatile when compared to similar long term period before the Election. The results are not significant for other years that show the volatility does not generally increase after Election. So this test has retained the H1 hypotheses as there is no significant difference among the volatility in post Election periods when compared to long term pre Election period.

Conclusion

Table 1 and Table 2 represent the average daily returns given by NIFTY, SENSEX and during various periods around the Lok Sabha Election. The estimates indicate that an individual Election has maximum impact (positive or negative) in the short-term, which diminishes in the medium-term and further reduces in the long-term in comparison to the pre-Election period.
Particularly there is no any negative return in NIFTY around the pre elections and post elections period. But in case of SENSEX, it has positive and also negative returns in post and pre period. And in the 2004 elections it has total negative values around pre and post elections.

Table 7 and Table 8 represent the variance of returns in NIFTY & SENSEX. A cursory glance at it shows decreased volatility over the long term compared to the medium term and short term in pre-Election period and also a decreased volatility over the long term compared to the medium term and the short term in post-Election period in most of the cases. It implies that volatility & its impact always reduces as we look forward to the long term.

Recommendations

The results show that Election does not have a significant impact on the CNX NIFTY. After using the paired T- Test, we found that the impact of Election on average returns is not significant whether in pre or post Election period, for short term, medium term & long term. The results of F-Test on the variances of returns reveal that short term and medium term period were more

volatile than the long term period when compared to similar long term period before the Election, in just one case, but mainly there is no significant difference. So this proves our H1 hypotheses correct.
It was also seen that the Election has more effect in short term, less in medium term and it diminishes in the long term after the Election announcement retaining the H2 hypothesis. So, the investors should invest more cautiously around the Election day as volatility in the market is high in short term during the Election announcement days. As a speculator by making investment strategies one can earn extra profits during this time. For the government and regulators, when markets are more volatile they should monitor the market movements on a real time basis and take corrective measures.

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