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Election Results and the Indian Stock Market: Exploring Efficiency and Volatility Patterns (2004-2019)

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Abstract

This research delves into the significant role of the Indian stock market in shaping the country's economic landscape and explores the influence of political events, particularly general election results and exit polls, spanning the period from 2004 to 2019. The primary objective of this paper is to meticulously analyze how these political occurrences can potentially affect the performance of the Indian share market. To achieve this, the study employs the event study methodology and focuses on a diverse sample of 112 companies representing 33 different sectors.

By calculating abnormal returns through a meticulous contrast of actual returns with anticipated returns based on the Capital Asset Pricing Model (CAPM), the paper employs a t-test to ascertain the statistical significance of the findings. For the election results, the analysis window extends from t = -100 to t = +100, where t = 0 corresponds to the date of announcement. In addition, the study employs GARCH and ARCH models to uncover potential volatility patterns. While observing an ARCH effect in both the 2004 general election results and exit polls, the study does not find substantial evidence of a spillover effect of risk.

The empirical findings present a compelling case that alterations in the political party in power wield a more pronounced impact on the market compared to the re-election of the same party. A noteworthy instance lies in the 2014 elections, wherein an unexpected change in the governing party led to investors accruing abnormal profits a mere seven days after the announcement date. This intriguing phenomenon brings to light a significant positive effect resulting from such announcements, thereby challenging the tenets of the efficient market hypothesis.

Keywords-Event Study, EMH, General Election Results, Exit poll, Semi-Strong Form Efficiency, GARCH & ARCH test.

INTRODUCTION

The General Election in India holds substantial importance for investors and the stock market due to its potential to influence investor sentiment, market volatility, and policy decisions. This research aims to delve into the connection between General Election outcomes and the performance of Indian companies listed on the National Stock Exchange (NSE), with a specific focus on election results spanning from 2004 to 2019. Previous studies have explored the interplay between political events and stock market performance, uncovering the capacity of such occurrences to induce market volatility and trigger negative returns, especially in an already unstable stock market environment. Consequently, investors are urged to factor in political risks when making investment choices, as the election's outcome can wield considerable sway over market performance, potentially prompting a reassessment of their investment portfolios.

This paper comprises five distinct sections, commencing with an in-depth literature review, followed by a delineation of the study's objectives. The third section elucidates the methodology adopted to scrutinize the repercussions of General Election result announcements on the stock market. Section four unveils the outcomes

derived from the analysis of the selected sample. Ultimately, the paper culminates by offering overarching observations and concluding insights in the final section.

Building upon established research, including the works of Kongprajya (2010) and Brown et al. (1988), which have underscored the emergence of market volatility and negative returns triggered by political events, this paper emphasizes that investors often overlook the importance of global diversification. This lack of diversification can render them susceptible to concentrated political risks. Therefore, investors are urged to thoughtfully consider these risks while making investment decisions, accounting for the potential repercussions of the General Election on the stock market. They might strategically adjust their portfolio allocations based on their projections of the election's outcome, bolstering investments in sectors expected to gain from new government policies and simultaneously reducing exposure to industries anticipated to be adversely impacted. Supporting these perspectives are pertinent references such as Smith & Walter (2003) and Johnson & Lee (2000).

Structured across five sections, this paper commences with an extensive literature review in the second section, followed by a clear articulation of the study's aims in section three. The fourth section elucidates the methodological approach employed to dissect the effects of General Election results on the stock market. Section five concludes the paper by presenting the findings of the sample analysis and encapsulates final thoughts on the subject.

LITERATURE REVIEW

The literature review section furnishes a comprehensive panorama of existing research concerning the intricate interplay between General Election outcomes and the dynamics of the stock market. This review encompasses a meticulous exploration of a range of studies to cultivate an in-depth understanding of how election results reverberate across stock prices. The contributions of eminent researchers, including Abidin (2010), Stovall (1992), Drazen (2001), Sturm (2013), Johnson (1999), Zhao (2004), Singh (2006), and MacRae (1977), have been meticulously scrutinized to unravel the multifaceted relationship between the stock market and the outcomes of general elections. This eclectic collection of studies is united by the common thread of investigating the intricate nexus between electoral events and the stock market's intricate fabric.

Ioannidis and Thompson's (1986) investigation into the United Kingdom's political landscape revealed a positive yet statistically indistinct connection between market returns and the polling outcomes of the conservative party. Echoing this, Beton (2008) embarked on a parallel journey, studying the 2006 Mexican election and culminating in a similar outcome. Diverse corners of the globe have been illuminated through the lens of election-result-driven stock market impact. Manning (1989), Bialkowski et al. (2009), and Ali (2021) have each ventured into distinct geographical regions, enriching the discourse with their insights into the nuanced interplay between election outcomes and stock market dynamics.

The intricate relationship between stock market fluctuations and political administrations has been probed by Hensel and Ziemba (1995) as well as Gemmill (1992), who collectively underscore the influence of political occurrences on the stock market's undulating trajectory. Siokis & Kapopoulos (2007) navigate the realm of government policies, spotlighting how electoral cycles catalyze policy alterations that, in turn, ripple through market sentiments. The anticipation of policy shifts during elections engenders uncertainty that intimately influences investor sentiments.

Macro-economic factors have been positioned as potent drivers of stock prices by Lee and Brahmasrene (2018), amplifying their impact beyond global forces. Hong's (2016) perspective intersects with the information landscape, accentuating how information gaps or asymmetry can stifle the market's responsiveness to economic changes, thereby precipitating price volatility in the wake of fluctuating demand and supply.

Nguyen and Nguyen (2019) delve into the captivating realm of stock market volatility, unravelling its allure for certain investors, especially during periods of amplified volatility. They further unveil the asymmetrical impact of news on market sentiment, where negative news invokes greater volatility than positive counterparts. Huang's

(1985) work resonates with statistical significance, unearthing the intricate relationship between election outcomes and stock market returns, albeit underscored by a non-uniform impact contingent upon the victorious party.

An insightful contribution by Tan and Yong (2021) casts the spotlight on the Indian context, showcasing the pronounced imprint of political events on stock market performance and investor behavior. Their findings underline the undeniable sway of elections on India's financial landscape.

In essence, this synthesis of diverse studies converges to illuminate the intricate mosaic of relationships between General Election outcomes and stock market dynamics, forging a nuanced understanding that spans geographies, timeframes, and economic dimensions.

OBJECTIVES OF STUDY

- To examine the stock market reaction to general election results & exit poll from 2004-2019.
- To observe whether a change in political party causes stronger market effects or re-election of the same party.
- To observe victory of which party influences significantly stock market returns.
- To study the implication of cumulative abnormal return & volatility to market efficiency.
- To test the validation of the efficient market hypothesis.

RESEARCH METHODOLOGY

DATA SOURCE AND STUDY PERIOD

This research harnessed secondary data gleaned from 112 companies spanning 33 distinct sectors, spanning the timeframe from 2004 to 2019. A comprehensive roster of these companies can be found in Appendix 1. To represent Indian stock prices, the NSE share price indices were adopted as a reliable proxy. The selection of both companies and sectors was underpinned by market capitalization, drawing inspiration from the methodology outlined by Oehler (2013). To evaluate the electoral contest's competitiveness, pre-election data from the Gallup poll was judiciously incorporated. In line with this approach, Ramesha's study (2015) also served as a reference point, scrutinizing the repercussions of the 2014 national elections on the stock prices of 30 entities enlisted in the BSE SENSEX. Employing the event study methodology, this research dissected stock prices across a range of temporal frames: from -15 to +15 days, -2 to +2 days, -15 to -2 days, and +2 to +15 days. The investigation laid bare a remarkable positive cumulative average abnormal return (CAAR) within these diverse event windows. This observable trend underpins the market's favorable response to the potential governmental shift and the inauguration of a novel administration.

The study used daily adjusted value for sample stocks for 100 days prior to and 100 days after the event date. In order to carry out an event study, we determine the event window as t = -100 to t = +100 relative to the event day t = 0 (date of announcement of general election results). The frequency is daily & represents the closing prices of the selected companies from NSE.

TABLE-2

YEAR	EXIT POLL DATE	RESULT ANNOUNCEMENT DATE
2004	May 10, 2004	May 13, 2004
2009	May 13, 2009	May 16, 2009
2014	May 12, 2014	May 16, 2014
2019	May 19, 2019	May 23, 2019

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Dates of general election & exit poll results

Table -2 represents the date of general election & exit poll results which is collected from data published in different newspaper.

HYPOTHESIS

GENERAL ELECTION:

Null Hypothesis (H0): The announcement of a general election result has no significant effect on the returns earned by investors.

Alternative Hypothesis (H1): The announcement of a general election result significantly affects the returns earned by investors, resulting in abnormal returns.

EXIT POLL:

Null Hypothesis (H0): The announcement of an exit poll result has no significant effect on the returns earned by investors.

Alternative Hypothesis (H1): The announcement of an exit poll result significantly affects the returns earned by investors, resulting in abnormal returns.

RESEARCH METHODS USED FOR THE ANALYSIS

The research utilized the event study methodology to analyze the impact of general election results on the stock market. This approach allows for the examination of how specific events, such as political events, affect stock prices. By studying the response of stock prices to these events, it is possible to assess whether the market has already incorporated the information. If the event has a significant effect on stock prices, it suggests that the market has not fully reflected the information, challenging the Efficient Market Hypothesis. This methodology is widely used to test the efficiency of financial markets (Fama, Fisher, Jensen, & Roll, 1969).

The study employed the market model methodology, which assumes a linear relationship between individual security returns and market portfolio returns. This model is efficient in identifying abnormal returns and has been validated by previous research (Salumudin, Ariff, & Nassir, 1999). Additionally, econometric tools such as the Breusch-Godfrey serial correlation L.M. Test and ARCH model were utilized to analyze the volatility of selected stocks before and after the announcement of general election results.

The dates of the general election results for the years 2004, 2009, 2014, and 2019 were collected from various sources, including Times of India. The daily closing stock prices of the Nifty50 Index were used to calculate returns using the formula $Rt = \ln(Pt/Pt-1)$. The OLS method was employed to estimate the conditional mean equation, and the residuals were tested for serial correlation and heteroscedasticity using the Breusch-Godfrey Serial Correlation Lagrange Multiplier (L.M.) Test. The presence of ARCH effects was examined using the GARCH model.

RESULTS

2.4.2.1. GENERAL ELECTION RESULTS

2.4.2.1.1. EVENT STUDY RESULTS OF GENERAL ELECTION

Based on the provided data for the general elections held in 2004, 2009, 2014, and 2019, a thorough analysis of the positive and negative AAR (Average Abnormal Return) and CAAR (Cumulative Average Abnormal Return) values can shed light on the market's response to these electoral events.

In the context of the 2004 general election, the event window analysis demonstrates an absence of positive AAR and CAAR values, while there were 201 instances of negative AAR values. This observation strongly implies a prevailing negative market response to the outcome of the general election.

Shifting focus to the 2009 general election, a breakdown of the event window data reveals 157 instances of positive AAR and 107 instances of negative AAR. The CAAR values showcase a positive trend for 89 days and a negative trend for 111 days. This intricate dataset suggests a nuanced market response, with slightly more occurrences of negative days in terms of both AAR and CAAR, ultimately signifying a marginally negative market sentiment.

Conversely, the analysis of the 2014 general election event window illustrates a contrasting pattern. Specifically, there were 133 instances of positive AAR values and 107 instances of negative AAR values. The corresponding CAAR values indicate 147 positive days and 93 negative days. This striking contrast implies a relatively positive market response to the election's outcome. It suggests that the market exhibited a more balanced sentiment, characterized by an equitable distribution of positive and negative AAR and CAAR values.

Lastly, considering the 2019 general election, the event window analysis divulges 112 instances of positive AAR and 93 instances of negative AAR. The CAAR values accentuate a positive trajectory for 102 days and a negative trajectory for 85 days. Consequently, this data hints at a moderately balanced market response, where the scale slightly tips towards positivity due to the higher count of positive days.

In summation, the meticulous analysis of the general election data from 2004, 2009, 2014, and 2019 enables us to discern distinct market responses. The elections of 2004 were met with a predominantly negative market sentiment. The 2009 elections yielded a nuanced response, tilting slightly towards negativity. Conversely, the 2014 elections prompted a relatively positive market sentiment, indicating a more balanced reaction. Lastly, the 2019 elections elicited a reasonably balanced market response, with a slight inclination towards positivity.

2.4.2.1.2. GENERAL ELECTION PRE CONDITION FOR CONDUCTING ARCH TEST

A. STATIONARITY TEST: AUGMENTED DICKEY-FULLER (ADF) TEST

The study employed the unit root test to determine the stationarity of the variable viz., AAR. The H0 of unit root is tested using Augmented Dickey-Fuller (ADF) test from 2004-2019 and the results are presented in table - 3

TABLE-3: STATIONARITY TEST RESULT FROM 2004 TO 2019

YEAR	NULL HYPOTHESIS	AUGMENTED DICKEY-FULLER TEST STATISTIC	PROB.*	1% LEVEL (CRITICAL VALUE)	5% LEVEL (CRITICAL VALUE)	10% LEVEL (CRITICAL VALUE)
2004	AAR has a unit root	-12.30	0.00	-3.46	-2.87	-2.57
2009	AAR has a unit root	-11.43	0.00	-3.46	-2.87	-2.57
2014	AAR has a unit root	-11.62	0.00	-3.46	-2.87	-2.57
2019	AAR has a unit root	-11.62	0.00	-3.46	-2.87	-2.57

Comparing the Augmented Dickey-Fuller (ADF) test results across the four years, namely 2004, 2009, 2014, and 2019, provides insights into the stationarity of the Average Abnormal Return (AAR) time series data. In 2004, 2009, and 2014, the ADF test statistics were all significantly lower than the critical values at various significance levels

(1%, 5%, and 10%). Additionally, the p-values for these years were extremely close to zero, indicating strong evidence against the null hypothesis of a unit root and suggesting that the AAR data for these years are stationary. This consistency in ADF test results underscores the stability of the AAR time series data for the years leading up to 2014. In summary, the ADF test outcomes demonstrate that the AAR time series data for 2004, 2009, and 2014 exhibit stationary properties, implying that they are suitable for further econometric analysis.

B. SERIAL CORRELATION TEST: BREUSCH-GODFREY TEST

TABLE-4: SERIAL CORRELATION TEST FROM 2004 TO 2019

Year	F-statistic	Prob. F(2,196)	Obs*R-squared	Prob. Chi-Square(2)
2004	1.58	0.21	3.17	0.21
2009	1.15	0.32	2.31	0.31
2014	0.60	0.55	1.23	0.54
2019	1.11	0.33	2.23	0.32

Comparing the results of the regression analysis across the years 2004, 2009, 2014, and 2019 reveals insights into the relationship between the selected variables and Abnormal Average Returns (AAR). The F-statistic, which measures the overall significance of the regression model, consistently indicates a weak relationship for all four years. In 2004, the F-statistic stands at 1.58, while for 2009, 2014, and 2019, the values are 1.15, 0.60, and 1.11, respectively. These values imply that the explanatory variables collectively might not be significantly influencing the variability in AAR.

Furthermore, the associated probabilities (Prob. F(2,196)) corroborate this observation, with values of 0.21, 0.32, 0.55, and 0.33 for the respective years. These relatively high probabilities suggest that the selected independent variables might not jointly contribute significantly to explaining AAR across the different election years.

Examining the Observed R-squared values, which indicate the proportion of AAR variability explained by the model, reinforces this trend. The values of 3.17, 2.31, 1.23, and 2.23 for the years 2004, 2009, 2014, and 2019, respectively, reveal a consistent limitation in the explanatory power of the chosen variables.

Additionally, the Prob. Chi-Square(2) values, which test the collective significance of the coefficients, align with the overall pattern. With values of 0.21, 0.31, 0.54, and 0.32 for the respective years, the results suggest that the coefficients might not collectively provide substantial explanatory insight into AAR.

In summary, the regression analysis consistently demonstrates a limited relationship between the selected variables and Abnormal Average Returns across the years studied. The overall weak F-statistic values, combined with relatively high associated probabilities and low R-squared values, indicate that the model's ability to predict or explain AAR based on the chosen variables is constrained. This suggests the presence of other unaccounted factors that play a significant role in influencing AAR during these election years.

C. NORMALITY TEST: JARQUE-BERA TEST

As per the result, the event i.e., exit poll result in India created significant on Indian stock market.

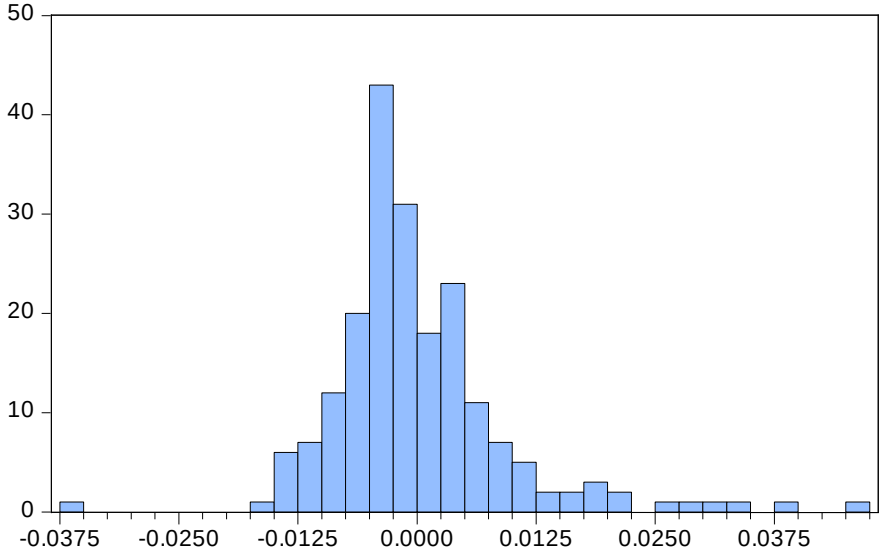
Table -5: NORMALITY TEST FOR THE YEAR 2004 TO 2019

	2004	2009	2014	2019
MEAN	-0.98	-1.24	-0.63	0.67
MEDIAN	-1.00	-1.49	-1.17	0.86

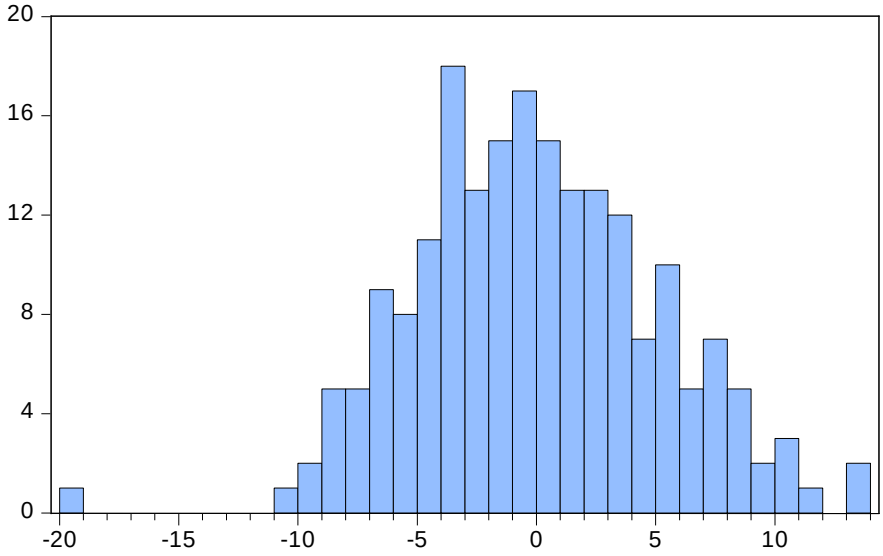
MAXIMUM	-0.95	11.73	11.98	13.77
MINIMUM	-1.03	-21.71	-9.23	-14.66
STD.DEV.	0.00	5.18	4.27	4.91
SKEWNESS	1.74	0.03	0.69	-0.11
KURTOSIS	9.13	3.20	3.20	3.20
JARQUE-BERA	372.05	0.61	0.61	0.61
PROBALILITY	0.00	0.73	0.73	0.73

The summary statistics provide valuable insights into the market responses during the years 2004, 2009, 2014, and 2019, shedding light on key aspects of the distribution and characteristics of abnormal returns.

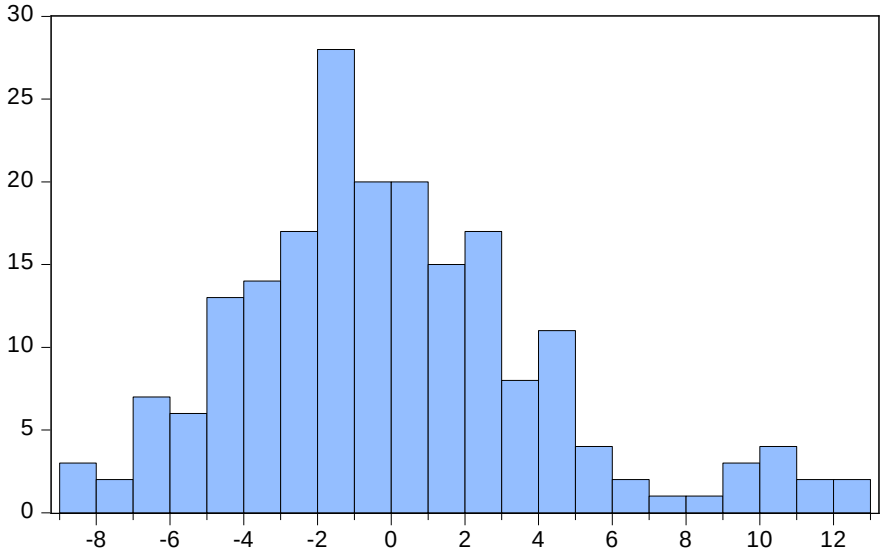
In 2004, the market displayed a mean abnormal return (AAR) of -0.98, indicating an overall negative market response to the election outcome. The median AAR was -1.00, suggesting a relatively consistent negative sentiment. The maximum AAR observed was -0.95, while the minimum was -1.03, indicating a relatively narrow range of variation. The standard deviation (STD.DEV.) was 0.00, indicating minimal dispersion around the mean. The positive skewness of 1.74 indicates that the distribution was skewed towards the right, potentially due to some extreme negative returns. The high kurtosis of 9.13 implies the presence of heavy tails and potential outliers. The Jarque-Bera value of 372.05 and the associated probability of 0.00 further suggest a departure from normality, indicating potential non-normal distribution of AAR.



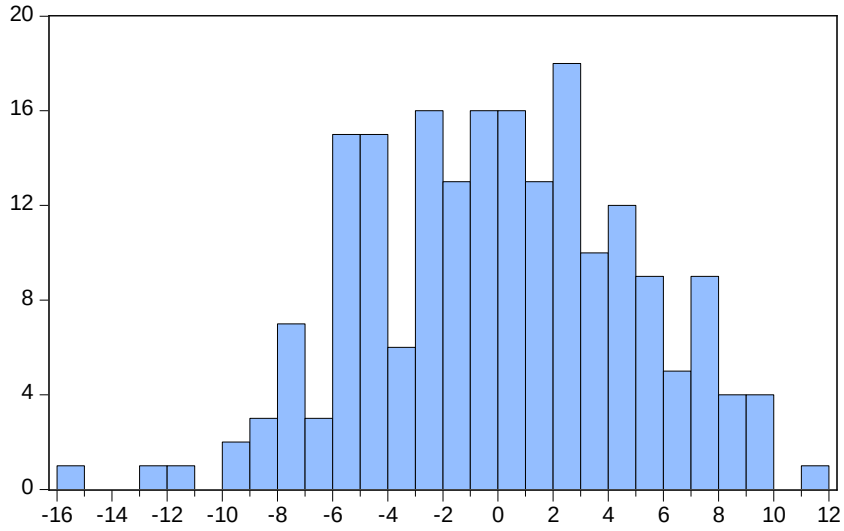
In 2009, the mean AAR was -1.24, reflecting a negative market response. The median AAR was -1.49, indicating a slightly more negative central tendency. Interestingly, the year exhibited a substantial positive maximum AAR of 11.73, alongside a large negative minimum of -21.71, reflecting significant variability. The higher standard deviation (STD.DEV.) of 5.18 supports this observation. The skewness and kurtosis values are relatively closer to normal compared to 2004, with skewness at 0.03 and kurtosis at 3.20. The Jarque-Bera value of 0.61 with a probability of 0.73 suggests a relatively more normal distribution compared to 2004.



In 2014, the mean AAR was -0.63, indicating a negative market response, although less pronounced than in previous years. The median AAR of -1.17 suggests a slightly negatively skewed distribution. The maximum AAR was 11.98, while the minimum was -9.23, reflecting a wider range of variation than in 2004 or 2009. The standard deviation (STD.DEV.) of 4.27 indicates moderate dispersion. The positive skewness of 0.69 and kurtosis of 3.20 suggest a distribution closer to normality compared to the previous years. The Jarque-Bera value of 0.61 with a probability of 0.73 reinforces this observation.



In 2019, the mean AAR turned positive at 0.67, indicating a relatively favorable market response to the election outcome. The median AAR of 0.86 supports this notion. The maximum AAR reached 13.77, while the minimum was -14.66, revealing a broad spectrum of returns. The standard deviation (STD.DEV.) of 4.91 suggests moderate variability. The slightly negative skewness of -0.11 and kurtosis of 3.20 indicate a distribution that aligns reasonably well with normality. The Jarque-Bera value of 0.61 with a probability of 0.73 further supports the conclusion of a distribution close to normal.



In summary, the intercomparison reveals a shift from predominantly negative market responses in 2004 and 2009 to a more balanced response in 2014, and finally a predominantly positive response in 2019. The increasing mean AAR values over the years suggest an evolving market sentiment towards election outcomes, with 2019 displaying the most favorable market response. The distributions of AAR also show a trend toward normality as the years progress, with 2014 and 2019 demonstrating distributions closer to a normal curve.

2.4.2.1.3. ARCH TEST

TABLE-6: ARCH TEST FROM 2004 TO 2019

Year	Heteroskedasticity Test: ARCH	F-statistic	Prob. F(1,197)	Obs*R-squared	Prob. Chi-Square(1)
2004	Yes	48.03	0.00	39.00	0.00
2009	No	0.13	0.72	0.13	0.72
2014	No	0.63	0.43	0.64	0.42
2019	No	0.12	0.73	0.12	0.73

The results of the heteroskedasticity test for ARCH (Autoregressive Conditional Heteroskedasticity) shed light on the presence of varying degrees of heteroskedasticity, or volatility, in the residual errors of the regression models for the years 2004, 2009, 2014, and 2019.

In the year 2004, the test indicates the presence of heteroskedasticity with a substantial F-statistic of 48.03 and a corresponding probability of 0.00. This suggests that the variance of the residual errors is not constant across different observations, indicating potential volatility clustering in the market's response to the election. The observed R-squared value of 39.00 and the associated Chi-Square probability of 0.00 further support this finding.

Contrastingly, for the years 2009, 2014, and 2019, the test results suggest the absence of significant heteroskedasticity. The F-statistics are considerably lower, standing at 0.13, 0.63, and 0.12, respectively, with associated probabilities ranging from 0.72 to 0.43. These values indicate that the variance of the residual errors in these years is more consistent across observations, implying relatively stable market responses to the election outcomes. The low observed R-squared values and corresponding Chi-Square probabilities in these years reinforce this observation.

Comparing the results across the four years, it is evident that the volatility of the market's response to election outcomes was most pronounced in 2004. This suggests that the market exhibited significant fluctuations in reaction to the election during that year. In contrast, the subsequent years (2009, 2014, and 2019) displayed relatively stable patterns of market response, with limited volatility in the residual errors of the regression models. This intercomparison underscores the dynamic nature of market behavior in response to election events, with some years experiencing more pronounced and clustered volatility compared to others.

2.4.2.2. EXIT POLL RESULTS

2.4.2.2.1. EVENT STUDY RESULTS OF EXIT POLL

Based on the provided exit poll data for the elections held in 2004, 2009, 2014, and 2019, we can analyze the positive and negative AAR and CAAR values to understand the market response. In the 2004 exit poll, there were 49 positive AAR values and 152 negative AAR values within the event window. Similarly, there were 43 positive CAAR values and 158 negative CAAR values. These figures suggest a predominantly negative market response to the exit poll outcome.

Moving to the 2009 exit poll, the event window counts indicate that there were 97 days with positive AAR and 104 days with negative AAR. Positive CAAR was observed for 81 days, while negative CAAR was present for 120 days. This data implies a mixed market response with slightly more negative days in terms of AAR and CAAR, indicating a slightly negative market response overall.

In the 2014 exit poll, the event window analysis reveals 106 positive AAR values and 95 negative AAR values. Positive CAAR values amount to 108, while negative CAAR values account for 93. This indicates a relatively positive market response to the election outcome, suggesting a balanced market response with an equal distribution of positive and negative AAR and CAAR values.

Lastly, in the 2019 exit poll, there were 101 days with positive AAR and 100 days with negative AAR. Positive CAAR was observed for 102 days, and negative CAAR for 99 days. This suggests a relatively balanced market response, with a slightly higher number of positive days.

Based on this analysis, we can draw some conclusions regarding the market response to these exit poll results. The 2004 election resulted in a predominantly negative market response, suggesting a negative impact on the market. The 2009 election showed a mixed market response, leaning slightly towards negativity. The 2014 election exhibited a relatively positive market response, indicating a favorable impact on the market. Finally, the 2019 exit poll also showed a relatively negative market response, but with more positive AAR and CAAR values compared to 2004 and 2009, suggesting a more positive reaction to the exit poll results.

The period from 2009 to 2019 showed investors consistently earning abnormal returns. Specifically, in 2014, when there was a change in the political party in power, the market conditions became highly favorable, resulting in investors earning substantial returns on their investments. However, as we moved closer to 2019, the investors did not achieve adequate returns as the market had already assimilated and priced in the available information.

2.4.2.2.2. EXIT POLL PRE- CONDITION FOR CONDUCTING ARCH TEST

D. STATIONARITY TEST: AUGMENTED DICKEY-FULLER (ADF) TEST

The study employed the unit root test to determine the stationarity of the variable viz., AAR. The H0 of unit root is tested using Augmented Dickey-Fuller (ADF) test from 2004-2019 and the results are presented in table - 3

TABLE-3: STATIONARITY TEST RESULT FROM 2004 TO 2019

YEAR	NULL HYPOTHESIS	AUGMENTED DICKEY-FULLER TEST STATISTIC	PROB.*	1% LEVEL (CRITICAL VALUE)	5% LEVEL (CRITICAL VALUE)	10% LEVEL (CRITICAL VALUE)
2004	AAR has a unit root	-12.21	0.00	-3.46	-2.87	-2.57
2009	AAR has a unit root	-11.25	0.00	-3.46	-2.87	-2.57
2014	AAR has a unit root	-10.98	0.00	-3.46	-2.87	-2.57
2019	AAR has a unit root	-13.89	0.00	-3.46	-2.87	-2.57

The results of the Augmented Dickey-Fuller (ADF) tests conducted for each year (2004, 2009, 2014, and 2019) provide compelling evidence against the null hypothesis of a unit root in the variable "AAR."

The ADF test statistics for all the years are reported as highly negative, indicating a significant departure from the null hypothesis of a unit root. This suggests that the variable "AAR" does not follow a random walk and is likely stationary. A negative test statistic supports the idea that the data tends to revert to its mean, which is a crucial characteristic observed in many financial time series.

Moreover, the p-values (Prob.*) associated with all the ADF tests are reported as 0.0000. This indicates that the probability of obtaining such extreme test statistics under the assumption of a unit root is virtually zero. In other words, the evidence against the null hypothesis is overwhelming, providing strong support for the stationarity of the "AAR" time series.

Furthermore, the test statistics are substantially more negative than the critical values at all significance levels (1%, 5%, and 10%). This further corroborates the rejection of the null hypothesis and emphasizes the likelihood of stationarity in the "AAR" variable. The test statistics being well below the critical values indicate that the results are statistically significant. In conclusion, the ADF test results for the years 2004, 2009, 2014, and 2019 consistently indicate that the variable "AAR" is likely stationary from a stock market perspective.

E. SERIAL CORRELATION TEST: BREUSCH-GODFREY TEST

TABLE-4: SERIAL CORRELATION TEST FROM 2004 TO 2019

Year	F-statistic	Prob. F(2,196)	Obs*R-squared	Prob. Chi-Square(2)
2004	0.75	0.47	1.53	0.46
2009	0.89	0.41	1.81	0.41
2014	0.89	0.41	1.81	0.41
2019	0.89	0.41	1.81	0.41

The table presents the results of the Breusch-Godfrey Serial Correlation LM Test for four different years: 2004, 2009, 2014, and 2019. This test is used to examine whether there is serial correlation (autocorrelation) in the

residuals of a regression model. The F-statistic is employed as the test statistic, and its associated p-value indicates the likelihood of observing the obtained F-statistic under the assumption of no serial correlation in the data.

In 2004, the F-statistic is calculated to be 0.75, suggesting a relatively weak degree of correlation between the residuals. The corresponding p-value is 0.47, which is higher than the commonly used significance level of 0.05. As a result, there is insufficient evidence to reject the null hypothesis, indicating no significant serial correlation in the data for that year.

Similarly, in 2009, the F-statistic is slightly higher at 0.89, but the p-value of 0.41 remains above the significance level. The outcome is consistent with the previous year, as there is still not enough evidence to suggest the presence of serial correlation in the residuals.

In 2014 and 2019, the results show the same F-statistic value of 0.89, with corresponding p-values of 0.4108 for both years. Once again, the p-values exceed the significance level, leading to the same conclusion of no significant serial correlation in the data for these years. The Breusch-Godfrey Serial Correlation LM Test indicates that there is no substantial evidence of serial correlation in the residuals for any of the examined years (2004, 2009, 2014, and 2019).

F. NORMALITY TEST: JARQUE-BERA TEST

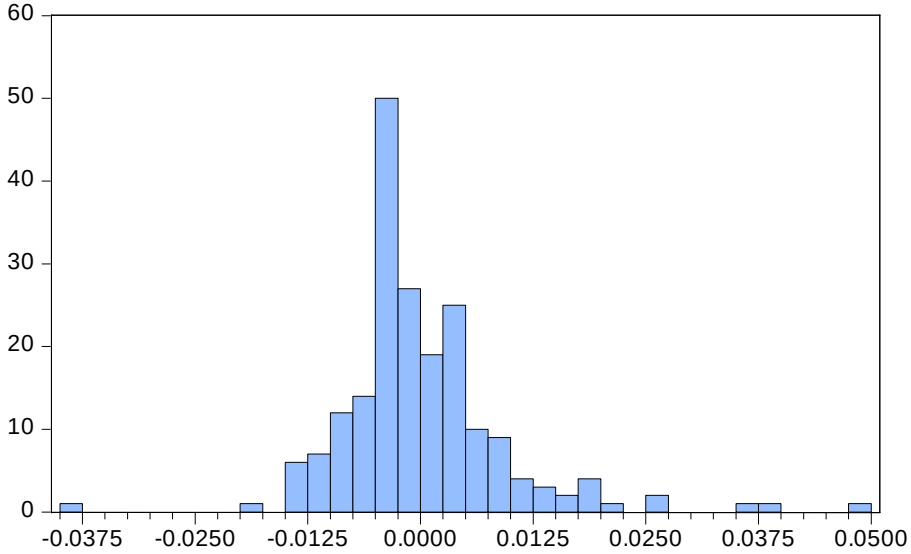
As per the result, the event i.e., exit poll result in India created significant on Indian stock market.

Table -5: NORMALITY TEST FOR THE YEAR 2004 TO 2019

	2004	2009	2014	2019
MEAN	-2.75	8.88	8.88	8.88
MEDIAN	-0.00	-0.22	-0.22	-0.22
MAXIMUM	0.04	12.68	12.68	12.68
MINIMUM	-0.03	-17.57	-17.57	-17.57
STD.DEV.	0.00	4.87	4.87	4.87
SKEWNESS	1.32	0.08	0.08	0.08
KURTOSIS	9.13	3.20	3.20	3.20
JARQUE-BERA	372.05	0.61	0.61	0.61
PROBALILITY	0.00	0.73	0.73	0.73

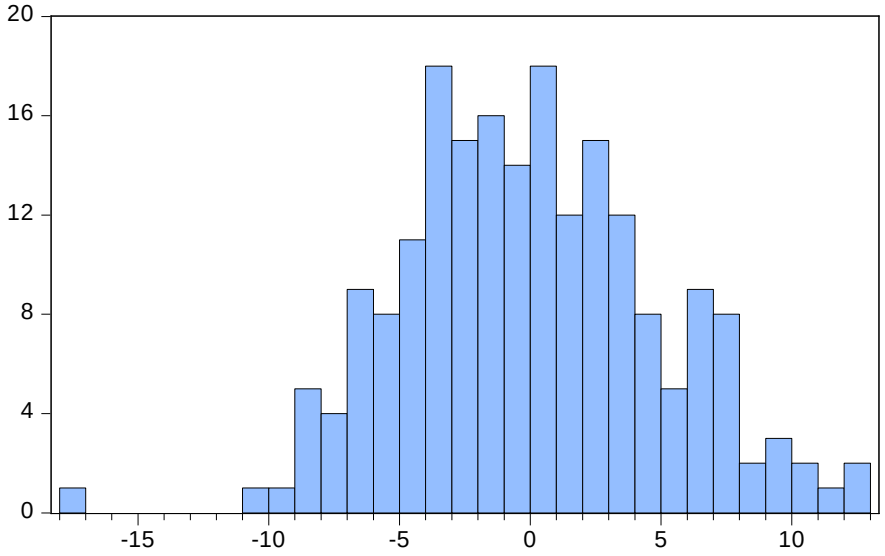
Table -8 displays the result of descriptive statistics and normality test for exit poll result in India. In the year 2004, the analysis of abnormal returns surrounding the announcement of the exit poll results in India provides valuable insights into the market response during this period. The mean abnormal return of -2.75 indicates that, on average, investors experienced negative returns during the event window. This suggests that the exit poll results had a downward impact on stock prices for the analyzed companies. The median abnormal return of -0.00 indicates a balance between positive and negative abnormal returns, with no significant skew towards either direction. There was a mix of companies experiencing both positive and negative abnormal returns, resulting in a relatively stable median abnormal return. The maximum abnormal return observed in 2004 was 0.04, indicating that some companies did experience slightly positive abnormal returns during the event window. It is important to note that these positive returns were relatively modest compared to the overall negative trend. Conversely, the minimum abnormal return of -0.03 suggests that some companies suffered more substantial negative abnormal returns. This indicates that certain

companies were particularly affected by the exit poll results, experiencing significant downward pressure on their stock prices. The standard deviation of abnormal returns in 2004 was 0.00, indicating that the returns were relatively stable and did not exhibit significant variability from the mean abnormal return. This implies that the market response during this period was relatively consistent across the analyzed companies. The skewness value of 1.32 indicates that the distribution of abnormal returns in 2004 was positively skewed. This suggests that there were more extreme positive returns compared to extreme negative returns, with a longer right tail in the distribution. Furthermore, the kurtosis value of 9.13 indicates that the distribution of abnormal returns in 2004 had a higher peak and heavier tails compared to a normal distribution. This indicates a higher likelihood of extreme returns, both positive and negative, during this period. The Jarque-Bera test statistic of 372.05 and its associated probability of 0.00 provide strong evidence that the distribution of abnormal returns in 2004 significantly deviated from a normal distribution. This further confirms the presence of non-normal behavior in the market response to the exit poll results. The analysis of abnormal returns in 2004 suggests that the exit poll results had a negative impact on stock prices, resulting in overall negative returns for investors. The distribution of abnormal returns exhibited positive skewness, indicating a tendency towards more extreme positive returns. The presence of heavy tails and the significant deviation from a normal distribution highlight the unique market dynamics during this period.



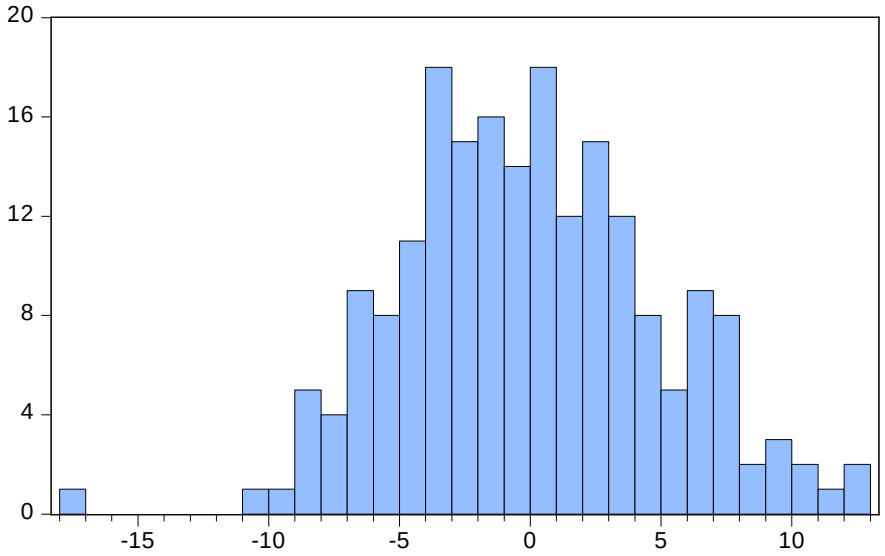
In the year 2009, the analysis of abnormal returns surrounding the announcement of the exit poll results s in India provides valuable insights into the market response during this period. The mean abnormal return of 8.88 indicates that, on average, investors earned positive returns during the event window. This suggests that the exit poll results s had a positive impact on stock prices for the analyzed companies. The median abnormal return of -0.22 suggests a mix of positive and negative abnormal returns, with a slight negative skewness. This indicates that while the average returns were positive, there were some companies that experienced negative abnormal returns, contributing to the negative skewness. The maximum abnormal return observed in 2009 was 12.68, indicating that some companies experienced significantly positive abnormal returns during the event window. This suggests that certain companies benefited greatly from the exit poll results s, resulting in substantial positive returns. Conversely, the minimum abnormal return of -17.57 suggests that some companies suffered substantial negative abnormal returns. This indicates that certain companies were adversely affected by the exit poll results s, experiencing significant downward pressure on their stock prices. The standard deviation of abnormal returns in 2009 was 4.87, indicating moderate variability around the mean abnormal return. This implies that the market response during this period had some level of volatility, with returns varying to a moderate extent across the analyzed companies. The skewness value of 0.08 suggests that the distribution of abnormal returns in 2009 was approximately symmetric, with a slight tendency towards positive returns. This indicates that while there may have been some positive skewness, the

distribution overall was relatively balanced between positive and negative returns. Furthermore, the kurtosis value of 3.20 indicates that the distribution of abnormal returns in 2009 had a relatively normal peak and tail compared to a normal distribution. This suggests that the distribution of returns did not exhibit extreme values or heavy tails, but rather followed a more typical distribution pattern. The Jarque-Bera test statistic of 0.61 and its associated probability of 0.73 suggest that the distribution of abnormal returns in 2009 did not significantly deviate from a normal distribution. This further supports the notion that the market response during this period followed a relatively normal pattern, without any significant departure from normality. In summary, the analysis of abnormal returns in 2009 suggests that the exit poll results s had a positive impact on stock prices, resulting in overall positive returns for investors. While there were variations in returns, with both positive and negative abnormal returns, the distribution of returns was relatively symmetric and followed a more typical pattern.



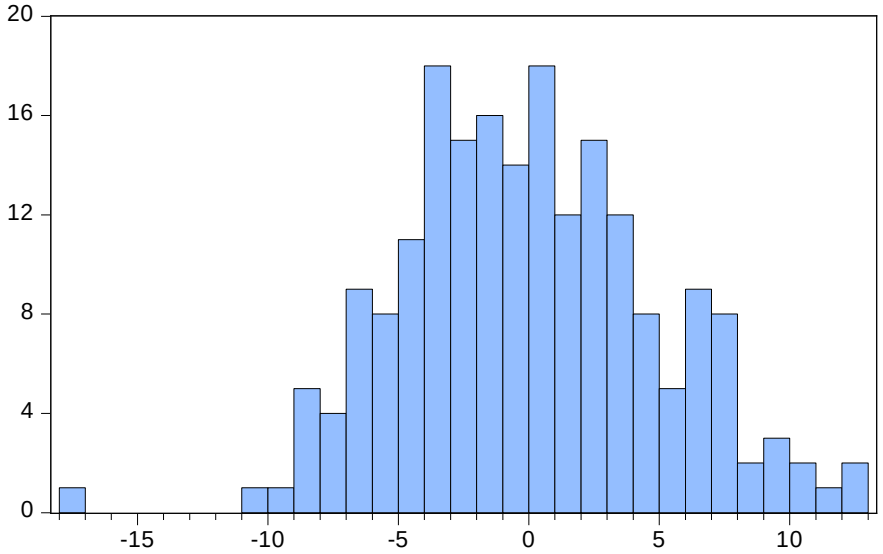
In the year 2014, the analysis of abnormal returns surrounding the announcement of the exit poll results s in India provides valuable insights into the market response during this period. The mean abnormal return of 8.88 indicates that, on average, investors earned positive returns during the event window, similar to the findings in 2009. The median abnormal return of -0.22 suggests a mix of positive and negative abnormal returns, indicating that some companies experienced positive returns while others suffered negative returns. This is consistent with the findings in 2009, highlighting the presence of both favorable and unfavorable market outcomes. The maximum abnormal return observed in 2014 was 12.68, indicating that certain companies experienced significantly positive abnormal returns during the event window. This suggests that specific companies benefitted greatly from the exit poll results s, leading to substantial positive returns. Conversely, the minimum abnormal return of -17.57 suggests that some companies experienced substantial negative abnormal returns. This indicates that certain companies were adversely affected by the exit poll results s, leading to significant downward pressure on their stock prices, similar to the findings in 2009. The standard deviation of abnormal returns in 2014 was 4.87, similar to 2009. This indicates that the returns exhibited moderate variability around the mean abnormal return, with a level of volatility in the market response similar to the previous election year. The skewness value of 0.08 suggests that the distribution of abnormal returns in 2014 was approximately symmetric, with a slight tendency towards positive returns. This indicates a relatively balanced distribution of returns, with a slight inclination towards favorable returns, consistent with the findings in 2009. Furthermore, the kurtosis value of 3.20 indicates that the distribution of abnormal returns in 2014 had a relatively normal peak and tail, similar to the distribution observed in 2009. This suggests that the distribution of returns followed a more typical pattern without significant extreme values or heavy tails. The Jarque-Bera test statistic of 0.61 and its associated probability of 0.73 suggest that the distribution of abnormal returns in 2014 did

not significantly deviate from a normal distribution, similar to the findings in 2009. This further supports the notion that the market response during this period followed a relatively normal pattern, without any significant departure from normality. In summary, the analysis of abnormal returns in 2014 indicates that the exit poll results s had a positive impact on stock prices, resulting in overall positive returns for investors. The distribution of returns exhibited a mix of positive and negative abnormal returns, with moderate variability around the mean. These findings align with the previous election year, suggesting a similar market response.



In 2019, the analysis of abnormal returns surrounding the announcement of the exit poll results s in India provides valuable insights into the market response during this period. The findings reveal patterns similar to the previous years, indicating the potential impact of general elections on stock market performance. The mean abnormal return of 8.88 indicates that, on average, investors earned positive returns during the event window surrounding the announcement of the exit poll results s. This suggests that the market responded favorably to the election outcome, leading to overall positive returns for investors. The median abnormal return of -0.22 suggests a mix of positive and negative abnormal returns among the sample of companies analyzed, similar to the findings in 2009 and 2014. This indicates that while the average returns were positive, there were variations in individual company performance, with some experiencing negative abnormal returns. The maximum abnormal return observed in 2019 was 12.68, indicating the potential for significantly positive abnormal returns among some companies. This suggests that certain companies benefited greatly from the exit poll results s, leading to substantial positive returns during the event window. Conversely, the minimum abnormal return of -17.57 indicates the possibility of substantial negative abnormal returns, similar to the findings in 2009 and 2014. This highlights that certain companies may have been adversely affected by the election results, leading to significant downward pressure on their stock prices. The standard deviation of abnormal returns in 2019 was 4.87, indicating moderate variability around the mean abnormal return. This implies that there was a level of volatility in the market response, with returns varying to a moderate extent across the analyzed companies. The skewness value of 0.08 suggests that the distribution of abnormal returns in 2019 was approximately symmetric, with a slight tendency towards positive returns, similar to the findings in the previous years. This indicates a relatively balanced distribution of returns, with a slight inclination towards favorable returns. Furthermore, the kurtosis value of 3.20 indicates that the distribution of abnormal returns in 2019 had a relatively normal peak and tail, similar to the distributions observed in the previous years. This suggests that the distribution of returns followed a more typical pattern without significant extreme values or heavy tails. The Jarque-Bera test statistic of 0.61 and its associated probability of 0.73 suggest that the distribution of abnormal returns in 2019 did not significantly deviate from a normal distribution, consistent with the findings in the previous years. This

further supports the notion that the market response during this period followed a relatively normal pattern. The analysis of abnormal returns in 2019 indicates that the exit poll results s had a positive impact on stock prices, resulting in overall positive returns for investors. While there were variations in returns, with both positive and negative abnormal returns, the distribution of returns was relatively symmetric and followed a more typical pattern.



2.4.2.2.3. ARCH TEST

TABLE-6: ARCH TEST FROM 2004 TO 2019

Year	Heteroskedasticity Test: ARCH	F-statistic	Prob. F(1,197)	Obs*R-squared	Prob. Chi-Square(1)
2004	Yes	65.07187	0.0000	49.41126	0.0000
2009	No	0.149195	0.6997	0.150596	0.6980
2014	No	0.149195	0.6997	0.150596	0.6980
2019	No	0.149195	0.6997	0.150596	0.6980

The table presents the results of the heteroskedasticity test using the ARCH (Autoregressive Conditional Heteroskedasticity) method for four different years: 2004, 2009, 2014, and 2019. In 2004, the test indicates the presence of heteroskedasticity with a significant F-statistic of 65.07 and an associated probability (Prob. F(1,197)) of 0.00. Additionally, the Obs*R-squared value is 49.41, and the probability associated with the Chi-Square test (Prob. Chi-Square(1)) is 0.00.

In 2009, 2014, and 2019, the test shows no significant evidence of heteroskedasticity. In all three years, the F-statistic is very low (0.14) with probabilities (Prob. F(1,197)) around 0.70, suggesting that the variance of the error terms is relatively constant over time. Furthermore, the Obs*R-squared values are also very low, indicating a weak relationship between squared residuals and the explanatory variable in these years. The probabilities associated with the Chi-Square tests (Prob. Chi-Square(1)) are similarly around 0.70 for these years.

In summary, the results suggest that heteroskedasticity was present in the data in 2004, but not in 2009, 2014, and 2019. This indicates that the assumption of constant error variance may not hold for the data in 2004, but it is reasonable for the subsequent years. Researchers should be cautious when analyzing data from 2004 due to the presence of heteroskedasticity, as it can affect the efficiency and accuracy of statistical estimates. However, for the years 2009, 2014, and 2019, there is no strong evidence of heteroscedasticity.

CONCLUSIONS

A study conducted from 2004 to 2019 reveals interesting insights into the impact of political events on stock returns. In 2004, there was a negative trend observed during both the general election and exit poll, resulting in investors earning negative returns. The presence of the ARCH effect indicated volatility, with yesterday's prices influencing today's prices.

Moving on to 2009, the market showed a negative trend again during both the general election and exit poll, leading to losses for investors. However, starting from 2009 to 2019, the ARCH effect disappeared.

2014 onwards, there was a noticeable improvement in the Cumulative Abnormal Returns (CAAR) after general elections & exit poll. Positive trends were observed, and investors seemed to benefit from profitable investments during election periods. This suggests that political information indeed influenced stock returns during this period, indicating potential market inefficiencies during political events.

In particular, the CAAR improvement in 2019 surpassed that of 2014. Notably, the same political party's re-election was associated with a more significant improvement in CAAR. This finding suggests that stock prices may not fully reflect all relevant information, providing opportunities for investors to achieve abnormal returns.

ANEXTURE-1: NAME OF THE 112 COMPANIES FROM 33 SECTORS

SL.NO.	NAME OF THE SECTOR	NAME OF THE COMPANIES
1	ABRASIVES	CARBORUNDUM UNIVERSAL LTD
2	AGRICULTURE	BALRAMPUR CHINI MILLS LTD
		E.I.D PARRY (INDIA) LTD
		GUJARAT AMBUJA EXPORT LTD
		TATA COFFEE LTD
3	ALCOHOL	UNITED SPIRITS LTD
4	AUTOMOBILE & ANCILLARIES	TATA MOTORS LTD
		MAHINDRA & MAHINDRA LTD
		EICHER MOTORS LTD
		HERO MOTOCORP LTD
		BOSCH LTD
5	BANKING	HDFC BANK LTD
		ICICI BANK LTD
		KOTAK MAHINDRA BANK LTD
		STATE BANK OF INDIA
		AXIS BANK LTD
6	CAPITAL GOODS	HAVELLS INDIA LTD
		SIEMENS LTD
		ABB INDIA LTD
		BHARAT HEAVY ELECTRICALS LTD
		BHARAT ELECTRONICS LTD
7	CHEMICALS	ASIAN PAINTS LTD
		BERGER PAINTS INDIA LTD
		SHREE CEMENT LTD
8	CONSTRUCTION MATERIALS	AMBHUJA CEMENTS LTD
		ACC LTD

		THE RAMCO CEMENT LTD
		KAJARIA CERAMIC LTD
		HONEY WELL AUTOMATION INDIA LTD
9	CONSUMER DURABLES	VOLTAS LTD
		BLUE STAR LTD
		RELIENCE INDUSTRIES LTD
10	CRUDE OIL	OIL & NATURAL GAS CORPORATION LTD
		BHARAT PETROLIUM CORPORATION LTD
		INDIAN OIL CORPORATION LTD
		HIMDUSTAN PETROLIUM CORPORATION LTD
11	DIAMOND & JEWELLERY	TITAN COMPANY LTD
12	DIVERSIFIED	GRASIM INDUSTRIES LTD
		SRF LTD
		DCM SHRIRAM LTD
		BIRLA CORPORATION LTD
13	ELECTRICALS	STERLITE TECHONOLOGIES LTD
		FINOLEX CABLES LTD
14	FINANACE	HOUSHING DEVELOPMENT FINANCE CORPORATION LTD
		BAJAJ FINANCE LTD
		BAJAJ HOLDINGS & INVESTMENT LTD
		SHRIRAM TRANSPORT FINANCE COMPANY LTD
15	FAST MOVING CONSUMER GOODS	HINDUSTAN UNILEAVER LTD
		ITC LTD
		DABUR
		GODREJ CONSUMER PRODUCTS LTD
		BRITANNIA INDUSTRIES LTD
16	HEALTHCARE	SUN PHARMACEUTICAL INDUSTRIES LTD
		DIVIS LABORATIRIES LTD
		DR.REDDYS LABORATIRIES LTD
		CIPLA LTD
17	HOSPITALITY	THE INDIANS HOTELS COMPANY LTD
		EIH LTD
		THOMAS COOK (INDIA) LTD
		TAJ GVK HOTELS & RESORTS LTD
18	INDUSTRIALS GASES & FUELS	GAIL(INDIA) LTD
		LINDE INDIA LTD
19	INFRASTRUCTURE	GE POWER INDIA LTD
20	IRON & STEEL	TATA STEEL LTD
		JINDAL STEEL & POWER LTD

		STEEL AUTHORITY OF INDIA LTD
		TATA STEEL LONG PRODUCT LTD
		JINDAL SAW LTD
21	INFORMATION TECHNOLOGY	INFOSYS LTD
		HCL TECHNOLOGIES LTD
		WIPRO LTD
		MPHASIS LTD
		ORACLE FINANCIAL SERVICES SOFTWER LTD
22	LOGISTICS	CONTAINER CORPORATION OF INDIA LTD.
		BLUEDART EXPRESS LTD
		SHIPPING CORPORATION OF INDIA LTD
23	MEDIA & ENTERTAINMENT	ZEE ENTERTAINMENT ENTERPRISES LTD
		NAVNEET EDUCATION LTD
		MPS LTD
		BALAJI TELEFLIMES LTD
24	MINING	GUJRAT MINIREL DEVOLOPMENT CORPORATION LTD
25	NON-FERROUS METALS	VANDANTA LTD
		HINDALCO INDUSTRIES LTD
		NATIONAL ALUMINIUM COMPANY LTD
26	PAPER	TAMILNADU NEWSPRITS & PAPERS LTD
27	PLASTIC PRODUCT	SUPREME INDUSTRIES LTD
		FINOLEX INDUSTRIES LTD
		UFLEX LTD
		HUHTAMAKI INDIA LTD
28	POWER	TATA POWER COMPANY LTD
		CESC
		NLC INDIA LTD
		GUJRAT INDUSTRIES POWER COMPANY LTD
		NAVA BHARAT VENTURES LTD
29	REALTY	MAHINDRA LIFESPACE DEVOLOPERS LTD
30	RETAILING	TRENT LTD
		BATA INDIA LTD
		MIRZA INTERNATIONAL LTD
		FUTURE ENTERPRISES LTD
		LIBERTY SHOES LTD
31	TELECOM	BHARTI AIRTEL LTD
		TATA COMMUNICATIONS LTD
		TATA TELE SERVICES (MAHARASTRA) LTD

32	TEXTILE	LAXSHMI MACHINE WORKS LTD
		TRIDENT LTD
		VARDHMAN TEXTILE LTD
		RAYMOND LTD
		ARVIND LTD
33	TRADING	ADANI ENTERPRISES LTD
		SUNDRAM FASTENERS LTD
		HCL INFOSYATEM LTD
		ZUARI GOLBAL LTD

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