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Article

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The Political Uncertainties of the United Kingdom-2022 and Stock Market Reactions: An Event Study Analysis for LSE and Other Major European Stock Markets

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Abstract

The year 2022 has been one of the extremely uproarious in contemporary British politics, caused by severe political crises and uncertainties. The study aims to examine three major events related to the UK political uncertainties in 2022 and its impact on the UK and other major European stock markets using the market model of the event study methodology. The daily closing price data of the FTSE 100 index, its constituent stocks and the benchmark indices of 14 other major European stock markets were considered as per the event window constructed in the study. The empirical results of the study exhibited that the resignation announcement of Boris Johnson and Lizz Truss had positive abnormal returns on the day of the announcement. Subsequently, the announcement of Rishi Sunak as the PM of the UK had a stronger abnormal return on the announcement day. Further, the sector-wise impact analysis confirmed that Financials, materials, Energy, industrial, and real estate sectoral stocks have reacted with positive abnormal returns. Also, when verifying the impact on other major indices in European markets, it is noticed that only for the resignation announcement of Boris Johnson were there positive abnormal returns in benchmark indices of Italy, Netherlands, and Norway. The study confirms that political uncertainties like the prime minister's resignation bring short-run market inefficiency and provide opportunities for abnormal returns. The findings of the study offer some significant implications for the market participants such as traders, investors, portfolio managers and analysts. The findings will provide insights for them to devise trading strategies and risk management and to make investing decisions such that the portfolio of the investors is resilient to such uncertain political events.

Keywords

Political uncertainties, Political resignations, Political appointments, Event study, Stock market indices, Market reactions

JEL Classification

G10, G14, G15, G40

Introduction

Political uncertainties and instabilities have a significant impact on the performance of stock markets (Sajid Nazir et al., 2014; Mertzanis & Allam, 2018; Jabarin et al., 2019; Sulehri & Ali, 2020). Political uncertainties have a direct or indirect impact on macroeconomic policies (Goodell & Vahamaa, 2013), stock market liquidity and volatility (Zou et al., 2023), which are essential for economic growth in the long run (Gholipur, 2019). One of the most recent political uncertainty events that is worthy of a comprehensive examination is the 2022 United Kingdom's (UK) series of political resignations. The year 2022 has been one of the extremely uproarious in contemporary British politics (CNN, 2022). The political environment in the UK dramatically changed after the demise of its longest-serving monarch, Queen Elizabeth II, on September 08, 2022. The nation witnessed three prime ministers during the period between early July 2022 and October 2022. By most accounts, the impact of this political turmoil on the British stock markets has been considerable.

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In early July 2022, several ministers in Boris Johnson's government resigned from their ministerial designations as they faced many scandal allegations. This eventually culminated in the resignation of Boris Johnson as the prime minister of the UK on July 7, 2022. However, he continued as the caretaker PM until the Conservative Party elected a new leader. Soon after the election results of the Conservative Party Leadership were announced, Liz Truss was sworn in as the prime minister of the UK on September 5, 2022. The September 2022 mini-budget proposed under the leadership of Liz Truss almost resulted in unprecedented government and financial crises across the UK. This subsequently forced Liz Truss to announce her resignation from the premiership on October 20, 2022. Following the same, the UK's stock markets closed higher for the day and responded to the event positively, indicating a sign of relief to the market participants after her reckless tax plans that caused uproar in the financial markets. The benchmark indices of the London Stock Exchange, FTSE 100 and FTSE 250 jumped 0.3% and 0.8%, respectively, after her announcement (Reuters, 2022b). In addition, the FTSE sectoral indices including construction, retailers and real estate which were severely impacted due to the macroeconomic anxieties triggered by the UK's mini-budget, gained between 0.9% to 2.3% (Reuters, 2022b). The participants of the financial markets perceived the resignation of Truss as a much-needed event to reinstate the integrity of the financial markets. On October 22, 2022, Liz Truss resigned as the prime minister of the UK making her the shortest-serving prime minister in British history. Further, Rishi Sunak won the subsequent Conservative Party leadership election to become leader and PM of the UK. The newly sworn PM Mr Sunak promised to stabilise the economic and political situations of the country during his swearing-in ceremony. Following the swearing-in of Rishi Sunak as the PM of the UK, the constituent stocks of the FTSE 100 index rallied and regained considerably from their intraday lows. The FTSE 100 index initially rose by approximately 0.6% on the day due to the wider positivity among the market participants, the same was also supported by the stocks from the industrials and consumer sectors (Reuters, 2022a).

Political uncertainty events are one of the most prominent events examined in the academic literature among other 'uncertainty events' such as economic crises, pandemic crises, terror attacks and geopolitical conflicts etc. that affect the equity markets worldwide. The political disturbances increase the investor's uncertainty and induce abnormal volatility in stock prices, thereby creating market distress (Mertzanis & Allam, 2018). In particular, a number of studies in the past have empirically revealed that political uncertainties have some significant impact on the asset pricing and equity markets performance (Brogaard et al., 2020; Brogaard & Detzel, 2015). Financial literature provides evidence of the impact of political uncertainty events on the financial markets' performance globally. A brief review of some prominent studies is presented as follows:

Dangol, (2008) analysed the impact of uncertain Nepalian political events such as the royal massacre, cease-fire by the government and the dismissal of the prime minister by the king on the NEPSE market index returns and strongly established the relationship between the political uncertainty and its stock market returns. Sajid Nazir et al., (2014) examined the political uncertainty events in Pakistan between 1999 and 2011 and their impact on the KSE 100 index returns. Their findings revealed that uncertain political events such as military coups, the resignation of the president, internal protests, terror attacks and parliament dissolution had a significant negative impact on the KSE 100 index returns. Mertzanis and Allam, (2018) investigated the political instabilities in Egypt during the 2011 revolution period and showed the existence of investors' herding behaviour in the EGX 30 index returns due to the higher political uncertainty, disturbances and political unrest in the country. Hou et al., (2017) studied the effect of political uncertainty in terms of US presidential election results between 1960 and 2017 and its impact on global commodity prices. The election result uncertainties have been found to have a significant negative influence on global commodity prices due to declining demand during the pre-election periods. Further, Jabarin et al., (2019) assessed the impact of uncertain political events such as political resignations, appointments, attacks and shootings, security operations and government formations etc. on the Amman and Palestine stock market returns. Their results show that nine and seven out of eleven events examined had a significant impact on the Amman and Palestine stock market returns, respectively.

Moreover, one of the most politically significant events of the 21st century i.e., the Brexit 2016 referendum and its impact on the returns and volatility of the central and southeastern European stock markets were empirically evaluated by Škrinjarić, (2019) by employing an event study methodology. The findings show that Brexit's impact on the stock returns of central-eastern European stock markets differed from the south-eastern European stock markets, but the event significantly impacted the returns and volatility of the examined European stock markets. In recent times, Kapar and Buigut, (2020) examined the impact of political blockade events of Qatar on the Qatar Exchange Index returns employing a volatility event-study approach and reported that the Qatari blockade events significantly impacted the volatility of the Qatar stock markets. Trakarnsirinont et al., (2023) conducted a study to analyse the effect of uncertain political events like political coups, political protests and government elections between 2001 and 2018 on the firms listed on the stock exchange of Thailand. The study revealed some mixed impact of these politically uncertain events on the ROA and MVE of the listed firms and concluded that political unpredictability significantly influenced the performance of the listed firms. Ahmed et al., (2023) examined the impact of political crisis events in Pakistan including government dismissal, military coups, PM disqualifications and no-confidence motions on the KSE All Share Index returns and report the presence of significant abnormal returns. The authors concluded that the Pakistan stock markets are extremely sensitive to any announcements regarding

political disturbances and instabilities.

Although the existing studies have examined the impacts and linkages between the political events and the stock market reactions by capturing political events such as government failures, military coups, revolutions, election result uncertainties, referendums, political protests and terror attacks etc. under the banner of political uncertainties/instabilities, they do not exclusively provide evidence on how the political uncertainty events like the frequent political resignations and its subsequent appointments have an impact on stock market returns. In other words, the literature on the exclusive impact of significant and frequent political resignations and its subsequent appointments on stock market returns is still relatively scarce.

Therefore, this study contributes to the scant literature in numerous ways. First, the study identified the three most recent and frequent political resignation and subsequent appointment events that comprehensively capture the period of 2022 political crises in the UK. Second, the study also provides sectoral-level evidence on how each of the selected frequent political resignation and its subsequent appointment events had impacted 11 diversified sectors of the UK economy. Third, the UK being a highly developed nation has greater potential to exert considerable economic, political, scientific, cultural and global influence on other major European markets due to the existence of strong interdependencies and cointegration among them. Thus, this study also attempts to comprehend the reaction of 14 other major European stock markets to each of the selected UK political resignation and subsequent appointment events.

Furthermore, the efficient market hypothesis also referred to as the EMH forms the base for this study. The EMH as defined by Fama (1970) assumes that all the news and information existing in the markets will be instantaneously mirrored in the stock prices, eventually making them fairly priced on the exchanges. The EMH segments itself into three different versions: (i) the weak form, which defines that all the historical and existing data with regards to the price and volume of the stock would already be reflected on its market price such that it allows no market participant to make abnormal profits through the fundamental or technical analysis; (ii) the semi-strong form presumes that the market price of the stocks immediately adjusts with regards to all its publicly available news, thereby resulting to a random walk departure from its historical prices; (iii) the strong form, which states that neither the publicly available information nor an insider information (assessed by a certain investor group) can give an investor an advantage to gain abnormal profits. This study aims to investigate whether political uncertainties and related events, which are available to the public or kept private, are reflected in stock prices. The goal is to determine if these events create opportunities for abnormal gains, or if there are no price imperfections during these times.

Data and Methodology

The primary objective of the study is to empirically examine the impact of the 2022 United Kingdom's political uncertainties on the London Stock Exchange. In addition, the study also aims to investigate the reaction of other major European stock markets during the UK's political crisis periods. In order to achieve the same, the standard event study approach was employed in the study. To perform an event study methodology the following steps as adopted by some prominent studies (Yousaf et al., 2022; Singh et al., 2020; Phuong, 2021; Herwany et al., 2021) in the recent times are to be followed:

- i. Identify the event of interest,
- ii. Determine the event date or zero day,
- iii. Construct the estimation window, pre-and post-event window,
- iv. Define the market index and the sample of the company stocks,
- v. Employ the market model of the event study methodology for examining the impact of the identified event on the stock returns.

Data Description

For event study analysis, the study considered the daily frequency closing prices of the LSE-listed firms from 04/01/2022 to 01/11/2022 to examine the effect of the aforementioned political crisis events on the London Stock Market. The FTSE 100 broad index was used as the benchmark index. All the 100 constituent firms of the FTSE 100 index were considered for the analysis. The data for the same was extracted from the LSE official website. Further, the selected 100 firms were divided into 11 different sectors (Communication, consumer discretionary, consumer staples, energy, financials, health care, information technology, industrials, materials, real estate and utilities) to perform the sectoral-level analysis for each of the events mentioned above.

Furthermore, the study also examined the reaction of other major European stock markets to the UK's political crisis events. Therefore, the MSCI Europe, a free float-adjusted market capitalization index that provides a broad representation of equity-market performance across the major European countries, was considered as the benchmark index. The daily frequency closing prices of the MSCI Europe index and the 14 major European stock market indices for the study period were collected from the Bloomberg Finance database. The list of the 14 major

European countries and their respective stock market indices considered for the analysis are presented in Table 1.

Table 1. 14 European markets and its respective stock market indices.

Countries	Stock Market Indices
Austria	ATX
Belgium	BEL 20
Denmark	OMXC 20
Finland	OMX HELSINKI 25
France	CAC 40
Germany	DAX
Ireland	FTSE IRELAND
Italy	FTSE ITALY ALL SHARE
Netherlands	AEX ALL SHARE
Norway	OSE BENCHMARK
Portugal	PSI
Spain	IBEX 35
Sweden	OMXS 30
Switzerland	FTSE SWITZERLAND

Event description

The study identified three significant events that comprehensively capture the period of 2022 political crises in the UK. The event dates, their description and their event windows are presented in Table 2 and Figure 1, respectively.

Table 2. Event description.

Event Number	Event date i.e., $t = 0$	Event description
E 1	07 July 2022	The Chancellor of the Exchequer, Nadhim Zahawi, stated in public that Prime Minister Boris Johnson would resign. Boris Johnson declared his resignation as PM of the UK at 12:30 PM. He continued as PM until the Conservative Party elected a new leader.
E 2	06 September 2022	Lizz Truss won the Conservative leadership election, eventually becoming the UK PM after formally being appointed by Queen Elizabeth II at Balmoral Castle.
E 3	25 October 2022	Truss resigned as PM, following which Rishi Sunak won the subsequent Conservative Party leadership election to become leader and PM of the UK.

Research Model

This study employed the standard event study approach established by (Brown & Warner, 1985) to examine the impact of all the 3 afore mentioned 2022 UK political crisis events on the London Stock Exchange and 14 major European stock markets. Event study methods have been extensively recognized and are capable of capturing the short-term impacts of several events on the performance of the stock market returns (Boubaker et al., 2015; Valizadeh et al., 2017; Pandey & Kumar, 2022b, 2022a). This study employed the market model-based event study method for market estimation of the normal returns.

In order to conduct the event study analysis, the study followed the methodology adopted by (Yousaf et al., 2022) in which an estimation window of 120 days from $t - 125$ to $t - 6$ days and an event window of 11 days from $t - 5$ to $t + 5$ days were employed. Shorter the event window, the lesser the impact of other confounding events on the study results (Kumari et al., 2022). The event timeline of the study is depicted in Figure 1.

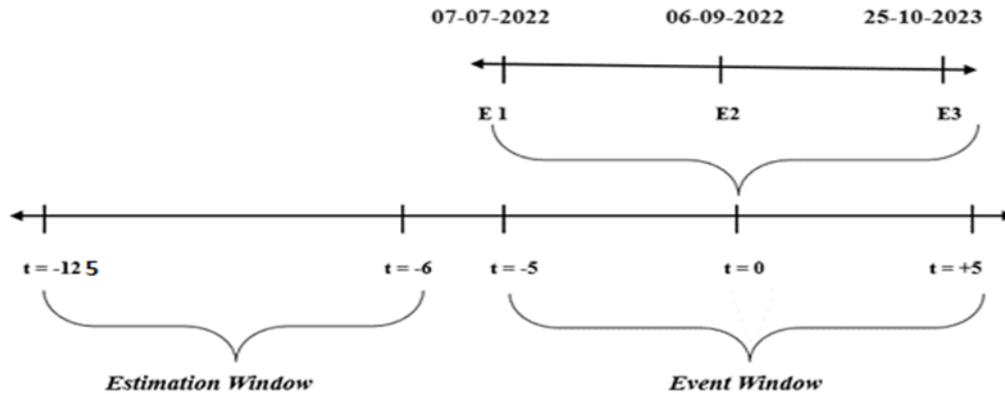


Fig 1. The event timeline of the study.

Estimation of Expected/Normal Returns $E(R_{it})$

$$E(R_{it}) = \alpha_i + \beta_i R_{mt} \quad (1)$$

The study performed the event study analysis at two levels: (1) at the UK stock market level, where R_{mt} depicts the returns of the benchmark index i.e., FTSE 100 on day t and (2) at the European continental level, where R_{mt} depicts the returns of the benchmark index i.e., MSCI Europe Index. Further, α_i and β_i represents the intercept and slope coefficients derived from the OLS regression (Dyckman et al., 1984).

Estimation of actual daily Returns (R_{it})

$$R_{it} = \text{LN} [(P_{it} - P_{it-1}) / P_{it-1}] * 100 \quad (2)$$

where, (1) at the UK stock market level, P_{it} depicts the price of the FTSE 100 constituent firms i on day t ; and P_{it-1} depicts the price of the FTSE 100 constituent firms i on day before t , and (2) at the European continental level, P_{it} depicts the price of the selected European index i on day t ; and P_{it-1} depicts the price of the selected European index i on day before t .

Estimation of Abnormal Returns (AR_{it})

To compute Abnormal Returns (AR_{it}) , the normal return is deducted from the actual returns on day t .

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

where (1) at the UK stock market level, AR_{it} depicts the abnormal return of the FTSE 100 constituent firm i on day t ; and R_{it} depicts the actual return of the FTSE 100 constituent firms i on day t , and (2) at the European continental level, AR_{it} depicts the abnormal return of the selected European index i on day t ; and R_{it} depicts the actual return of the selected European index i on day t .

Estimation of Cumulative Abnormal Returns (CAR_i)

The Cumulative Abnormal Returns is computed to ascertain the total abnormal return recorded during the event window from day $t-5$ to $t+5$:

$$CAR_{i(-5,+5)} = \sum_{t=-5}^{t+5} AR_{it} \quad (4)$$

where (1) at the UK stock market level, CAR_i depicts the Cumulative Abnormal Returns of the FTSE 100 constituent firm i during the event window from day $t-5$ to $t+5$; and (2) at the European continental level, CAR_i depicts the Cumulative Abnormal Returns of the selected European index i during the event window from day $t-5$ to $t+5$.

Estimation of Average Abnormal Returns (AAR_t)

The Average abnormal returns are computed to observe the common reaction of the FTSE 100 constituent firms at the UK stock market level and the selected European stock market indices at the European continental level to all the 3 aforementioned political crisis events. AAR_t is computed by aggregating and averaging the abnormal returns of each day.

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

where AAR_t shows the average abnormal returns on day t . N depicts the number of FTSE 100 constituent firms at the UK stock market level and the selected European stock market indices at the European continental level.

Estimation of Cumulative Average Abnormal Returns (CAAR_t)

Further the Cumulative Average Abnormal Returns (CAAR) for the event window i.e., from $t-5$ days to $t+5$ days were computed as follows:

$$CAAR_t = \sum_{t=-5}^{t+5} CAR_{it} \quad (6)$$

Finally, the obtained values of the AARs and CAARs in the event windows of all the 3 aforementioned political crisis events were considered for testing their statistical significance. The cross-sectional t-test as proposed by (Brown & Warner, 1985) and (Joshiyura & Lamba, 2023) for each day 't' in the event window was computed as follows:

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

$$t_{CAAR} = \sqrt{N} \frac{CAAR_t}{S_{CAAR}} \quad (8)$$

where, t_{AAR} and t_{CAAR} are t-statistics, N depicts the number of FTSE 100 constituent firms at the UK stock market level and the selected European stock market indices at the European continental level. Further, σ_{AAR} and S_{CAAR} depicts the standard deviation of t_{AAR} and t_{CAAR} , respectively.

Results and Discussions

This section of the study provides the empirical results of the analysis on how each of the selected political events had an impact on stock returns. In addition, this section also presents the results of the sectoral-level impact and captures the reaction of 14 other major European stock markets to each of the selected UK political resignation and appointment events. Further, the obtained results have been discussed in this section. Further, table 3, table 4 and table 5 presents the descriptive statistics for the variables of the study.

Table 3. Descriptive statistics of ARR for the Event 1.

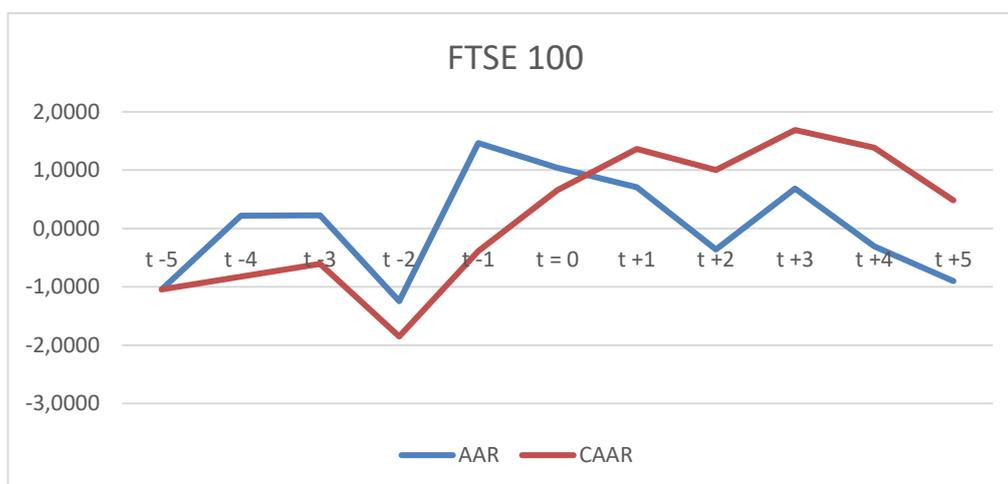
Event Window	N	Minimum	Maximum	Mean	Std. Deviation	Variance
t -5	100	-4.51	3.07	-1.0462	1.53859	2.367
t -4	100	-4.44	4.68	.2189	1.63818	2.684
t -3	100	-3.74	4.00	.2227	1.36314	1.858
t -2	100	-8.38	5.08	-1.2470	2.79230	7.797
t -1	100	-5.85	6.21	1.4644	1.76121	3.102
t = 0	100	-5.06	6.67	1.0425	2.17230	4.719
t +1	100	-3.30	3.24	.7068	1.17052	1.370
t + 2	100	-5.74	3.26	-.3607	1.43581	2.062
t + 3	100	-2.50	6.48	.6868	1.35372	1.833
t + 4	100	-4.47	11.15	-.3042	1.68101	2.826
t + 5	100	-19.52	4.29	-.9006	2.64005	6.970

Table 4. Descriptive statistics of ARR for the Event 2.

Event Window	N	Minimum	Maximum	Mean	Std. Deviation	Variance
t-5	100	-6.59	3.75	-0.0035	1.93441	3.742
t-4	100	-3.8	3.17	0.2075	1.23133	1.516
t-3	100	-5.77	2.93	-1.0887	1.67284	2.798
t-2	100	-3.87	5.41	1.0057	1.58612	2.516
t-1	100	-5.26	3.81	-0.5226	1.57296	2.474
t=0	100	-2.7	4.56	1.0053	1.57355	2.476
t+1	100	-3.64	4.27	0.2583	1.41526	2.003
t+2	100	-10.21	3.96	-0.2799	2.07446	4.303
t+3	100	-1.2	3.76	0.795	1.00037	1.001
t+4	100	-2.77	6.02	0.9531	1.54078	2.374
t+5	100	-14.03	2.73	-1.0338	1.92299	3.698

Table 5. Descriptive statistics of ARR for the Event 3.

Event Window	N	Minimum	Maximum	Mean	Std. Deviation	Variance
t-5	100	-4.08	6.20	.7023	1.35276	1.830
t-4	100	-5.91	2.17	-.8311	1.61582	2.611
t-3	100	-2.26	4.01	.5024	1.45020	2.103
t-2	100	-6.43	3.47	-.5307	1.54626	2.391
t-1	100	-10.01	8.13	1.1503	1.88440	3.551
t=0	100	-7.02	7.32	1.6002	1.97995	3.920
t+1	100	-5.45	6.91	.8012	1.76803	3.126
t+2	100	-16.40	5.27	-.2318	2.17541	4.732
t+3	100	-9.66	5.92	-.6957	1.93624	3.749
t+4	100	-2.76	5.15	.4264	1.30603	1.706
t+5	100	-4.87	31.63	1.3391	3.46457	12.003

**Fig. 2.** The movement of AAR and CAAR through the event window of Event 1.

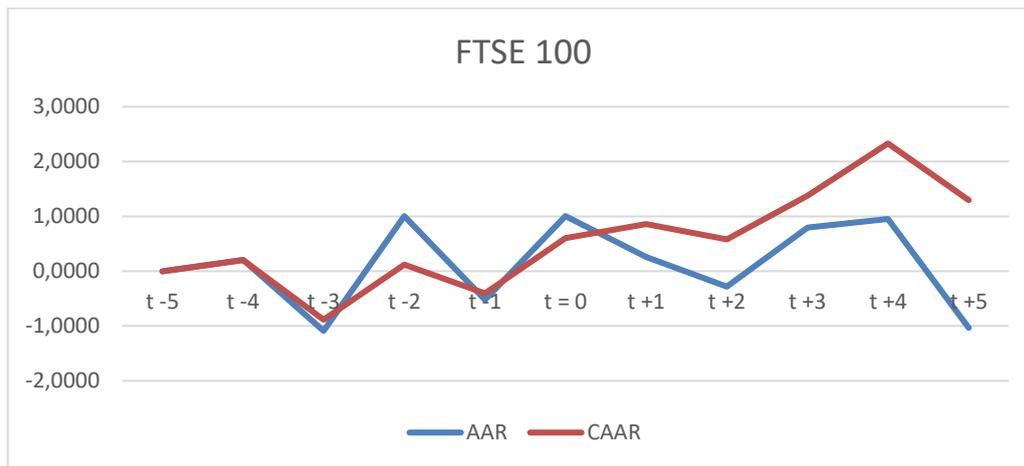


Fig. 3. The movement of AAR and CAAR through the event window of Event 2.

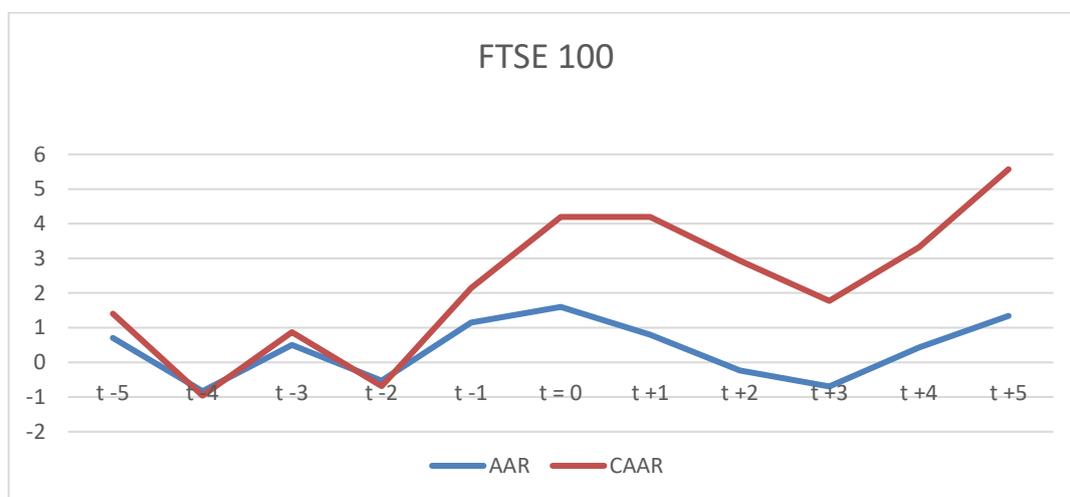


Fig. 4. The movement of AAR and CAAR through the event window of Event 3.

It can be observed from the table 3, table 4 and table 5 that the mean AAR (Average Abnormal Return) on the Announcement date i.e., $t = 0$ was 1.0425%, 1.0053% and 1.6002 for event 1, event 2 and event 3, respectively. This indicates that the examined political uncertain events had a positive impact on the FTSE 100 constituent stock prices.

However, with regards to event 1, it can be observed from the table 3 that Day +5 had the lowest AAR value of -19.52%, which means that the stock price has declined significantly on that day. On the other hand, Day +4 had the highest AR of 11.15% in the event window, indicating a significant increase in the stock price. Furthermore, the table reveals that the least AAR (Average Abnormal Return) of 0.218914% is observed on Day -4, which means that the stock price has remained relatively stable on that day. In contrast, the most AAR of 1.464448% is observed on Day -1, indicating a significant increase in the stock price on that day. Additionally, the highest standard deviation and variance were recorded on Day -2, which means that the stock price has been highly volatile on that day. Overall, these findings provide valuable insights into the stock price behavior during the given event window.

The table 4 and table 5 exhibits the summary statistics for the event 2 and event 3, respectively. It can be observed from the table 2 that Day +5 had the lowest AAR value of -14.03% for event 2 and for the event 3 it was on day -2 with a value of -16.40%. On the other hand, day +4 had the highest AAR of 6.02% in the event window and for the event 3 it was on day +5 which was +31.63%.

Furthermore, the highest standard deviation and the variance of 2.07446 and 4.303, respectively were recorded on Day +2 for event 2. Where else, for event 3 the highest standard deviation and variance recorded the values of 3.4645 and 12.00 on day 5 for event 3. This value implies that the stock prices were highly volatile on aforementioned days. Overall, these findings provide valuable insights into the stock price behavior during the event 2 and event 3.

Analysis for UK Markets

Table 6. Day-Wise AAR and CAAR of the FTSE 100 Constituent Firms for the Event 1.

	AAR	t-stat ARR	CAAR	t-stat CAAR
t-5	-1.0462	-6.8000*	-1.0462	-6.8000*
t-4	0.2189	1.3363	-0.8273	-5.0503*
t-3	0.2227	1.6337	-0.6046	-4.4356*
t-2	-1.2470	-4.4657*	-1.8516	-6.6311*
t-1	1.4644	8.3150*	-0.3872	-2.1982**
t=0	1.0425	4.7990*	0.6553	3.0168*
t+1	0.7068	6.0386*	1.3622	11.6373*
t+2	-0.3607	-2.5125**	1.0014	6.9747*
t+3	0.6868	5.0732*	1.6882	12.4708*
t+4	-0.3042	-1.8098***	1.3840	8.2329*
t+5	-0.9006	-3.4112*	0.4834	1.8310***

Note: *, **, *** indicate significant values at 1%, 5% and 10%, respectively.

Table 7. Day-wise AAR and CAAR of the FTSE 100 constituent firms for the event 2.

	AAR	t-stat ARR	CAAR	t-stat CAAR
t-5	-0.0035	-0.0182	-0.0035	-0.0182
t-4	0.2075	1.6854***	0.2040	1.6568
t-3	-1.0887	-6.5079*	-0.8847	-5.2884*
t-2	1.0057	6.3406*	0.1210	0.7631
t-1	-0.5226	-3.3223*	-0.4016	-2.5529*
t=0	1.0053	6.3889*	0.6038	3.8370*
t+1	0.2583	1.8252***	0.8621	6.0913*
t+2	-0.2799	-1.3494	0.5822	2.8063*
t+3	0.7950	7.9474*	1.3772	13.7668*
t+4	0.9531	6.1858*	2.3303	15.1241*
t+5	-1.0338	-5.3761*	1.2965	6.7419*

Note: *, **, *** indicate significant values at 1%, 5% and 10%, respectively.

Table 8. Day-wise AAR and CAAR of the FTSE 100 constituent firms for the event 3.

	AAR	t-stat ARR	CAAR	t-stat CAAR
t-5	0.702298	5.1916*	0.702298	5.1916*
t-4	-0.83108	-5.1434*	-0.12879	-0.7970
t-3	0.502399	3.4643*	0.373612	2.5763*
t-2	-0.53072	-3.4323*	-0.15711	-1.0161
t-1	1.150319	6.1044*	0.993211	5.2707*
t=0	1.60025	8.0823*	2.59346	13.0986*
t+1	0.801224	4.5317*	3.394685	19.2004*
t+2	-0.23181	-1.0656	3.162873	14.5392*
t+3	-0.69569	-3.5930*	2.467184	12.7421*
t+4	0.426431	3.2651*	2.893615	22.1558*
t+5	1.339125	3.8652*	4.23274	12.2172*

Note: *, **, *** indicate significant values at 1%, 5% and 10%, respectively.

In the history of British politics, Boris Johnson has played a pivotal role in handling the toughest of its time, especially the pandemic economics. Unfortunately, he declared his resignation as a Conservative MP in June 2023 after a Partygate scandal inquiry revealed Johnson had misled Parliament and recommended a lengthy suspension from the House of Commons. The stock market was shocked to note that the Chancellor of the Exchequer, Nadhim Zahawi, publicly stated that Prime Minister Boris Johnson would resign. Boris Johnson declared his resignation as PM of the UK at 12:30 PM. He continued as PM until the Conservative Party elected a new leader. Table 6 shows the FTSE 100 Constituent Firm's cross-sectional average and cumulative average abnormal returns for the event 1. Surprisingly, a statistically significant positive abnormal return can be noticed on the day of resignation announcement and +1 and -2 days of resignation day. It signifies that the market welcomed the resignation of Boris Johnson. CAAR confirms the existence of a significant positive abnormal return of 0.6553 on the day of the announcement. Thus, political uncertainties like the prime minister's resignation bring short-run market inefficiency, causing a positive wealth effect. Further, in the post-announcement window a positive AAR till +5 days can be observed confirming that events like 2022 United Kingdom's political uncertainties have prolonged reactions, causing market inefficiency and providing abnormal return opportunities.

After Boris Johnson's resignation, Lizz Truss won the Conservative leadership election, eventually becoming the UK PM after formally being appointed by Queen Elizabeth II at Balmoral Castle. Table 7 shows the FTSE 100 constituent firms' share price reaction for the event 2. The results were found to be in a similar manner to Boris Johnson's resignation. Further, a statistically significant AAR of 1.0053 and CAAR of 3.8370 can be noticed on the day of the announcement of the new prime minister and -4 to +5 days of the event window. Subsequently, Truss resigned as PM, following which Rishi Sunak won the subsequent Conservative Party leadership election to become leader and PM of the UK. Table 8 shows the AAR on the announcement day of Rishi Sunak as the prime minister, and a significant AAR of 1.6% and CAAR of 2.5% can be observed, which is higher than the previous two events. A strong existence of abnormal returns can be noticed around politically uncertain periods, causing market asymmetric effects. Short-run political instability affects market efficiency, causing market volatility with positive price effects. Thus, the study documents the existence of the Information asymmetry.

Further, the study examined the sectoral impact of these political events across 11 key sectors in Britain. Political events trigger policy-specific factors related to the sector, and sectoral-specific stocks react differently for different sectors.

Sectoral Level Impact Analysis

The Sector-wise AAR and CAAR of the FTSE 100 constituent firms for event 1, 2 and 3 are provided in the Appendix Table A1, A2 and A3, respectively. Table A1 presents the sector wise reaction for event 1, i.e., Boris Johnson's resignation announcement. It can be noticed that sectoral stocks that belong to Financials (AAR 1.956%, CAAR 0.266%), Materials (AAR 3.130%) Energy (3.037%, CAAR -5.594%), Industrials (AAR 1.5607%, CAAR 2.2498%) and Real Estate (AAR 1.8142%, CAAR 1.9406%) have reacted with positive statistically significant abnormal returns for the announcement. However, sectors such as Utilities (-0.2295%), Consumer Staples (-0.6792%), and Healthcare (-1.1478%) have shown a negative AAR on the announcement date. Table A2 shows the stock price reaction for the event 2, i.e., Truss resignation announcement. It was found that the stocks of consumer discretionary (AAR 1.51%, CAAR 2.26%), Information Technology (AAR 2.49%, CAAR 1.07%), and Real Estate (AAR 1.87%, CAAR 3.35%) sectors have a significant abnormal return on the day of the announcement and during the event window. It can be further noticed that sectors such as communication, energy, healthcare, Industrial, material, and utility stocks had statistically insignificant positive AAR but had significantly Negative CAAR% on the announcement day.

With regards to the sectoral level analysis, it can be observed that the market reaction to political uncertainties is unstable, and it largely depends on how the political scenarios of the country influence the business dynamics of the sectors. Table A3 shows the announcement of Rishi Sunak as the new prime minister. It is noticed that sectoral stocks that belong to Communication (AAR, 1.0761%), Consumer Discretionary (AAR 2.5018%, CAAR 2.5087%), Consumer Staples (AAR, 1.6089%, CAAR 2.7103%), Financials (AAR 1.3788%, CAAR 2.2109%), Health Care (AAR 1.4733%, CAAR 3.2199%), Information technology (AAR 3.5250%, CAAR 5.2136%), Real estate (AAR 5.7719%, CAAR 6.3546%) and Utilities (AAR, 1.8448%, CAAR 4.0595%) have significant positive abnormal return for the event. Further, it is seen that stocks of Healthcare (AAR, -0.3031%) and Energy (-1.3219%) sectors have reacted with negative statistically abnormal returns for the event. Thus, with regards to sectoral level impact, the study concludes that the degree of responses to political uncertainties across sectors differs.

Analysis for European Markets

Table 9. Country-wise abnormal returns (AR) on the event day i.e., ($t = 0$) for event 1, 2 and 3.

Markets	Event 1		Event 2		Event 3	
	AR	t-stat (AR)	AR	t-stat (AR)	AR	t-stat (AR)
Austria	0.3304	0.3089	-0.2773	-0.3000	-0.3302	-0.3876
Belgium	0.3764	0.5590	0.1007	0.1399	0.0436	0.0632
Denmark	-0.2437	-0.1610	-0.5936	-0.4096	0.9473	0.6550
Finland	1.1652	1.2516	-0.0766	-0.0857	-0.8007	-1.0152
France	0.0721	0.1192	0.0784	0.1316	0.1767	0.3251
Germany	0.4565	0.7058	0.7823	1.1330	-0.8791	-1.3558
Ireland	0.2289	0.1629	1.2503	0.8591	0.8338	0.6079
Italy	1.3910	1.7924***	-0.0660	-0.0725	-0.2455	-0.2709
Netherlands	1.2407	1.7241***	-0.0504	-0.0704	0.1256	0.1850
Norway	2.4266	2.1563**	-3.4208	-2.8977*	-0.4836	-0.3827
Portugal	0.3956	0.4907	-0.8025	-0.9347	0.3017	0.3520
Spain	0.8770	1.3002	-0.3601	-0.5371	0.0328	0.0516
Sweden	0.8802	0.9388	0.1888	0.1956	-0.1117	-0.1180
Switzerland	-0.0739	-0.1235	0.0994	0.1589	0.4815	0.8134

Note: *, **, *** indicate significant values at 1%, 5% and 10%, respectively.

Table 9 shows the AR of event announcements. A significant positive AR in the benchmark indices of Italy, Netherlands, and Norway for the event 1 can be observed. Though other European indices had shown positive AAR reactions, it was statistically insignificant. However, there were any statistically significant AAR for Event 2 and Event 3. This concludes that the European markets were not affected by the political uncertainties in Britain. Post-BREXIT European market's dependency on the political affairs of Britain has the least impact on European markets, except for Italy, Netherlands, and Norway. Buigut and Kapar, (2023) indicate that the Brexit referendum phase depressed UK–EU trade by around 10.5%, and transition phase by around 15%. In both cases, particularly for the transition phase, the effect is greater on the UK imports from EU than the UK exports to EU. Netherlands being one of the largest trade partners of Britain is positively impacted by the political uncertainties in Britain.

Table 10, 11 and 12 shows the country wise CAR for all the three events for -1 to +5 days. A significant presence of CAR for most of the European indices for +1 and -1 days for event 1 except for Spain index which had insignificant CAR can be observed. Similar presence of CAR is noticed for -3, -5 and +3, +5 days except for Italy market index which had no statistically significant CAR during -1, -3, -5 days but has shown a positive CAR for +1, +3 and +5 days of announcement. This confirms that Boris Johnson's resignation had positive short run impact on the European market indices returns. However, announcement of appointment Lizz Truss as prime minister has no positive significant CAR among European market indices around event window except for Italy and Netherlands. For the announcement of Rishi Sunak as the PM around -1 and +1 days positive CAR for Italy, Netherlands and Portugal. This confirms that European market indices has no considerable impact due to political turmoil in Britain. This strongly signals that Britain political events has no significant influence on the European markets.

Table 10. Country-wise cumulative abnormal returns (CAR) for event 1.

Markets	t-5		t-3		t-1		t+1		t+3		t+5	
	CAR	t-value	CAR	t-value	CAR	t-value	CAR	t-value	CAR	t-value	CAR	t-value
Austria	-0.5399	-0.5069	-1.1647	-1.0935	-2.0426	-1.9177***	0.7735	0.7262	0.9010	0.8459	2.2094	2.0743*
Belgium	0.0381	0.0568	0.1044	0.1557	2.5098	3.7433*	2.9258	4.3639*	2.5280	3.7706*	2.8090	4.1896*
Denmark	1.7249	1.1440	1.8523	1.2284	5.0577	3.3542*	5.0321	3.3373*	5.2679	3.4936*	8.0117	5.3133*
Finland	-0.6535	-0.7049	0.2238	0.2415	1.1565	1.2476	2.4319	2.6232*	2.6091	2.8145*	2.4430	2.6352*
France	-0.2137	-0.3551	-0.0351	-0.0583	1.7553	2.9171*	1.7191	2.8569*	2.9825	4.9566*	3.6266	6.027*
Germany	-0.0729	-0.1136	-0.4747	-0.7402	0.6676	1.0409	1.9235	2.9990*	2.1997	3.4297*	2.0136	3.1396*
Ireland	1.5167	1.0835	4.3210	3.0870*	4.8896	3.4932*	6.8391	4.8859*	6.8195	4.8719*	4.6072	3.2914*
Italy	-0.7220	-0.9343	-0.7758	-1.0038	-0.0210	-0.0272	1.9193	2.4836**	1.7725	2.2936**	0.4398	0.5691
Netherlands	0.2798	0.3905	-0.0472	-0.0659	1.5207	2.1220**	2.5373	3.5407*	2.8793	4.0179*	3.8100	5.3166*
Norway	-1.7485	-1.5603	0.1251	0.1116	-2.0650	-1.8427***	-0.6380	-0.5693	0.1395	0.1245	-2.4000	-2.1420**
Portugal	-0.6841	-0.8522	-1.0386	-1.2938	-2.7909	-3.4765*	-2.3880	-2.9747**	-3.3474	-4.1698*	-4.9733	-6.195*
Spain	0.1254	0.1867	0.4739	0.7056	-0.2966	-0.4417	-0.2044	-0.3044	-0.5355	-0.7974	-1.0828	-1.612
Sweden	-0.6524	-0.6987	0.3962	0.4243	3.6791	3.9405*	5.1064	5.4692*	5.9509	6.3736*	4.7526	5.0903*
Switzerland	0.5253	0.8812	1.6140	2.7074*	3.2648	5.4766*	3.4720	5.8242*	4.4044	7.9182*	4.4264	7.425*

Note: *, **, *** indicate significant values at 1%, 5% and 10%, respectively.

Table 11. Country-wise cumulative abnormal returns (CAR) for event 2.

Markets	t-5		t-3		t-1		t+1		t+3		t+5	
	CAR	t-value	CAR	t-value								
Austria	-0.4456	-0.4840	-0.0954	-0.1036	0.0632	0.0687	1.9850	2.1562*	1.1262	1.2233	2.258	2.453**
Belgium	0.1760	0.2456	-0.3169	-0.4421	-0.1999	-0.2789	0.1059	0.1478	0.5825	0.8128	-0.079	-0.1102
Denmark	0.1306	0.0905	-2.3366	-1.6189	-1.3509	-0.9360	-2.3355	-1.6181	-0.2780	-0.1926	-1.486	-1.0296
Finland	0.3816	0.4284	0.2846	0.3195	-0.7915	-0.8887	-0.4219	-0.4737	-1.0766	-1.2088	-1.221	-1.3716
France	0.4786	0.8063	0.5718	0.9633	0.2403	0.4049	0.4073	0.6862	-0.6382	-1.0752	-0.219	-0.3697
Germany	1.5115	2.1983**	2.0637	3.0014*	1.8035	2.6230*	3.0320	4.4096*	1.5438	2.2452**	2.251	3.2749*
Ireland	0.2269	0.1566	0.0975	0.0673	-0.0606	-0.0418	1.1830	0.8164	1.3749	0.9488	-0.244	-0.1698
Italy	1.5385	1.6971***	2.2808	2.5159*	1.7182	1.8953***	1.7792	1.9626***	1.7477	1.9279***	2.611	2.880*
Netherlands	-0.9007	-1.2633	-1.3749	-1.928***	-1.5360	-2.1543**	-2.1686	-3.0416*	-2.6917	-3.7753*	-3.125	-4.383*
Norway	-1.9299	-1.6417	-1.6212	-1.3791	-1.1945	-1.0161	-6.9475	-5.9100*	-5.8017	-4.9352*	-5.131	-4.365*
Portugal	-2.2937	-2.6827*	-1.8851	-2.2047**	-2.1094	-2.4671**	-3.4703	-4.0588*	-4.3967	-5.1423*	-4.026	-4.709*
Spain	0.0894	0.1339	0.1305	0.1955	-0.1768	-0.2649	-0.3269	-0.4897	-0.2550	-0.3819	0.007	0.0110
Sweden	0.3501	0.3644	-1.0758	-1.1196	-0.6703	-0.6976	-0.6956	-0.7239	-0.6337	-0.6595	-0.439	-0.458
Switzerland	0.4478	0.7188	0.3253	0.5221	0.8598	1.3800	0.7312	1.1735	-0.0499	-0.0801	-0.233	-0.3752

Note: *, **, *** indicate significant values at 1%, 5% and 10%, respectively.

Table 12. Country-wise cumulative abnormal returns (CAR) for event 3.

Markets	t-5		t-3		t-1		t+1		t+3		t+5	
	CAR	t-value	CAR	t-value	CAR	t-value	CAR	t-value	CAR	t-value	CAR	t-value
Austria	-0.3368	-0.397	-0.1115	-0.1314	-0.2462	-0.2902	-0.9949	-1.1729	1.4327	1.689***	2.4712	2.9134*
Belgium	0.5075	0.7388	-0.4302	-0.6261	0.5372	0.7819	-0.4385	-0.6383	0.7660	1.1150	1.8010	2.6216*
Denmark	1.3130	0.9117	-0.1745	-0.1212	0.0343	0.0238	1.1283	0.7834	1.7503	1.2153	1.4389	0.9991
Finland	0.0867	0.1103	-1.395	-1.77**	-1.4419	-1.83***	-2.3064	-2.9367*	-3.2375	-4.1221*	-2.5719	-3.275*
France	-0.1635	-0.302	0.2874	0.5310	-0.0364	-0.0672	-0.6625	-1.2242	-0.1600	-0.2957	0.4756	0.8788
Germany	0.3113	0.4822	0.5005	0.7752	0.7179	1.1119	-0.3254	-0.5040	0.6620	1.0253	1.1726	1.816***
Ireland	-1.2612	-0.923	-1.6406	-1.2013	-3.0918	-2.2639*	-3.8030	-2.7847*	-4.6191	-3.3822*	-5.2177	-3.821*
Italy	0.3350	0.3711	1.3917	1.5420	1.6421	1.819***	0.5965	0.6609	1.7461	1.9346***	2.6513	2.9376*
Netherlands	-0.3236	-0.478	1.0359	1.5327	-0.2838	-0.4199	-1.4241	-2.107**	-0.7454	-1.1029	0.4473	0.6618
Norway	0.6219	0.4942	1.2669	1.0068	0.1508	0.1199	0.1473	0.1171	1.5974	1.2694	3.7650	2.992*
Portugal	-0.8920	-1.045	0.4936	0.5783	1.5317	1.794***	1.6835	1.972**	1.5476	1.8133***	4.4030	5.1589*
Spain	0.2581	0.4078	0.9149	1.4456	0.5982	0.9453	0.6116	0.9663	1.7866	2.8230*	2.7331	4.3185*
Sweden	1.0740	1.1394	-0.4885	-0.5182	0.3483	0.3695	-0.5390	-0.5718	0.1732	0.1837	0.0319	0.0338
Switzerland	0.4371	0.7415	-0.3815	-0.6472	0.2173	0.3687	0.2935	0.4979	0.1892	0.3210	0.2488	0.4221

Note: *, **, *** indicate significant values at 1%, 5% and 10%, respectively.

Table 13 and 14 shows the Aggregate European stock market's reaction to political events 1, 2 and 3. It is observed that event 1 has a statistically significant (AAR, 0.635%, CAAR 1.742%) price reaction as compared to event 2. Possible reason could be that Boris Johnson resignation was most expected by the European markets due to Britain's bilateral relationships and its policies towards European countries. Surprisingly, the appointment Lizz Truss as prime minister and subsequent to her resignation appointment of Rishi Sunak as the PM of the Britain has not impacted the European stock market significantly.

According to the study, political uncertainty can have a significant impact on market efficiency. The research revealed that this uncertainty creates an asymmetric information effect, which can lead to price inefficiencies and create opportunities for abnormal gains. This implies that political events, such as the election or removal of a prime minister, can play a crucial role in shaping the market's semi-strong form of efficiency.

Table 13. Aggregate European stock market's AAR and CAAR for political events 1 and 2.

Days	Event 1				Event 2			
	AAR	t-value	CAAR	t-value	AAR	t-value	CAAR	t-value
t-5	-0.135	-0.577	-0.135	-0.577	-0.011	-0.041	-0.011	-0.041
t-4	0.768	3.7649*	0.633	3.1031*	-0.344	-2.2161**	t-value	-2.2871**
t-3	-0.295	-1.318	0.338	1.514	0.094	0.383	-0.261	-1.064
t-2	0.729	2.7461*	1.068	4.0205*	-0.047	-0.320	-0.308	-2.0993*
t-1	0.040	0.159	1.107	4.4715*	0.084	0.524	-0.225	-1.404
0	0.635	3.4847*	1.742	9.5647*	-0.205	-0.778	-0.429	-1.632
t+1	0.285	1.237	2.026	8.8057*	-0.096	-0.397	-0.525	-2.1731**
t+2	0.364	2.905*	2.390	19.0918*	0.102	0.810	-0.424	-3.3779*
t+3	-0.084	-0.427	2.306	11.7541*	-0.278	-1.674	-0.701	-4.2290*
t+4	-0.804	-5.8275*	1.503	10.8985*	-0.191	-1.9703**	-0.892	-9.2205*
t+5	0.483	1.623	1.985	6.6764*	0.237	1.242	-0.655	-3.4252*

Note: *, **, *** indicate significant values at 1%, 5% and 10%, respectively.

Table 14. Aggregate European stock market's AAR and CAAR for political event 3.

Days	Event 3			
	AAR	t-value	CAAR	t-value
t-5	0.118	0.675	0.118	0.675
t-4	0.176	1.091	0.295	1.8231***
t-3	-0.208	-1.240	0.087	0.515
t-2	0.147	0.781	0.234	1.240
t-1	-0.170	-0.887	0.064	0.334
0	-0.080	-0.500	-0.016	-0.101
t+1	-0.472	-3.3032*	-0.488	-3.4155*
t+2	0.288	1.041	-0.201	-0.726
t+3	0.328	2.0083**	0.128	0.781
t+4	0.538	4.4809*	0.666	5.5443*
t+5	0.312	1.8526***	0.978	5.8005*

Note: *, **, *** indicate significant values at 1%, 5% and 10%, respectively.

Conclusion

The study attempted to verify announcement effect of three major political events in Britain viz., announcement of Boris Johnson resignation, appointment of Lizz Truss as the new PM of Britain and following Truss's resignation Rishi Sunak become the leader and PM of the UK. This research paper attempts to examine the impact of these political uncertain events on the FTSE 100 constituent stocks return. Further, price effect is also verified across 11 sectors of FTSE100 constituent stocks. The study also looked into the impact of these events on other major European stock indices. The study uses event study methodology considering -5 days in the pre-event window and

+5 days in the post event window. The study documents positive AAR and CAAR in observation window and particularly on the day of announcement for resignation announcement of Boris Johnson. Similar findings are documented for Lizz Truss appointment also. A statistically significant AAR and CAAR of on the day of the announcement and in the event, window was reported. Subsequently, the announcement of Rishi Sunak as the PM of the UK recorded a higher percentage of AAR on the announcement day and in the event window. This confirms that political uncertainties like the prime minister's resignation bring short-run market inefficiency and provides opportunities for abnormal return. Existence of positive AAR in pre-event window signifies information asymmetry. Existence of abnormal returns in post-announcement window confirms that political uncertainties have prolonged reactions, causing market inefficiency and providing abnormal return opportunities. Further, the study examined the sectoral impact of these political events across 11 key sectors in Britain. Political events trigger policy-specific factors related to the sector, and sectoral-specific stocks react differently for different sectors. However, when verified for sectoral impact, we notice a mixed reaction for these events. Sectors such as Financials, materials, Energy, industrials, and real estate have posted a positive abnormal return. Further, this study also attempted to verify the impact on other major indices in European markets. It was noticed that only for resignation announcement of Boris Johnson there were positive abnormal returns in benchmark indices of Italy, Netherlands, and Norway. Other European indices has shown insignificant price changes. The study concludes that uncertain political events can influence price movement on both on Index and stock level. Investors should understand the impact of outcome of political events while making portfolio decisions for short run period.

Policy Implications and further research

This study findings are imperative for policy makers, investors, fund managers and academicians. Political turmoil's trigger policy level changes and affects the business models and revenues. Market participants shall make changes to their portfolios based on the key political events and take informed decisions. Market anomalies and volatility are one of the primary concerns in emerging markets. Degree of information asymmetry is very high and events of such nature paves way for insiders to earn abnormal returns. Policy makers involvement in creating investors awareness is highly imperative. Further research can be conducted to understand the long run impact of uncertain political events. Firm specific factors and other market related factors can also be verified along with the political uncertain events to check it inter relatedness.

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Appendices

Table A1. Sector-wise AAR and CAAR of the FTSE 100 constituent firms for event 1.

Sector		t-5	t-4	t-3	t-2	t-1	t=0	t+1	t+2	t+3	t+4	t+5
Communication	AAR	-0.3173	-0.1846	0.9445	-1.4233	2.0567	0.7896	1.4676	-0.4144	0.7331	-0.6540	-0.8186
	t-stat AAR	-0.4585	-0.3688	1.1920	-1.5108	2.5445**	1.2001	5.1885*	-0.9546	1.9323***	-1.6122	-3.2219*
	CAAR	-0.3173	-0.5019	0.4426	-0.9807	1.0759	1.8656	3.3332	2.9188	3.6520	2.9979	2.1792
	t-stat CAAR	-0.4585	-1.0028	0.5586	-1.0410	1.3311	2.8355*	11.7841*	6.7242*	9.6259*	7.3893*	8.5771*
Consumer Discretionary	AAR	-0.9224	0.9096	-0.5135	-0.8692	1.6933	0.3153	0.9066	-0.6795	1.4798	-0.3190	0.2959
	t-stat AAR	-3.0091*	3.4886*	-1.4646	-2.326**	6.2696*	0.4736	4.1550*	-1.4698	3.9117*	-1.3015	0.8664
	CAAR	-0.9224	-0.0128	-0.5263	-1.3956	0.2976	0.6130	1.5196	0.8400	2.3199	2.0009	2.2968
	t-stat CAAR	-3.0091*	-0.0492	-1.5012	-3.7346*	1.1021	0.9208	6.9645*	1.8170***	6.1323*	8.1632*	6.7240*
Consumer Staples	AAR	-1.4815	1.1370	-0.2423	-0.0245	1.6902	-0.6792	1.1603	-0.1424	0.9307	-0.1187	-0.6003
	t-stat AAR	-3.2853*	2.3949*	-0.6624	-0.0326	6.0110*	-1.1238	3.6812*	-0.3847	2.9066*	-0.5077	-1.4112
	CAAR	-1.4815	-0.3444	-0.5868	-0.6113	1.0788	0.3995	1.5599	1.4174	2.3482	2.2294	1.6290
	t-stat CAAR	-3.2853*	-0.7255	-1.6039	-0.8131	3.8367*	0.6610	4.9488*	3.8291*	7.3331*	9.5304*	3.8291*
Energy	AAR	-1.9852	-0.0850	2.4973	-7.1632	-1.8959	3.0374	1.1363	0.6045	-0.9292	0.3139	-1.4954
	t-stat AAR	-27.389*	-0.0982	2.0741**	-11.705*	-5.5192*	6.1138*	1.2645	0.4540	-0.8701	1.8714***	-0.8714
	CAAR	-1.9852	-2.0702	0.4271	-6.7361	-8.6320	-5.5946	-4.4582	-3.8537	-4.7829	-4.4690	-5.9644
	t-stat CAAR	-27.389*	-2.391**	0.3547	-11.007*	-25.1287*	-11.2611*	-4.9611*	-2.8946*	-4.4789*	-26.6398*	-3.4757*
Financials	AAR	-1.1213	-0.2790	0.1154	-1.7424	1.3374	1.9567	0.5035	-0.4974	0.9871	-0.9266	-2.2987
	t-stat AAR	-4.2533*	-1.0336	0.5875	-3.4787*	2.7967*	7.8239*	1.7227***	-2.7591*	4.1713*	-3.9185*	-2.477**
	CAAR	-1.1213	-1.4004	-1.2849	-3.0273	-1.6899	0.2668	0.7704	0.2729	1.2600	0.3341	-1.9646
	t-stat CAAR	-4.2533*	-5.1874*	-6.5393*	-6.0441*	-3.5337*	1.0670	2.6358*	1.5136	5.3246*	1.4138	-2.116**
Healthcare	AAR	-0.6586	0.2714	0.2204	0.5264	1.1656	-1.1478	-0.5914	0.5078	-0.9576	-1.1718	-0.2347
	t-stat AAR	-2.8582*	0.9853	0.4206	1.0333	1.8518***	-1.1877	-1.3112	2.3613*	-2.0254**	-2.3197**	-0.7645
	CAAR	-0.6586	-0.3871	-0.1666	0.3598	1.5255	0.3776	-0.2137	0.2940	-0.6636	-1.8354	-2.0701
	t-stat CAAR	-2.8582*	-1.4051	-0.3180	0.7062	2.4234**	0.3907	-0.4739	1.3673	-1.4035	-3.6334*	-6.7429*
Industrials	AAR	-0.6178	0.6599	0.6968	-1.5224	1.4726	1.5607	0.8934	-0.4347	0.6995	-0.2047	-0.4976

	t-stat AAR	-1.3365	1.5968	2.0891**	-2.378**	3.1042*	4.6054*	3.5423*	-1.5787	2.5344**	-0.5892	-0.9901
	CAAR	-0.6178	0.0420	0.7388	-0.7835	0.6890	2.2498	3.1433	2.7085	3.4080	3.2032	2.7056
	t-stat CAAR	-1.3365	0.0894	1.9472***	-1.0761	1.2769	5.8358*	10.9547*	8.6452*	10.8543*	8.1043*	4.7317*
	AAR	0.6837	0.0802	-0.1168	2.4993	3.2591	0.1824	1.2715	0.0701	0.4004	-0.278	-0.1554
Information Technology	t-stat AAR	2.5759*	0.3835	-0.7303	4.7310*	8.3186*	0.7735	3.7391*	0.3536	1.0283	-0.6237	-0.7828
	CAAR	0.6837	0.7640	0.6471	3.1464	6.4055	6.5879	7.8595	7.9296	8.3300	8.0520	7.8966
	t-stat CAAR	2.5759*	3.6518*	4.0435*	5.9560*	16.3498*	27.9338*	23.1117*	40.0065*	21.3918*	18.0649*	39.7631*
	AAR	-1.4305	-1.6513	0.3365	-3.5400	1.3939	3.1309	0.6360	-1.7837	-0.0362	0.5099	-2.1519
Materials	t-stat AAR	-1.6615	-2.1373*	0.8656	-2.6156*	3.9871*	3.4765*	1.5496	-3.5690*	-0.1058	0.3176	-3.067*
	CAAR	-1.4305	-3.0819	-2.7452	-6.2854	-4.8915	-1.7606	-1.1245	-2.9083	-2.9445	-2.4345	-4.5865
	t-stat CAAR	-1.6615	-3.9889*	-7.0617*	-4.6441*	-13.9917*	-1.95***	-2.7397*	-5.8191*	-8.6075*	-1.5164	-6.5368*
	AAR	-2.1346	-0.9846	-0.1147	1.8412	1.5192	1.8142	0.4251	-0.5097	0.1139	1.2589	-0.9737
Real Estate	t-stat AAR	-13.376*	-3.5906*	-0.7757	1.2594	8.2978*	1.8759*	27.9229*	-1.6579	0.0914	4.8053*	-6.0747*
	CAAR	-2.1346	-3.1193	-3.2340	-1.3926	0.1264	1.9406	2.3657	1.8559	1.9699	3.2288	2.2550
	t-stat CAAR	-13.376*	-11.375*	-21.8575*	-0.9526	0.6905	2.0066**	15.3897*	6.0360*	1.5801	12.3249*	14.0675*
	AAR	-1.5835	1.6879	0.5608	-0.0405	0.6186	-0.2295	-0.6038	1.8782	0.8979	0.3524	0.5566
Utilities	t-stat AAR	-11.165*	2.2118**	2.8659*	-0.1632	1.3800	-1.2980	-5.2538*	5.7607*	3.1334*	1.0339	1.5791
	CAAR	-1.5835	0.1044	0.6652	0.6247	1.2434	1.0138	0.4099	2.2882	3.1861	3.5386	4.0952
	t-stat CAAR	-11.165*	0.1368	3.3994*	2.5148**	2.7736*	5.7317*	3.5669*	7.0181*	11.1188*	10.3804*	11.6185*

Note: *, **, *** indicate significant values at 1%, 5% and 10%, respectively.

Table A2. Sector-wise AAR and CAAR of the FTSE 100 constituent firms for event 2.

Sector		t-5	t-4	t-3	t-2	t-1	t=0	t+1	t+2	t+3	t+4	t+5
Communication	AAR	0.4884	0.4448	-1.2585	0.5060	-1.1237	0.5597	0.3382	-0.5902	1.1808	1.4689	-0.8336
	t-stat AAR	2.9267*	1.1251	-2.6374*	1.3183	-2.8441*	1.1288	0.6054	-0.8973	3.3564*	3.9882*	-1.5835
	CAAR	0.4884	0.9332	-0.3252	0.1807	-0.9430	-0.3832	-0.0450	-0.6352	0.5455	2.0144	1.1808
	t-stat CAAR	2.9267*	2.360**	-0.6816	0.4709	-2.38**	-0.7728	-0.0805	-0.9657	1.5507	5.4694*	2.24**
Consumer Discretionary	AAR	1.0326	0.5460	-0.7060	0.1707	-0.2997	1.5194	0.0222	-0.6548	0.6400	1.7783	-1.6413
	t-stat AAR	3.2535*	2.074**	-1.4910	0.3501	-0.8066	3.5783*	0.0673	-1.99**	2.5511*	4.6386*	-4.178*
	CAAR	1.0326	1.5787	0.8726	1.0434	0.7437	2.2631	2.2853	1.6305	2.2704	4.0487	2.4074
	t-stat CAAR	3.2535*	5.9987*	1.84***	2.139**	2.001**	5.3298*	6.9268*	4.957*	9.0503*	10.5609*	6.129*
Consumer Staples	AAR	0.7311	0.3348	-0.6600	0.0756	0.0739	0.9649	-0.4251	-1.7462	0.3636	1.6780	-2.0363
	t-stat AAR	2.5033**	1.1453	-1.1316	0.2897	0.1716	2.6891*	-1.1149	-1.7559	1.4937	2.6618*	-1.6472
	CAAR	0.7311	1.0658	0.4058	0.4814	0.5553	1.5202	1.0951	-0.6511	-0.2875	1.3905	-0.6458
	t-stat CAAR	2.5033**	3.6461*	0.6957	1.844***	1.2901	4.2366*	2.8724*	-0.6547	-1.1812	2.2057**	-0.5224
Energy	AAR	-2.2234	-0.9088	1.5132	0.7478	0.9321	-0.2885	-0.2973	-0.5084	1.4397	-0.6394	0.3431
	t-stat AAR	-1.0850	-2.566*	2.6484*	10.3108*	1.976**	-0.1386	-0.2065	-1.3294	1.2386	-2.2565**	0.3352
	CAAR	-2.2234	-3.1323	-1.6191	-0.8713	0.0608	-0.2277	-0.5250	-1.0334	0.4063	-0.2330	0.1101
	t-stat CAAR	-1.0850	-8.844*	-2.8337*	-12.012*	0.1289	-0.1094	-0.3647	-2.702*	0.3496	-0.8224	0.1075
Financials	AAR	0.2782	0.7067	-1.0401	1.4955	-0.9560	1.3892	0.1696	0.1062	0.6524	0.1794	-0.4138
	t-stat AAR	1.0125	2.6193*	-3.9603*	4.2484*	-4.1033*	4.2239*	0.5218	0.3029	3.4297*	0.5857	-1.2158
	CAAR	0.2782	0.9849	-0.0551	1.4404	0.4844	1.8736	2.0432	2.1494	2.8018	2.9813	2.5675
	t-stat CAAR	1.0125	3.6505*	-0.2099	4.0918*	2.079**	5.6967*	6.2854*	6.1287*	14.729*	9.7307*	7.543*
Healthcare	AAR	-0.3654	-0.2782	-0.3540	0.8021	-0.0698	0.0215	0.3502	0.4329	0.0190	0.4809	-1.5621
	t-stat AAR	-0.5061	-0.4219	-0.5200	0.7628	-0.1226	0.0361	0.9414	0.6709	0.0517	1.0034	-3.233*
	CAAR	-0.3654	-0.6436	-0.9976	-0.1956	-0.2653	-0.2439	0.1063	0.5393	0.5583	1.0392	-0.5230
	t-stat CAAR	-0.5061	-0.9762	-1.4654	-0.1860	-0.4664	-0.4103	0.2859	0.8357	1.5148	2.1684*	-1.0826
Industrials	AAR	-0.6223	-0.0179	-2.1330	1.9021	-0.9671	0.7881	0.9442	0.2106	0.7553	0.8756	-0.8606
	t-stat AAR	-0.8930	-0.0660	-6.0243*	6.2358*	-2.280**	2.221**	3.4552*	0.3041	3.5632*	2.9279*	-3.208*
	CAAR	-0.6223	-0.6402	-2.7732	-0.8711	-1.8382	-1.0502	-0.1060	0.1046	0.8599	1.7355	0.8749

	t-stat CAAR	-0.8930	-2.357**	-7.8325*	-2.8559*	-4.3345*	-2.9607*	-0.3879	0.1510	4.0568*	5.8034*	3.261*
	AAR	-0.0111	0.3936	-1.7039	1.0493	-1.1518	2.4957	0.9932	0.8069	1.1275	0.3477	-1.8812
Information Technology	t-stat AAR	-0.0232	0.8514	-7.6225*	5.5861*	-2.430**	3.4676*	16.853*	1.3295	8.7997*	5.1985*	-6.121*
	CAAR	-0.0111	0.3825	-1.3214	-0.2721	-1.4239	1.0718	2.0650	2.8719	3.9994	4.3471	2.4659
	t-stat CAAR	-0.0232	0.8274	-5.9114*	-1.4485	-3.0049*	1.4892	35.040*	4.7317*	31.213*	6.9887*	8.024*
	AAR	-1.3941	0.0850	-1.7694	1.3358	-0.5464	0.8444	0.0035	0.5097	1.9016	0.8679	-0.4379
Materials	t-stat AAR	-1.953***	0.2467	-6.6901*	3.8066*	-0.5573	2.135**	0.0056	0.7813	5.1538*	3.9061*	-1.0059
	CAAR	-1.3941	-1.3091	-3.0786	-1.7428	-2.2892	-1.4448	-1.4413	-0.9316	0.9700	1.8379	1.4000
	t-stat CAAR	-1.9530	-3.8006*	-11.6399*	-4.9666*	-2.3350**	-3.6544*	-2.32**	-1.4278	2.6290*	8.2717*	3.2164*
	AAR	1.2377	0.2230	-2.5592	2.6304	-0.0451	1.8707	-0.0362	-1.1131	1.4540	2.6854	-2.6225
Real Estate	t-stat AAR	1.7757***	0.2728	-1.3812	3.3494*	-0.0282	2.0578**	-0.0848	-2.967*	1.9955**	1.6083	-5.714*
	CAAR	1.2377	1.4607	-1.0985	1.5319	1.4868	3.3575	3.3213	2.2082	3.6622	6.3476	3.7252
	t-stat CAAR	1.77***	1.78***	-0.5929	1.95***	0.9311	3.6933*	7.7783*	5.886*	5.0260*	3.8015*	8.116*
	AAR	-1.3507	-1.2023	0.5160	0.2984	0.6185	-0.3791	1.0941	-0.7269	0.6987	0.6878	0.0561
Utilities	t-stat AAR	-1.4998	-1.4030	1.0890	0.7429	1.9961	-1.6513	0.9409	-2.35**	2.446**	1.5526	0.2296
	CAAR	-1.3507	-2.5530	-2.0371	-1.7387	-1.1202	-1.4993	-0.4052	-1.1322	-0.4334	0.2544	0.3105
	t-stat CAAR	-1.4998	-2.979*	-4.2994*	-4.3287*	-3.6154*	-6.5305*	-0.3485	-3.663*	-1.5175	0.5743	1.2708

Note: *, **, *** indicate significant values at 1%, 5% and 10%, respectively.

Table A3. Sector-wise AAR and CAAR of the FTSE 100 constituent firms for event 3.

Sector		t-5	t-4	t-3	t-2	t-1	t=0	t+1	t+2	t+3	t+4	t+5
Communication	AAR	0.2911	-0.2296	-0.7804	-1.6854	1.6768	1.0761	0.3085	-2.8035	1.1545	0.7499	1.4011
	t-stat AAR	0.6182	-0.3358	-2.122**	-1.71***	4.9877*	2.3522**	0.7220	-1.0275	1.1332	1.3291	3.3535*
	CAAR	0.2911	0.0615	-0.7190	-2.4044	-0.7275	0.3486	0.6571	-2.1464	-0.9919	-0.2421	1.1590
	t-stat CAAR	0.6182	0.0899	-1.95***	-2.440**	-2.16**	0.7620	1.5378	-0.7867	-0.9737	-0.4290	2.7741*
Consumer Discretionary	AAR	0.3149	-1.6874	1.0045	-1.7868	2.1618	2.5018	1.1077	0.2538	-1.4057	0.3042	0.8859
	t-stat AAR	1.2548	-4.1416*	3.3319*	-4.5373*	4.1714*	5.9970*	3.2206*	1.0770	-3.8705*	0.7732	4.4085*
	CAAR	0.3149	-1.3726	-0.3681	-2.1550	0.0069	2.5087	3.6164	3.8702	2.4645	2.7687	3.6547
	t-stat CAAR	1.2548	-3.3688*	-1.2211	-5.4720*	0.0133	6.0136*	10.514*	16.4246*	6.7858*	7.0365*	18.185*
Consumer Staples	AAR	0.3907	-0.0462	0.4135	-0.2476	0.5912	1.6089	-0.5542	-0.6315	-0.2561	1.1203	3.6476
	t-stat AAR	1.5601	-0.1389	0.9502	-0.7365	2.132**	2.7060*	-1.0246	-1.5072	-0.4927	4.9154*	1.2825
	CAAR	0.3907	0.3444	0.7579	0.5103	1.1015	2.7103	2.1561	1.5246	1.2685	2.3888	6.0363
	t-stat CAAR	1.5601	1.0349	1.741***	1.5176	3.9724*	4.5585*	3.9862*	3.6386*	2.4400**	10.481*	2.122**
Energy	AAR	-1.9278	1.2464	0.7588	-0.3525	1.1178	-1.3219	0.8976	2.6479	0.8986	1.7931	1.6797
	t-stat AAR	-1.78***	3.0847*	0.9003	-0.2999	1.76***	-2.1970**	1.2811	1.5519	0.4147	1.1699	7.7708*
	CAAR	-1.9278	-0.6814	0.0775	-0.2750	0.8428	-0.4791	0.4185	3.0664	3.9650	5.7581	7.4378
	t-stat CAAR	-1.7842	-1.686***	0.0919	-0.2340	1.3277	-0.7963	0.5973	1.79***	1.8300***	3.7569*	34.409*
Financials	AAR	0.7852	-0.5002	0.4417	-0.3516	0.4569	1.3788	-0.2326	0.2680	-1.6793	0.8912	1.2505
	t-stat AAR	4.1480*	-1.1800	1.5860	-1.927***	0.7986	2.7274*	-0.7437	1.0172	-3.7499*	3.6641*	5.4298*
	CAAR	0.7852	0.2851	0.7268	0.3752	0.8321	2.2109	1.9783	2.2462	0.5670	1.4581	2.7086
	t-stat CAAR	4.1480*	0.6725	2.6096*	2.0568**	1.4543	4.3734*	6.3246*	8.5264*	1.2660	5.9952*	11.761*
Healthcare	AAR	0.9707	-0.5393	-0.1392	0.1044	0.1626	-0.3031	2.1214	-0.6443	1.0865	1.0858	0.7794
	t-stat AAR	2.058**	-0.8337	-0.1693	0.1852	0.9756	-1.4189	2.6732*	-4.1393*	2.4618**	6.1540*	1.0491
	CAAR	0.9707	0.4315	0.2923	0.3967	0.5593	0.2562	2.3776	1.7333	2.8197	3.9056	4.6850
	t-stat CAAR	2.058**	0.6671	0.3556	0.7036	3.3557*	1.19***	2.9961*	11.135*	6.3892*	22.134*	6.3057*
Industrials	AAR	1.8636	-0.9855	0.0692	-0.5335	1.3329	1.4733	1.8227	-0.4161	-0.5588	-0.1462	0.5361
	t-stat AAR	4.9346*	-3.8114*	0.1737	-1.900***	4.0631*	5.2701*	7.0508*	-1.2756	-1.756***	-0.5200	0.9669
	CAAR	1.8636	0.8780	0.9472	0.4138	1.7467	3.2199	5.0426	4.6266	4.0678	3.9216	4.4577

	t-stat CAAR	4.9346*	3.3956*	2.3775**	1.4740	5.3243*	11.518*	19.506*	14.184*	12.7848*	13.949*	8.0404*
	AAR	1.2066	-1.9191	1.6573	-1.0535	1.7973	3.5250	1.4919	-1.4970	-0.8742	-0.8165	-0.0320
Information Technology	t-stat AAR	2.246**	-1.772***	2.6835*	-1.0726	3.9072*	8.4550*	1.1345	-3.8624*	-1.5342	-2.8249*	-0.0550
	CAAR	1.2066	-0.7125	0.9448	-0.1087	1.6886	5.2136	6.7055	5.2085	4.3344	3.5179	3.4859
	t-stat CAAR	2.246**	-0.6581	1.5298	-0.1107	3.6709*	12.505*	5.0993*	13.438*	7.6069*	12.170*	5.9990*
	AAR	0.6643	-0.9525	1.3669	1.2111	0.1547	0.7408	2.7052	-1.5744	-1.4155	-0.4764	2.4958
Materials	t-stat AAR	1.2779	-3.3152*	4.0801*	1.903***	0.2725	1.4164	3.2176*	-3.3408*	-2.1366**	-1.2669	2.5872*
	CAAR	0.6643	-0.2881	1.0788	2.2899	2.4446	3.1853	5.8905	4.3161	2.9006	2.4241	4.9199
	t-stat CAAR	1.2779	-1.0029	3.2201*	3.5994*	4.3065*	6.0906*	7.0062*	9.1584*	4.3781*	6.4459*	5.1001*
	AAR	-0.5610	-3.0225	2.7434	-0.1931	1.6159	5.7719	0.1024	1.7708	-0.7491	-0.3407	1.4974
Real Estate	t-stat AAR	-0.8403	-4.4357*	6.1768*	-0.3231	3.7242*	5.9297*	0.4506	9.1591*	-2.0592**	-0.8984	5.7784*
	CAAR	-0.5610	-3.5835	-0.8401	-1.0332	0.5827	6.3546	6.4570	8.2278	7.4787	7.1380	8.6354
	t-stat CAAR	-0.8403	-5.2590*	-1.891***	-1.72***	1.3429	6.5282*	28.4175*	42.5569*	20.5584*	18.8225*	33.3233*
	AAR	0.6558	-0.8981	-0.7105	0.2336	2.9340	1.8448	-0.1706	1.1618	0.9726	-0.0029	0.6996
Utilities	t-stat AAR	0.7294	-1.3464	-3.9032*	0.4421	8.5928*	7.6285*	-0.4862	2.8560*	3.8548*	-0.0135	2.2513**
	CAAR	0.6558	-0.2424	-0.9529	-0.7192	2.2147	4.0595	3.8890	5.0508	6.0234	6.0205	6.7202
	t-stat CAAR	0.7294	-0.3633	-5.2347*	-1.3610	6.4863*	16.7866*	11.0865*	12.4159*	23.8723*	28.0599*	21.6241*

Note: *, **, *** indicate significant values at 1%, 5% and 10%, respectively.