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Does political crisis impact the capital market returns in Bangladesh?

Abstract

The study is a comprehensive analysis on nineteen key political events that took place in the duration between January, 2005 to November, 2023. This study incorporates the events that are solely political in nature. The study uses Cumulative Abnormal Returns (CARs) that were calculated from capital market abnormal returns. For checking the robustness of the study, the study included two dimensions; one is the DSEX Index and the other is the criteria-based constructed portfolio. Also, for understanding lag values impact and sensitivity level of the impact of political events on capital market returns, five days impact horizon and fifteen days impact horizon have been separately analyzed. The statistical results found in small span horizon that political events' impact is less sensitive to capital market returns. On the other hand, it is also found that political events' impact is highly sensitive to capital market returns in long span horizon. Basing on the test of hypothesis, it is clear that there exists significant relation between political events and capital market returns in Bangladesh.

1. Introduction

The research focuses on every major political event that took place in the last nineteen years from 2005 to 2023. The study was necessary to be conducted in Bangladesh perspective because our country is a political economy. The country was liberated in 1971 and the history of this country cannot be separated from politics and political movement (Batabyal, 2020). It is true that every economy of a country is impacted by political factors and policies. In the theoretical framework, it has been acknowledged that Bangladesh is directly and indirectly impacted by political economy, industry structure and political fund mobilization in the capital market of Bangladesh. A study of Bertelsmann Stiftung's Transformation Index (BTI, 2022) shows that in 137 countries Bangladesh is susceptible to political factors in a radical manner (Figure 1).

Figure 1: Status of Bangladesh in BTI with Respect to the Transformation toward Democracy and a Market Economy as well as the Quality of Governance.
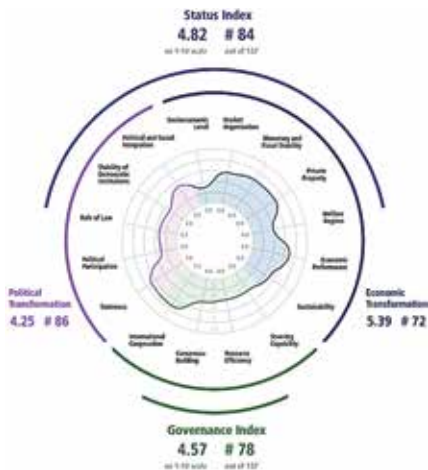
Source: BTI, 2022

On the other hand, the stock market returns in any country can have small to large impacts due to different events. From 2019 to 2020, Covid-19 had a big impact on stock market returns. Different studies have been done to analyze the impact of pandemic on stock market returns which show significance (Haque & Chowdhury, 2020). Also, studies have been conducted where elections were monitored thoroughly to judge their impacts on capital market. Bangladesh, having high frequency political events, thus required a study that covered such a long period of nineteen years to incorporate major political events' impact on stock market returns. The study will consider nineteen major political events for every year from 2005 to 2023. Using Cumulative Abnormal Returns (CARs), the study will statistically simulate the stock price of the broad index (DSEX) and a portfolio constructed basing on lots of fundamental criteria. The study will judge whether there exists any relationship between political events and capital market returns, and will also find out in which sensitivity level, the events impact the capital market returns. This study will help all the stakeholders of capital market to invest with knowledge during political events and investment strategies to adopt during such events. The study will also recommend the authorities with measures to be taken to stabilize and smoothen political impacts.

As primary research questions, firstly, the research tends to understand whether political events significantly impact capital market returns in Bangladesh. Secondly, how many days the political events take to have maximum sensitivity to impact the capital market returns in Bangladesh. The study, in secondary objectives, wants to inform the authorities and the investors of informative decision-making measures to take during major political crises.

2. Literature Review

Different researches have been done to understand capital market's price movements in different countries around the world. A stock's price normally changes for different fundamental reasons.

In valuation strategy of a stock, it has been discussed that a share's market price is normally representative of the fundamental value it carries (Damodaran, 1994). In Discounted Cash Flow (DCF) approach, the value that comes should be the original market price. But a share price is impacted by different extraneous factors including political factors. In most of the cases, political factors are political events.

Bangladesh is a political economy (Haque & Chowdhury, 2020). Being a political economy, there exists significant chances that the stock price returns be impacted on the basis of the political events. So far, different studies have been done where different events' impacts have been analyzed on stock market returns. Using event studies methodology in such big events to analyze the ultimate impact on stock market returns, different windows of sensitivity can be considered. Also, calculating abnormal returns after adjusted

return calculation for a constructed portfolio is a basic methodology that has been seen in many studies to be followed to find final impacts.

The updated methodology that has been seen in this type of studies is calculating Cumulative Abnormal Returns (CARs) which finally get transformed into t-test and F-Test for finding difference of the means and variances of the similar data sets to prove the significance of the hypothesis (Kabiru et al., 2015). According to the study, depending on how volatile the electoral atmosphere is, market reactions to elections might be either very negative or favorable. Cumulative Abnormal Returns (CAR) analysis revealed that the general elections in 2002 and 2013 were unimportant, but the CAR events surrounding the general elections in 1997 and 2007 were discovered to be noteworthy at the 5% significance level. The study considered a portfolio that was randomly constructed and impact of election was seen on the portfolio.

Another study was done to understand the relationship between political instability and stock market returns (Irshad, 2017). This study looked into the connection between stock prices and political unrest. The study's findings showed a negative correlation between political unrest and stock prices. Furthermore, the data indicated that a political system that is unstable eventually causes stock prices to drop. While industrial production and exports have a positive link with stock prices, inflation has been found to have a negative relationship with stock prices.

An event-based analysis to judge relation between political events of Pakistan with its stock market was done in 2022 (Audi et al., 2022). The Pakistan Stock Exchange is impacted by political events, according to this study's findings, but the effects vary depending on the events' political and economic ramifications. Some events, like the assassination of Benazir Bhutto, the chief justice's suspension, and Musharraf's takeover, had a greater effect on the stock market than others.

Another recent study has been done on Sri Lankan stock exchange in Colombo (Kumara & Fernando, 2021) where results from the t-test and the computed average abnormal return supported the idea that political developments affect the market index, albeit not by much. Additionally, research showed that investors tend to overreact to positive political news and underreact to negative news. However, the nature of the event and its marketability determine the impact's directions on the research topic.

Similar level study was done on EU and neighboring areas where political instability was simulated with (Hartwell, 2017) the stock market returns. It was discovered that informal political volatility significantly lowers stock returns when asymmetric Generalized Autoregressive Conditional Heteroskedasticity (GARCH) modelling was applied to monthly data, although formal political institutions produce significantly more financial volatility than monetary policy changes.

As it is very common that the subcontinental stock exchanges of the Asia-Pacific are highly susceptible to changes in political events, the Pakistani stock exchanges are researched highly in this regard for having high volatilities. The study on Pakistan found that political stability has significant positive impact on the stock market performance while, political instability has negative impact on stock market performance. Moreover, other governance indicators have a significant positive impact on performance (Mai et al., 2023).

3. Research Gap and Distinguishments

- Earlier studies have considered either only portfolio measures or Index measure. But a complete study should incorporate both of them which is done in this study.

• In Bangladesh aspect, studies have been done on impact of elections on stock market (Roy, 2021), but no study as of author's last knowledge, specify the field of broad political events that observe impact on stock returns in Bangladesh perspective.

• The studies done so far did not consider any theoretical framework-based knowledge to find impacts from multiple angles.

• Some studies which worked on portfolio construction did not set criteria on which portfolio construction have been done that is considered in this study.

4. Theoretical Framework

The research on "Does Political Events Impact Capital Market Returns in Bangladesh?" is based on a conceptual framework that connects the capital market returns to the political instability in Bangladesh. The framework is shown in Figure 2:

Figure 2: Theoretical Framework of Links that Connect Political Essence to Capital Market Returns
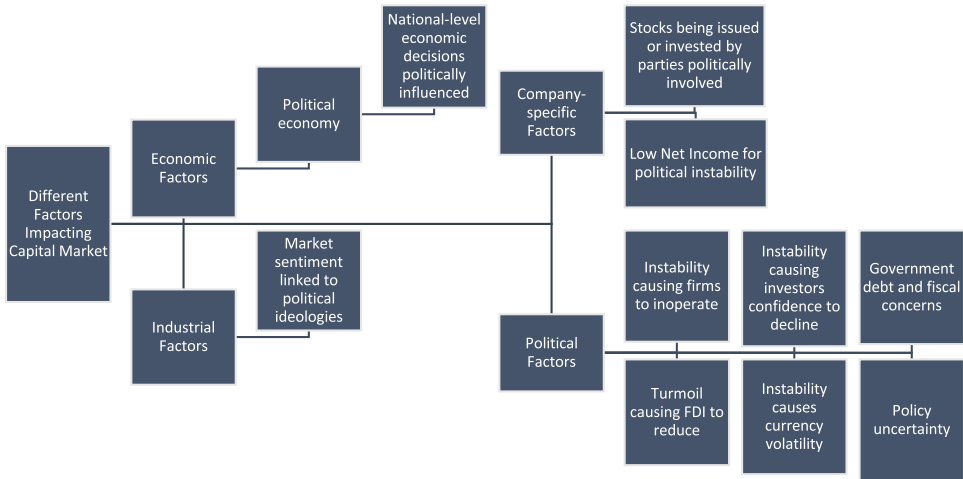
Source: Author Generated

There are different factors that can impact a country's capital market return. In Bangladesh, the authors have tried to link every core factor that are the predecessor of stock market returns. Stock market return generated from upward movement of stock prices is mainly a factor found from fundamental analysis (Damodaran, 1994). Again, the intelligent investors will always buy low and sell high and this will be repeated based on different analyses like economy analysis, industry analysis and company analysis ((Graham & Zweig, 2006). While discussing the economic factors, political economy is the most important segment that is pertinent to Bangladesh (Hossain & Rashid, 1999). In

Bangladesh, national-level economic decisions are also connected to political economy and political interference (BTI, 2022). When analyzing the industry for understanding the stock price movements, it is very much important to determine the market sentiment linked to political factors (Hartwell, 2017). After that, during company analysis, the analysts compare financial statements of historical and comparable companies' information to judge the stock. When a firm being listed is sponsored by politically affiliated person/s or a lion's share of the capital is owned by politically involved people, scenario of price fluctuations can be impacted or correlated firmly with political events (Sajid Nazir et al.,

2014). As we know, net income is the key source of fundamental valuation strategies using discounted cash flow method, so, impact on firms due to political instability can impact the net income firmly causing share price to fluctuate (Damodaran, 1994). Finally, political factors directly can impact in different manners. Sometimes, instability in political actions can cause firms to stop or be inoperative for a long time. In Bangladesh, political gatherings and complete shutdown declared from opposition parties and Islamic communities caused many working days to be shut down in 2014. Investors' confidence also gets down in such conditions. The currency volatility and foreign exchange reserves cannot be benign in these conditions. As the government policies and fiscal policies cannot operate fully during political shutdown, the capital market cannot operate in full swing and also many of the shares' cost of funds increase dramatically (Galasso, 2022). Thus, the full framework finds out, how political instability can impact the stock market returns from every possible angle.

4.1 Hypothesis Formation

As capital market returns are to be tested with respect to political crises in Bangladesh, two studies were conducted in the perspective of Pakistan in 2014. The studies (Sajid Nazir et al., 2014) and (Murtaza et al., 2015) hypothesized that there exists significant relationship between political events and stock markets. In this study, basing on the research questions, the following hypotheses have to be tested:

H_a1: There exists significant relation between major political events and capital market returns in Bangladesh.

The hypothesis has to be tested using t-test and F-Test. The t-test will find out whether there exists any significant difference between the means of the CARs data sets. The F-Test will determine whether there exists any significant difference between the variances between the CARs data sets.

5. Methodology of the Study

The updated methodology that has been seen in this type of studies is calculating Cumulative Abnormal Returns (CARs) which finally get transformed into t-test and F-Test for finding difference of the means and variances of the similar data sets to prove the significance of the hypothesis ((Kabiru et al., 2015). The major political events from 2005 to 2023 are considered in this study and relevant expectations of impacts on stock market is briefly summarized below:

Table 1: Event Selection

Sl.	Event	Event Date	Expected Behavior of the Market	
			Pre Event	Post Event
1.	Habiganj Grenade Attack - Assassination of Shah A M S Kibria	27.01.2005	Neutral	Down
2.	Iajuddin Ahmed Takes Oath as Chief Advisor of the Caretaker Government	29.10.2006	Neutral	Up
3.	State of Emergency Declared in the Whole Country	11.01.2007	Down	Down
4.	Former PM Sheikh Hasina Arrested on Corruption Charges	16.07.2007	Neutral	Down
5.	Former PM Begum Khaleda Zia Arrested on Corruption Charges	03.09.2007	Neutral	Down
6.	9th Bangladesh General Election- 2008	29.12.2008	Down	Up

7.	Bangladesh Rifles Mutiny	25.02.2009	Neutral	Down
8.	Shahbagh Protests Demanding Punishment of War Criminals	05.02.2013	Neutral	Neutral
9.	10th Bangladesh General Election- 2014	05.01.2014	Down	Up
10.	Khaleda Zia's Arrest Warrant Issued	25.02.2015	Neutral	Neutral
11.	Execution of Jamaat-e- Islami Leader Muhammad Kamaruzzaman	11.04.2015	Neutral	Down
12.	BNP Chairperson Khaleda Zia, as Per Court Verdict, Jailed for 5 years	02.02.2018	Neutral	Down
13.	Jatiya Oikya Front's Ultimatum	22.09.2018	Neutral	Down
14.	Court Verdict of Lutfuzzaman Babar and Tariqe Rahman against 2004 Grenade Attack	10.10.2018	Down	Down
15.	11th Bangladesh General Election- 2018	30.12.2018	Down	Up
16.	DUCSU Election-2019	11.03.2019	Neutral	Neutral
17.	UP Election-2021	12.11.2021	Down	Up
18.	Dhaka College-New Market Shop Owners Clash	19.04.2022	Neutral	Down
19.	Announcement of 12th General Election-2023	15.11.2023	Down	Down

Source: Author Generated

The following table represents the stocks chosen for the study. This is the portfolio of the stocks that have been chosen to analyze the price movements. The basis of the portfolio construction including the following stocks are as follows:

1. Representation from different sectors of Dhaka Stock Exchange Limited (DSE) has been considered in this portfolio construction.

2. As Dhaka Stock Exchange Limited includes 65% 'A category stocks' and 29% 'B category' stocks, so, the portfolio construction included majorly 'A category' and 'B category' shares.

3. The shares that are performing since 2005 have been considered (GSK has closed operation 3 years ago for which events after 2019 have been considered blank for GSK while analyzing).

4. Stock choosing criteria has also included trading percentage. It means that, the shares with high trading frequencies and mostly well-known ones are considered here.

5. The shares which are popular with regular dividend (Cash, bonus, and stock) disbursement level have been prioritized in this portfolio construction model.

Table 2: Portfolio Construction (Based on Above Criteria)

Islami Bank Bangladesh Limited	Padma Oil Company Limited
Rupali Bank Limited	United Insurance Limited
The City Bank Limited	Intech Limited
Heidleberg Cem ent Bangladesh Limited	Northern Jute Manufacturing Company Limited
Monno Ceramics Industries Limited	Usmania Glass Sheet Factory Limited
Anwar Galvanazing Limited	GlaxoSmithKline (GSK) Bangladesh Limited
Olympic Industries Limited	ACI Limited
British A merican Tobacco Bangladesh Company Limited	The IBN SINA Pharmaceutical Industry Limited
Bata Shoe Company (Bangladesh) Limited	Apex Footwear Limited
Square Textile s Limited	Stylecraft Limited

Source: Author Generated

5.1 Data Analysis Strategy

Step 1- Defining the Event Window: In this analysis, two separate windows have been considered for understanding the sensitivity a political event takes to absorb in the capital market stock prices. The windows are: 5 days pre and post event window and 15 days pre and post event window.

Step 2: In this step, price data of both DSEX and portfolio have been adjusted with the following key issues:

a) Cash dividend
b) Stock dividend
c) DGEN conversion to DSEX in 2011
d) Stock Split
e) Bonus Issue

Step 3- Estimating a "Normal" Return of an Event Window without the occurrence of the Event: At first, the study calculated the changes recorded in share prices to determine the actual return. The formula to calculate the actual return is:

$$\text{Actual Return} = \frac{Pt - Pt - 1}{Pt - 1} \times 100 \qquad (1)$$

Where;

P_t = Price of the security i at time t

P_{t-1} = Price of the security at time t-1

The changes happened in the DSE index for the identical period were calculated too. This result was expressed as the market return. The DSEX return has been computed for determining the Abnormal Return that is also called Alpha. For determining this Market Return, the following formula has been used:

$$\text{Market Return} = \frac{DSEXt - DSEXt - 1}{DSEXt - 1} \qquad (2)$$

Step 4: Estimating the "abnormal" return within the event window, where the abnormal return is characterized as the difference between the real and anticipated returns without the occurrence of the event.

The research applied the following model to get abnormal returns.

Abnormal Return=Actual Returns - Expected Returns

Step 5: In this step, Cumulative Abnormal Returns (CARs) are calculated by adding down the values of Abnormal Returns (ARs) for DSEX adjusted return series and Portfolio adjusted return series.

Step 6: In this step, the determination of the Cumulative Abnormal Return (CARs) is the preliminary focus that is addition of the abnormal returns over the timeframe of event periods. There will be the following steps:

● The event-wise 15 days before-after data series will be presented in two separate columns for the selected twenty stocks. Thus, Cumulative Abnormal Returns (CARs) will be calculated for the conduction of the study. CAR is the cumulative difference between the stock returns within the time period. Return series for DSEX index will be calculated using the same approach.

● The event-wise 5 days before-after data series will be prepared in two separate columns of the average of the twenty stocks' Cumulative Abnormal Returns. The same will be done for the calculation of DSEX index return.

● Then, using STATA 12.1 Version, the t-test, F-Test, Descriptive Statistics will be calculated from the data series. This will help us to identify the significance of the deviation or variance in the return series with respect to any particular political event.

● From these studies, whether there exists any significant difference in stock market returns due to political events exists or not will be determined.

6. Analysis and Results

6.1 Test of Significance of Difference between the Means of CARs (t-test)

Table 3: t-test Results for the Events

Event Serial	Events	Indices	5 Days Window t-test (P Value)	15 Days Window t-test (P Value)
01	Habiganj Grenade Attack – Assassination of Shah A M S Kibria	DSEX Index Return	0.3467	0.0699*
		Portfolio Return	0.2716	0.0650*
02	Iajuddin Ahmed Takes Oath as Chief Advisor of the Caretaker Government	DSEX Index Return	0.4805	0.1444
		Portfolio Return	0.2354	0.5135
03	State of Emergency Declared in the Whole Country	DSEX Index Return	0.3626	.1941
		Portfolio Return	0.3920	.004
04	Former PM Sheikh Hasina Arrested on Corruption Charges	DSEX Index Return	.4024	0.8303
		Portfolio Return	.6740	0.3286
05	Former PM Begum Khaleda Zia Arrested on Corruption Charges	DSEX Index Return	0.3355	0.2589
		Portfolio Return	0.8245	0.4975
06	9th Bangladesh General Election– 2008	DSEX Index Return	0.0791*	0.0519*
		Portfolio Return	0.0046***	0.0186**
07	Bangladesh Rifles Mutiny	DSEX Index Return	0.5022	0.0374**
		Portfolio Return	0.2081	0.0021***
08	Shahbagh Protests Demanding Punishment of War Criminals	DSEX Index Return	0.4342*	0.0599*
		Portfolio Return	0.0046***	0.0102**
09	10th Bangladesh General Election– 2014	DSEX Index Return	0.4481	0.0162**
		Portfolio Return	0.5155	0.0331**
10	Khaleda Zia's Arrest Warrant Issued	DSEX Index Return	0.2727	0.0337**
		Portfolio Return	0.1661	0.0152**
11	Execution of Jamaat–e– Islami Leader Muhammad Kamaruzzaman	DSEX Index Return	0.3246	0.7023
		Portfolio Return	0.1101	0.0102**
12	BNP Chairperson Khaleda Zia, as Per Court Verdict, Jailed for 5 years	DSEX Index Return	0.4289	0.0214**
		Portfolio Return	0.0094***	0.0379**
13	Jatiya Oikya Front's Ultimatum	DSEX Index Return	0.3864	0.0555*
		Portfolio Return	0.0017***	0.0950*
14	Court Verdict of Lutfuzzaman Babar and Tariqe Rahman against 2004 Grenade Attack	DSEX Index Return	0.0791*	0.4553
		Portfolio Return	0.0045***	0.8275
15	11th Bangladesh General Election– 2018	DSEX Index Return	0.5189	0.0614*
		Portfolio Return	0.5905	0.0927*
16	DUCSU Election–2019	DSEX Index Return	0.0896*	0.0774*
		Portfolio Return	0.0756*	0.0985*
17	UP Election–2021	DSEX Index Return	0.2417	0.1329
		Portfolio Return	0.0991*	0.0741*
18	Dhaka College-New Market Shop Owners Clash	DSEX Index Return	0.5087	0.3004
		Portfolio Return	0.3028	0.0748*
19	Announcement of 12th General Election-2023	DSEX Index Return	0.1421	0.0865*
		Portfolio Return	0.0961*	0.0705*

Source: Author Generated
Here,

*** Stands for 99% Confidence interval, ** Stands for 95% Confidence interval, * Stands for 90% Confidence interval

The t-test results show whether there exists any significant difference between the means of the events' 5 days window of two data sets of CARs and 15 days window of two data sets of CARs. The result shows that, in case of DSEX 5 days window, event number 06, 08, 14, and 16 are significant at 90% confidence interval. On the other hand, in case of DSEX 15 days window, event number 01, 06, 08, 13, 15, 16 and 19 are significant at 90% confidence interval, while event number 03, 07,09, 10, and 12 are significant at 95% confidence interval.

In case of portfolio return 5 days window, event number 16, 17, and 19 are significant at 90% confidence interval, while event number 06, 08, 12, 13, and 14 are significant at 99% confidence interval. In case of portfolio return 15 days window, event number 01, 03, 13, 15, 16, 17, 18, and 19 are significant at 90% confidence interval, while event number 06, 08, 09, 10, 11, and 12 are significant at 95% confidence interval. In case of event 07, portfolio return is significant at 99% confidence interval.

6.2 Test of Significance of Difference between the Variances of CARs (F-Test)

Table 4: F-Test Results for the Events

Event Serial	Events	Indices	5 Days Window F-Test (P Value)	15 Days Window F-Test (P Value)
01	Habiganj Grenade Attack – Assassination of Shah A M S Kibria	DSEX Index Return	0.7612	0.1741
		Portfolio Return	0.0406**	0.0004***
02	Iajuddin Ahmed Takes Oath as Chief Advisor of the Caretaker Government	DSEX Index Return	0.4064	0.7082
		Portfolio Return	0.1078	0.5211
03	State of Emergency Declared in the Whole Country	DSEX Index Return	0.4050	0.1941
		Portfolio Return	0.3265	0.004***
04	Former PM Sheikh Hasina Arrested on Corruption Charges	DSEX Index Return	0.4024	0.3280
		Portfolio Return	0.6740*	0.0033***
05	Former PM Begum Khaleda Zia Arrested on Corruption Charges	DSEX Index Return	0.4083	0.6249
		Portfolio Return	0.8976	0.2734
06	9th Bangladesh General Election- 2008	DSEX Index Return	0.4662	0.1514
		Portfolio Return	0.7414	0.0709*
07	Bangladesh Rifles Mutiny	DSEX Index Return	0.3887	0.0346**
		Portfolio Return	0.3522	0.0305**
08	Shahbagh Protests Demanding Punishment of War Criminals	DSEX Index Return	0.3929	0.8069
		Portfolio Return	0.2825	0.6969
09	10th Bangladesh General Election- 2014	DSEX Index Return	0.3882	0.2699
		Portfolio Return	0.3059	0.0842*
10	Khaleda Zia's Arrest Warrant Issued	DSEX Index Return	0.4216	0.6613
		Portfolio Return	0.5445	0.0188**
11	Execution of Jamaat–e- Islami Leader Muhammad Kamaruzzaman	DSEX Index Return	0.4117	0.0732*
		Portfolio Return	0.8899	0.8450
12	BNP Chairperson Khaleda Zia, as Per Court Verdict, Jailed for 5 years	DSEX Index Return	0.3918	0.0033***
		Portfolio Return	0.3751	0.0030***

12	BNP Chairperson Khaleda Zia, as Per Court Verdict, Jailed for 5 years	DSEX Index Return	0.3918	0.0033***
		Portfolio Return	0.3751	0.0030***
13	Jatiya Oikya Front's Ultimatum	DSEX Index Return	0.4013	0.0026***
		Portfolio Return	0.2296	0.0752*
14	Court Verdict of Lutfuzzaman Babar and Tariqe Rahman against 2004 Grenade Attack	DSEX Index Return	0.4662	0.5235
		Portfolio Return	0.7414	0.4660
15	11th Bangladesh General Election- 2018	DSEX Index Return	0.3783	0.0329**
		Portfolio Return	0.6392*	0.0041***
16	DUCSU Election-2019	DSEX Index Return	0.1459	0.0997*
		Portfolio Return	0.3551	0.0874*
17	UP Election-2021	DSEX Index Return	0.2332	0.1874
		Portfolio Return	0.1661	0.0678*
18	Dhaka College-New Market Shop Owners Clash	DSEX Index Return	0.2114	0.0965*
		Portfolio Return	0.2001	0.0951*
19	Announcement of 12th General Election-2023	DSEX Index Return	0.3991	0.1947
		Portfolio Return	0.2965	0.1423

Source: Author Generated

Here,

*** Stands for 99% Confidence interval, ** Stands for 95% Confidence interval, * Stands for 90% Confidence interval

The F-Test results show whether there exists any significant difference between the variances of the events' 5 days window of two data sets of CARs and 15 days window of two data sets of CARs. In case of DSEX 5 days window, all of the events are proved to be insignificant. In case of DSEX 15 days window, event 11, 16, and 18 are significant at 90% confidence interval, while event 07 and 15 are significant at 95% confidence interval and event 12 and 13 are significant at 99% confidence interval.

In case of portfolio return 05 days window, event number 04 and 15 are significant at 90% confidence interval, while event number 01 is significant at 95% confidence interval. In case of Portfolio return 15 days window, event number 06, 09, 13, 16, 17, and 18 are significant at 90% confidence interval, while event number 07 and 10 are significant at 95% confidence interval and event number 01, 03, 04, 12, and 15 are significant at 99% confidence interval.

7. Findings

As the study includes multi-dimensional outputs from 19 political events having consequence over stock market returns, so, averaging the p values for t-tests found from DSEX and portfolio return, the final statistical significance for finding out the difference between the means of CARs in 5 days window and 15 days window can be determined. Based on the event wise analysis and results for five days and fifteen days, the following summary table can be represented:

Table 5: Overall Summary

Sl.	Political Events	Statistical Significance	
		For 5 days Period	**For 15 Days Period**
1.	Habiganj Grenade Attack - Assassination of Shah A M S Kibria	No	Yes
2.	Iajuddin Ahmed Takes Oath as Chief Advisor of the Caretaker Government	No	No
3.	State of Emergency Declared in the Whole Country	No	Yes
4.	Former PM Sheikh Hasina Arrested on Corruption Charges	No	No
5.	Former PM Begum Khaleda Zia Arrested on Corruption Charges	No	No
6.	9th Bangladesh General Election- 2008	Yes	Yes
7.	Bangladesh Rifles Mutiny	No	Yes
8.	Shahbagh Protests Demanding Punishment of War Criminals	No	No
9.	10th Bangladesh General Election- 2014	Yes	Yes
10.	Khaleda Zia's Arrest Warrant Issued	No	Yes
11.	Execution of Jamaat-e- Islami Leader Muhammad Kamaruzzaman	No	Yes
12.	BNP Chairperson Khaleda Zia, as Per Court Verdict, Jailed for 5 years	No	No
13.	Jatiya Oikya Front's Ultimatum	No	Yes
14.	Court Verdict of Lutfuzzaman Babar and Tariqe Rahman against 2004 Grenade Attack	No	No
15.	11th Bangladesh General Election- 2018	Yes	Yes
16.	DUCSU Election-2019	No	Yes
17.	UP Election-2021	No	Yes
18.	Dhaka College-New Market Shop Owners Clash	No	Yes
19.	Announcement of 12th General Election-2023	No	No

Source: Author Generated

- Both of the alternative hypotheses can be accepted based on the results.

- Based on the above table, we can see that in case of five days event only political event like election has significant impact on the stock market of Bangladelsh. The other political events have little or no significant impact with respect to the stock market behavior of Bangladesh.

- In case of fifteen days period, it is found that minor political events have little or even no significant impact on the stock market of Bangladesh. Only the major political events and elections have significant impact on the stock market of Bangladesh.

- The "Mode" of 5 days window for statistical significance is "No" that means, there exists no significant difference between the means of CARs before the events and after the events. This means that political events in 5 days window do not impact stock market return.

- The "Mode" of 15 days window for statistical significance is "Yes" that means, there exists significant difference between the means of CARs before the events and after the events.

This means that political events in 15 days window significantly impact stock market return.

The impact level of political events to capital market returns by the 5 days window and 15 days window is graphically presented in the following chart:

Figure-3: Political Events Impact on Capital Market Returns in Different Windows

Political Events' Impact on Capital Market Return in DSE

■ For 5 days Period ■ For 15 days Period
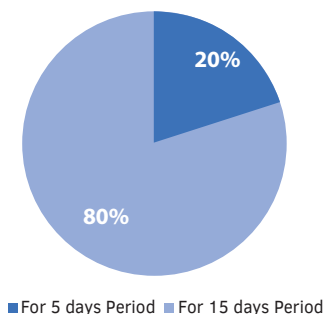
Source: Author Generated

• The figure above represents the other outcome of the research. The figure represents the sensitivity level to what the events knock the capital market returns. The statistical results represent that in case of 5 days window, political events are less sensitive to capital market return which is 20% of the total sensitivity applicable to capital market returns. On the other hand, 15 days impact shows that political events are mostly sensitive to the capital market returns that is 80% of the total sensitivity applicable to capital market returns.

8. Discussion

Bangladesh, being a political economy, is highly susceptible to political actions. We know that a stock's daily price is the final indicator of the fundamental value of that particular stock. The fundamental value is the indicator of financial, industrial and economical condition of that stock. But a stock is also affected by news, specifically market news. Being a political economy, that market news is also inclusive of political news. Thus, implication of findings applicable for key stakeholders of stock market are important to understand.

8.1 Implication of Findings for Institutional Investors

Every institutional investor should take investment decisions based on fundamental values, technical analysis, and perception relating to long term focus regarding capital market. Institutional investors should not gamble like speculators that is based on zero information. As the study found that there exist no significant reasons except for public sentiments and perceptions that transform into herd instinct to negatively mobilize the shocks in capital market. Political impacts seem to be neutralized in 90 days window that is the resilience shock period. So, frequent trading is discouraged if market is down ward-sloping. Institutional investors are also suggested to invest in 'A category' fundamental stocks and hold the portfolio during political unrest. The companies' stocks which are political financers in different parties directly or indirectly may seem to be having different shocks in capital market returns more than other companies' stocks. Thus, bulk investors should consider the companies' affiliation with political parties during probability of occurring such events.

8.2 Implication of Findings for General Investors

During different significant events, it has been seen that brokers try to trade on shares which are more fragile. Every general investor should stay away from brokers' herding behaviours that transfer perception from one investor to another. Also, one important thing has been found that unless market movements and forecasts are clear, a general investor should refrain from trading activities during political turmoil. Without understanding the fact that finan-

cial education is mandatory to find out proper stocks to invest, it will be very difficult to avoid herd instinct in picking stocks and trading dynamics. Thus, general investors should learn fundamental analysis, financial statement analysis, and forecasting strategies for picking shock-resilient stocks for investment. Also, general investors should understand that money flow is dependent on financial backbone and investors' confidence on companies. Thus, good stocks are better options for investment. Finally, investors education has to be increased. Different websites provide stock information that has to be properly known to the investors. Thus, an investor must understand the way to choose best stocks and mechanism to synthesize the market news.

8.3 Implication of Findings to Policy Makers

Bangladesh Securities and Exchange Commission (BSEC) must increase retardation to price volatility during major political events. Being the only regulator and controller, BSEC has the responsibility to understand market pulses and dynamics that may have influences from political events. Volatility due to external events are not constructive, rather syndication volatility or, derivative volatility. Political events transformed volatility is a derivative volatility that is indirect volatility causing impact on stock price. So, it is a market noise that should be addressed in surveillance by the BSEC. The regulator should find out 'political linked' stocks which can be restricted to trade during political events on the judgement that they make the market less

resilient during turmoil. Proper financial education program should be introduced so that investors can understand the externalities and impact assessment due to such unaffiliated noises.

9. Conclusion

The main goal of this research is to find out the relationship of the stock market returns of Bangladesh with political instability. DSEX index returns and portfolio returns were considered as the proxy variables to find out the impact on stock returns during the selected political events. It was expected that political events should have a mixed effect mostly neutral on the stock market returns in Bangladesh. But the result found that at short span (5 days) of the events, stock price seems to be less reflecting of any changes while at comparatively higher span (15 days), the political events have a significant sensitivity to the stock price volatility and returns. The findings show that there exists 20% sensitivity of the total sensitivity captured in relation between political events and stock price returns in case of 5 days window and 80% sensitivity of the total sensitivity captured in relation between political events and stock price returns in case of 15 days window. As an event study always focuses on lag values, the study accomplishes the fact that there exists significant relationship between major political events and capital market returns of Bangladesh which must be a scope of optimization that rests in the hands of capital market controlling authority of Bangladesh to safeguard investors and stakeholders relevant to investments.

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Appendix

1. Average CARs of Portfolio (5 Days Window)

5 Days Average CARs of Portfolio

Average CARs of Portfolio		
	Before	After
27.01.2005	0.222	-0.006
29.10.2006	-0.186	-0.076
11.01.2007	-0.046	-0.150
16.07.2007	0.036	0.054
03.09.2007	-0.046	-0.012
29.12.2008	-0.213	0.532
25.02.2009	0.321	-0.094
05.02.2013	0.319	-0.242
05.01.2014	-0.020	-0.002
25.02.2015	0.456	-0.075
11.04.2015	0.612	-0.155
02.02.2018	0.448	-0.312
22.09.2018	0.346	-0.185
10.10.2018	0.009	-0.039
30.12.2018	-0.214	-0.125
11.03.2019	0.213	0.046
12.11.2021	0.084	0.021
19.04.2022	0.015	-0.031
15.11.2023	0.154	0.140

5 Days Average CARs of DSEX

Average CARs of DSEX		
	Before	After
27.01.2005	-0.008	-0.007
29.10.2006	0.010	-0.006
11.01.2007	0.012	0.000
16.07.2007	0.004	0.008
03.09.2007	0.017	0.002
29.12.2008	-0.002	0.007
25.02.2009	-0.002	-0.015
05.02.2013	0.000	0.004
05.01.2014	-0.001	0.007
25.02.2015	0.000	-0.004
11.04.2015	-0.006	0.000
02.02.2018	-0.006	0.007
22.09.2018	-0.002	-0.002
10.10.2018	0.003	-0.002
30.12.2018	0.005	0.011
11.03.2019	0.004	0.004
12.11.2021	0.008	0.002
19.04.2022	0.004	0.010
15.11.2023	0.005	0.006

2. Average CARs of Portfolio Chart (5 Days Window)

Cumulative Abnormal Returns – 5 Days Period

DSEX Index Return -5 Days Period
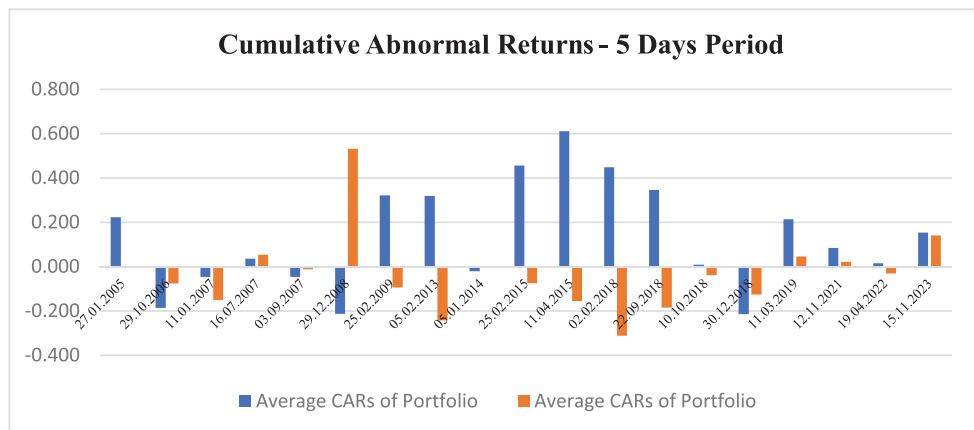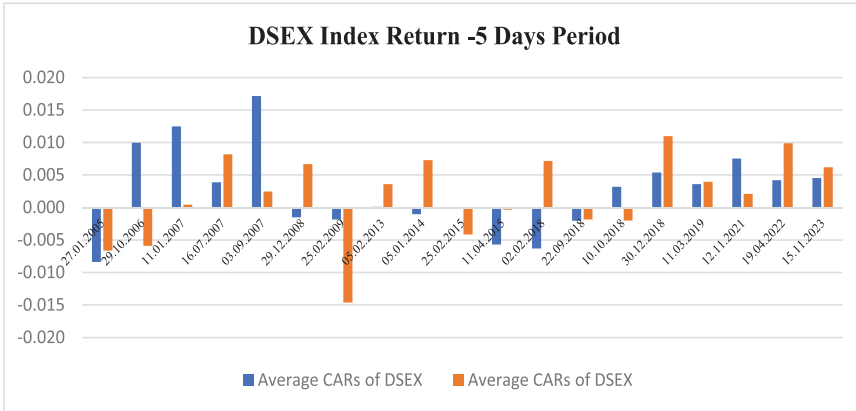
3. Abnormal Return Series for Events (5 Days Window)

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days Period	
Before	After	Before	After
0.002	-0.018	0.091	0.363
-0.019	0.006	0.363	-0.404
-0.012	0.005	0.212	-0.246
-0.008	-0.009	0.218	0.044
-0.004	-0.018	0.227	0.212

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days Period	
Before	After	Before	After
0.012	-0.018	-0.273	0.266
0.005	-0.011	0.042	0.164
0.009	-0.002	-0.320	-0.274
0.020	0.008	-0.353	-0.375
0.003	-0.006	-0.024	-0.158

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
0.016	0.008	-0.214	-0.402
0.010	-0.004	-0.071	0.049
0.023	-0.001	-0.029	-0.116
0.004	-0.010	-0.050	0.055
0.010	0.009	0.135	-0.335

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
0.004	0.022	-0.156	-0.110
0.006	0.007	0.058	-0.078
0.004	0.009	0.072	0.048
-0.008	0.021	0.223	-0.309
0.013	-0.018	-0.018	0.717

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
0.022	-0.021	-0.087	0.370
0.010	-0.002	0.047	0.435
0.013	0.003	-0.094	0.092
0.016	0.017	0.015	-0.541
0.025	0.015	-0.112	-0.413

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
-0.008	0.002	0.257	0.507
-0.029	0.020	0.583	0.174
0.029	-0.002	-0.244	-0.035
-0.002	0.011	0.267	0.270
0.002	0.002	-0.144	0.493

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
-0.001	0.010	0.367	-0.461
0.007	-0.013	0.118	0.189
-0.006	-0.030	0.390	0.492
-0.006	-0.006	0.394	0.013
-0.003	-0.034	0.816	0.578

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
0.000	0.003	0.515	-0.385
0.005	0.002	0.107	-0.058
0.008	0.006	-0.064	-0.304
-0.007	0.013	0.603	-0.414
-0.005	-0.006	0.431	-0.052

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
-0.006	0.008	-0.016	0.019
-0.009	0.014	0.142	-0.235
-0.007	0.004	0.161	0.138
0.002	0.007	-0.063	-0.102
0.014	0.004	-0.327	0.169

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
0.000	-0.005	0.207	-0.240
-0.003	-0.004	0.217	0.032
0.003	-0.005	0.416	0.072
0.001	-0.003	0.665	-0.165
-0.002	-0.004	0.775	-0.075

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
-0.009	0.016	0.403	-0.667
-0.008	0.003	0.462	-0.113
-0.012	0.000	0.724	-0.030
0.000	-0.015	0.694	0.062
0.000	-0.006	0.775	-0.028

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
-0.011	0.014	0.432	-0.519
0.005	-0.002	0.155	-0.110
-0.008	0.005	0.553	-0.245
-0.014	0.022	0.646	-0.568
-0.003	-0.002	0.457	-0.116

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
0.003	-0.002	0.148	-0.213
-0.003	-0.007	0.327	-0.018
0.000	0.002	0.400	-0.193
0.002	0.002	0.319	-0.202
-0.011	-0.004	0.624	-0.071

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
0.002	0.002	0.081	0.023
0.008	-0.011	-0.320	0.001
-0.002	0.003	0.117	-0.143
0.006	-0.004	-0.024	0.151
0.003	0.000	0.191	-0.225

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
0.004	0.006	-0.034	0.187
0.003	0.017	-0.320	-0.253
0.003	0.017	-0.076	-0.346
0.009	-0.006	-0.313	-0.002
0.007	0.020	-0.326	-0.213

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
0.004	0.008	0.234	0.040
0.003	0.009	0.222	0.050
0.003	0.009	0.276	0.087
0.006	-0.006	0.201	0.002
0.005	-0.002	0.132	0.047

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
0.009	0.008	0.117	0.402
0.006	0.009	0.007	0.039
0.017	0.016	0.029	-0.116
0.007	-0.010	0.140	0.015
0.003	-0.012	0.125	-0.235

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
0.009	0.008	0.117	0.402
0.006	0.009	0.007	0.039
0.017	0.016	0.029	-0.116
0.007	-0.010	0.140	0.015
0.003	-0.012	0.125	-0.235

CAR Series of DSEX- 5 Days Period		CAR Series of Portfolio- 5 Days	
Before	After	Before	After
0.009	0.008	0.070	0.395
0.006	0.009	0.099	0.039
0.017	0.016	0.124	0.101
0.007	-0.010	0.228	0.014
0.003	-0.012	0.249	0.150

4. Average CARs of Portfolio and DSEX (15 Days Window Table)

15 Days Average CARs of Portfolio

Average CARs of Portfolio		
	Before	After
27.1.2005	0.149	0.081
29.10.2006	-0.036	0.047
11.01.2007	0.040	-0.155
16.7.2007	0.058	0.030
03.09.2007	-0.006	-0.007
29.12.2008	-0.205	0.243
25.02.2009	0.282	-0.081
05.02.2013	0.336	-0.160
05.01.2014	-0.026	0.106
25.02.2015	0.210	-0.031
11.04.2015	0.310	-0.058
02.02.2018	0.259	0.057
22.09.2018	0.264	0.171
10.10.2018	0.026	0.041
30.12.2018	-0.136	0.004
11.03.2019	0.252	-0.156
12.11.2021	0.165	-0.121
19.04.2022	0.095	-0.131
15.11.2023	0.224	-0.120

15 Days Average CARs of DSEX

Average CARs of DSEX		
	Before	After
27.1.2005	-0.007	-0.009
29.10.2006	0.003	-0.005
11.01.2007	0.008	0.003
16.7.2007	0.005	0.003
03.09.2007	0.008	0.003
29.12.2008	-0.003	0.008
25.02.2009	0.001	0.000
05.02.2013	-0.001	0.003
05.01.2014	-0.001	0.007
25.02.2015	0.002	-0.005
11.04.2015	-0.002	-0.003
02.02.2018	-0.001	-0.001
22.09.2018	0.000	-0.002
10.10.2018	0.000	-0.002
30.12.2018	0.000	0.005
11.03.2019	0.004	-0.003
12.11.2021	0.008	-0.004
19.04.2022	0.004	-0.001
15.11.2023	0.005	0.001

5. Average CARs of Portfolio and DSEX (15 Days Window Chart)

Average CARs for Portfolio-15 Days

Average CARs for DSEX-15 Days
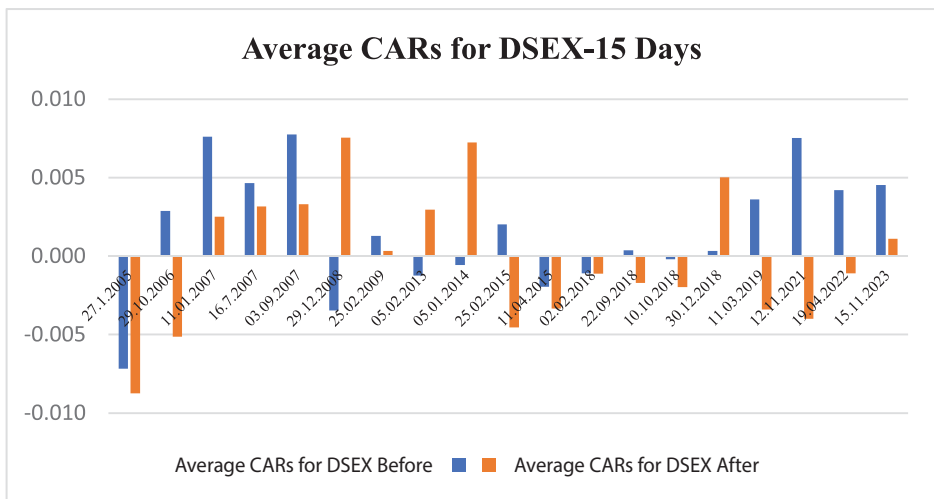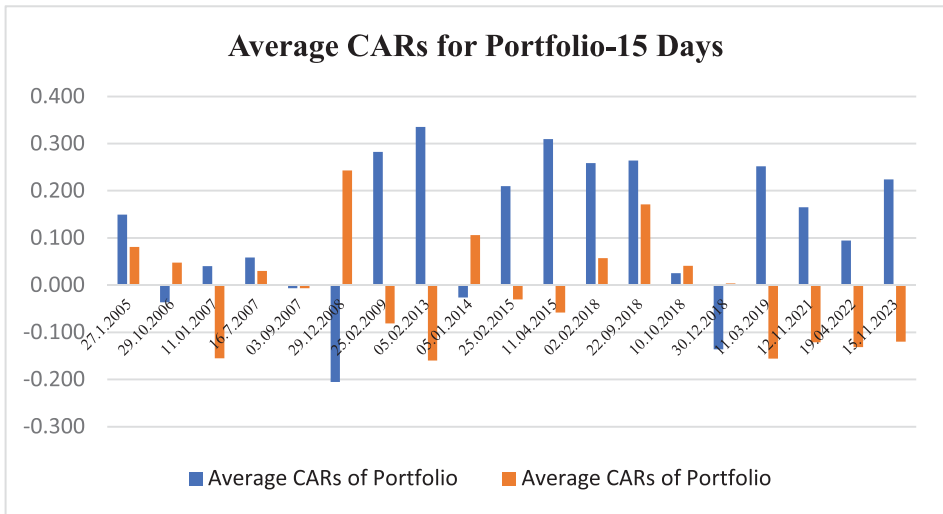
6. Abnormal Return Series for Events (15 Days Window)

CAR Series of DSEX- 15 Days Period		CAR Series of Portfolio- 15 Days Period	
Before	After	Before	After
-0.011	-0.018	0.528	0.363
0.006	0.006	-0.212	-0.404
0.002	0.005	-0.252	-0.246
-0.006	-0.009	-0.664	0.044
-0.001	-0.018	0.834	0.212
0.002	-0.012	0.401	0.102
0.004	-0.026	-0.429	0.376
-0.001	-0.039	0.208	0.709
-0.002	-0.031	0.568	0.433
0.002	-0.066	0.091	1.143
0.006	0.061	0.363	-1.405
0.009	0.040	0.212	-0.642
-0.006	0.006	0.218	0.116
-0.004	-0.022	0.227	0.336

CAR Series of DSEX- 15 Days Period		CAR Series of Portfolio- 15 Days Period	
Before	After	Before	After
0.005	-0.018	-0.234	0.266
-0.020	-0.011	0.392	0.164
0.012	-0.002	-0.169	-0.274
0.030	0.008	-0.627	-0.375
0.003	-0.006	-0.148	-0.158
-0.001	0.002	0.131	-0.239
-0.012	0.002	0.354	0.213
-0.005	-0.003	0.230	-0.014
-0.022	-0.006	0.494	0.142
0.012	-0.002	-0.273	-0.323
0.005	-0.027	0.042	0.866
0.009	-0.014	-0.320	0.466
0.020	-0.021	-0.353	0.454
0.003	0.025	-0.024	-0.523

CAR Series of DSEX- 15 Days Period		CAR Series of Portfolio- 15 Days Period	
Before	After	Before	After
0.003	0.008	0.087	-0.402
-0.010	-0.004	0.323	0.049
0.002	-0.001	0.015	-0.116
0.010	-0.010	0.026	0.055
-0.001	0.009	0.263	-0.335
-0.001	0.006	0.233	-0.270
0.044	0.001	0.381	-0.175
-0.006	0.009	0.291	-0.362
0.003	0.008	0.204	-0.340
0.016	0.005	-0.214	-0.299
0.010	0.007	-0.071	-0.325
0.023	0.004	-0.029	0.092
0.004	0.001	-0.050	0.226
0.010	-0.007	0.135	0.035

CAR Series of DSEX- 15 Days Period		CAR Series of Portfolio- 15 Days Period	
Before	After	Before	After
0.017	0.022	-0.022	-0.110
0.015	0.007	-0.627	-0.078
-0.010	0.009	-0.039	0.048
0.006	0.021	0.435	-0.309
0.018	-0.018	-0.051	0.717
0.000	0.006	0.528	0.139
0.001	0.016	0.055	-0.397
0.004	-0.009	0.436	-0.101
-0.006	-0.006	-0.077	0.143
0.004	0.015	-0.156	-0.509
0.006	-0.013	0.058	0.909
0.004	0.011	0.072	-0.050
-0.008	-0.001	0.223	0.059
0.013	-0.016	-0.018	-0.037

CAR Series of DSEX- 15 Days Period		CAR Series of Portfolio- 15 Days Period	
Before	After	Before	After
-0.015	-0.021	0.203	0.370
-0.006	-0.002	0.246	0.435
0.026	0.003	-0.332	0.092
0.014	0.017	-0.340	-0.541
0.009	0.015	0.092	-0.413
0.000	-0.005	0.109	0.102
0.021	-0.009	-0.281	0.421
-0.011	-0.005	-0.027	-0.255
-0.015	-0.002	0.475	-0.153
0.022	0.003	-0.087	0.052
0.010	0.028	0.047	-0.345
0.013	0.011	-0.094	-0.049
0.016	-0.002	0.015	0.266
0.025	0.014	-0.112	-0.077

CAR Series of DSEX- 15 Days Period		CAR Series of Portfolio- 15 Days Period	
Before	After	Before	After
0.013	0.002	-0.552	0.507
-0.012	0.020	-0.040	0.174
-0.018	-0.002	-0.110	0.035
0.001	0.011	-0.143	0.270
-0.012	0.002	-0.138	0.493
-0.004	-0.003	-0.004	0.087
0.003	-0.012	0.072	0.427
-0.005	-0.011	-0.057	0.093
-0.006	0.016	0.186	0.485
-0.008	0.030	0.257	-0.375
-0.029	-0.002	0.583	-0.165
0.029	0.006	-0.244	0.096
-0.002	0.009	0.267	-0.182
0.002	0.038	-0.144	0.658

CAR Series of DSEX- 15 Days Period		CAR Series of Portfolio- 15 Days Period	
Before	After	Before	After
-0.003	0.010	0.570	-0.461
0.022	-0.013	-0.490	0.189
-0.011	-0.030	0.244	0.492
-0.009	-0.006	0.365	0.013
-0.008	-0.034	0.543	0.578
0.008	0.049	0.220	-1.081
0.026	0.011	-0.163	-0.330
0.001	-0.022	0.034	-0.092
0.002	-0.004	0.274	-0.211
-0.001	-0.010	0.367	-0.335
0.007	-0.011	0.118	0.292
-0.006	-0.003	0.390	0.052
-0.006	0.001	0.394	0.144
-0.003	0.002	0.816	-0.122

CAR Series of DSEX- 15 Days Period		CAR Series of Portfolio- 15 Days Period	
Before	After	Before	After
-0.012	0.003	0.518	-0.385
0.005	0.002	0.242	-0.058
0.001	0.006	0.262	-0.304
-0.008	0.013	0.530	-0.414
-0.002	-0.006	0.421	-0.052
0.001	0.000	0.462	-0.239
0.003	0.007	-0.022	-0.156
-0.002	0.002	0.265	-0.137
-0.003	0.009	0.429	-0.252
0.000	0.002	0.515	-0.125
0.005	0.000	0.107	-0.199
0.008	0.007	-0.064	-0.213
-0.007	0.001	0.603	-0.065
-0.005	-0.006	0.431	0.363

CAR Series of DSEX- 15 Days Period		CAR Series of Portfolio- 15 Days Period	
Before	After	Before	After
-0.003	0.008	-0.246	0.019
0.009	0.014	-0.434	0.235
0.001	0.004	-0.025	0.138
-0.008	0.007	0.323	0.102
-0.004	0.004	0.060	0.169
-0.002	0.009	0.041	0.084
-0.007	0.006	0.058	0.369
0.001	0.010	0.166	0.100
0.010	-0.003	-0.218	0.372
-0.006	0.008	-0.016	0.154
-0.009	0.012	0.142	0.254
-0.007	0.013	0.161	0.012
0.002	0.012	-0.063	0.122
0.014	-0.001	-0.327	0.606

CAR Series of DSEX- 15 Days Period		CAR Series of Portfolio- 15 Days Period	
Before	After	Before	After
0.004	-0.005	-0.036	-0.240
0.004	-0.004	-0.044	0.032
0.002	-0.005	0.303	0.072
0.016	-0.003	-0.130	-0.165
0.005	-0.004	-0.133	-0.075
0.006	-0.009	0.035	0.133
-0.002	0.000	0.215	-0.050
-0.013	0.005	0.382	-0.164
0.006	-0.014	0.065	0.078
0.000	-0.006	0.207	-0.055
-0.003	-0.005	0.217	0.080
0.003	-0.013	0.416	0.242
0.001	-0.008	0.665	-0.137
-0.002	0.006	0.775	-0.181

CAR Series of DSEX- 15 Days Period		CAR Series of Portfolio- 15 Days Period	
Before	After	Before	After
0.015	0.016	-0.255	-0.667
-0.006	0.003	0.143	-0.113
-0.003	0.000	0.423	-0.030
0.004	-0.015	0.121	0.062
0.011	-0.006	-0.264	-0.028
-0.011	-0.007	0.386	0.098
0.005	-0.014	0.079	0.240
-0.004	-0.023	0.260	0.401
-0.009	0.006	0.383	-0.317
-0.009	-0.005	0.403	-0.089
-0.008	-0.013	0.462	0.240
-0.012	-0.022	0.724	0.415
0.000	0.014	0.694	-0.580
0.000	0.019	0.775	-0.448

CAR Series of DSEX- 15 Days Period		CAR Series of Portfolio- 15 Days Period	
Before	After	Before	After
-0.010	0.014	0.307	-0.519
0.012	-0.002	0.102	-0.110
0.005	0.005	0.233	-0.245
0.004	-0.022	0.104	-0.568
0.004	-0.002	0.069	-0.116
0.008	0.001	0.104	1.847
0.002	0.002	0.179	-0.178
-0.001	-0.009	0.198	0.024
0.002	-0.016	0.085	0.155
0.011	-0.002	0.432	-0.126
0.005	-0.005	0.155	-0.026
-0.008	0.000	0.553	0.145
0.014	-0.013	0.646	0.460
-0.003	-0.010	0.457	0.060

CAR Series of DSEX-15 Days Period		CAR Series of Portfolio-15 Days Period	
Before	After	Before	After
0.005	-0.002	0.003	-0.213
0.001	-0.007	0.322	-0.018
-0.009	0.002	0.312	-0.193
0.005	0.002	0.084	-0.202
0.000	-0.004	0.147	-0.071
0.002	-0.002	0.219	-0.130
0.008	0.001	0.061	-0.175
-0.002	-0.003	0.123	-1.074
0.006	-0.005	0.024	0.144
0.003	-0.007	0.148	4.122
-0.003	-0.004	0.327	0.454
0.000	0.005	0.400	0.171
0.002	0.006	0.319	0.151
-0.011	-0.007	0.624	0.014

CAR Series of DSEX-15 Days Period		CAR Series of Portfolio-15 Days Period	
Before	After	Before	After
0.006	0.002	0.188	0.023
-0.007	-0.011	0.119	0.001
-0.010	0.003	0.085	-0.143
-0.011	-0.004	0.219	0.151
0.005	0.000	-0.128	-0.225
0.001	-0.009	0.011	0.039
-0.009	-0.015	0.050	0.526
0.005	0.000	-0.204	0.110
0.000	0.005	-0.027	0.001
0.002	0.001	0.081	-0.043
0.008	-0.013	-0.320	0.244
-0.002	0.007	0.117	-0.119
0.006	0.010	-0.024	-0.142
0.003	-0.003	0.191	0.145

CAR Series of DSEX-15 Days Period		CAR Series of Portfolio-15 Days Period	
Before	After	Before	After
-0.015	0.006	-0.037	0.187
-0.005	0.017	-0.301	-0.253
-0.002	0.017	-0.126	-0.346
-0.004	0.011	-0.095	-0.002
-0.002	0.020	-0.064	-0.213
-0.003	0.005	-0.164	-0.041
-0.006	0.000	-0.123	-0.005
0.003	0.011	0.022	-0.190
-0.002	-0.004	0.057	0.195
-0.004	0.005	-0.034	0.036
-0.003	-0.004	-0.320	0.067
0.003	-0.002	-0.076	0.325
-0.009	0.011	-0.313	-0.348
0.007	-0.005	-0.326	0.441

CAR Series of DSEX-15 Days Period		CAR Series of Portfolio-15 Days Period	
Before	After	Before	After
0.001	0.009	-0.005	-0.327
0.014	-0.002	-0.001	-0.059
0.007	-0.010	0.022	0.292
0.000	-0.004	0.256	-0.111
0.001	-0.024	0.651	-0.378
0.004	-0.036	0.023	-0.081
0.003	0.011	0.163	-0.210
0.001	0.022	0.045	-0.092
0.002	-0.004	0.274	-0.311
0.001	0.010	0.367	-0.235
0.004	-0.021	0.116	-0.192
0.011	0.001	0.410	-0.102
0.006	0.001	0.414	-0.144
0.001	0.001	0.798	-0.232

CAR Series of DSEX-15 Days Period		CAR Series of Portfolio-15 Days Period	
Before	After	Before	After
0.004	-0.007	0.002	-0.046
0.005	-0.021	0.001	-0.021
0.021	-0.015	0.007	-0.015
0.010	-0.002	0.001	0.013
0.003	-0.024	0.543	0.578
0.008	0.050	0.000	-0.731
0.026	0.000	0.057	-0.330
0.001	-0.022	0.001	-0.042
0.005	-0.004	0.005	-0.211
0.001	-0.010	0.144	-0.135
0.007	-0.001	0.118	-0.492
0.010	-0.003	0.290	0.081
0.010	-0.001	0.394	-0.124
0.001	-0.002	0.745	-0.222

CAR Series of DSEX-15 Days Period		CAR Series of Portfolio-15 Days Period	
Before	After	Before	After
0.013	0.009	-0.457	-0.155
0.122	0.005	-0.388	-0.259
-0.021	-0.040	0.344	-0.292
-0.092	-0.004	0.365	-0.154
0.008	-0.034	0.124	0.548
0.007	0.049	0.192	-0.981
0.003	0.011	0.163	-0.330
0.002	-0.021	0.032	-0.091
0.001	-0.004	0.095	-0.211
0.020	-0.010	0.366	-0.315
0.004	0.011	0.020	0.402
0.003	0.003	0.148	0.022
-0.006	0.002	0.215	-0.144
-0.003	0.003	0.116	0.122

CAR Series of DSEX- 15 Days Period		CAR Series of Portfolio- 15 Days Period	
Before	After	Before	After
0.012	-0.020	0.125	-0.123
0.014	-0.003	-0.479	-0.389
0.004	-0.003	0.125	-0.152
0.002	-0.008	0.311	0.013
0.004	-0.003	0.665	-0.048
0.007	0.049	0.220	-0.381
0.001	0.011	-0.163	-0.330
0.000	-0.017	0.034	-0.092
0.001	-0.004	0.274	-0.211
0.020	-0.010	0.367	-0.335
0.007	-0.011	0.118	0.292
-0.006	-0.002	0.390	0.052
-0.006	0.000	0.424	0.144
0.003	0.002	0.728	-0.122