

Impact of Eid-ul-Azha on Market Return in Dhaka Stock Exchange

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Abstract: *This study intends to discover whether any impact of Eid-ul-Azha on market return in Dhaka Stock Exchange exists or not. Dummy variable regression analysis, ANOVA, t-test have been done. Higher mean index return were observed in '1 to 5 days before Eid-ul-Azha holiday' and '6 to 10 days after Eid-ul-Azha holiday'. Result of dummy regression indicates significant positive change in index return in '01 to 05 days before Eid-ul-Azha holiday'. Independent sample t-test also suggested presence of anomaly index return in different trading days before and after Eid-ul-Azha holiday. An impact of Eid-ul-Azha on market return in Dhaka Stock Exchange is evident in this study.*

Keywords: *Eid-ul-Azha, Calendar effect, Dhaka Stock Exchange*

I. Introduction

Examining different calendar effects on market price is one way to test semi strong form of efficient market hypothesis (EMH). Semi strong form of efficient market hypothesis (EMH) claims that security prices change quickly to the release of all public information.

Various calendar effects including religious events' effect have been examined around the world. This study intends to investigate impact of Eid-ul-Azha on market return in Dhaka Stock Exchange. The Muslim population of Bangladesh (which contains 89.5% Muslim people within country and poses third position with 9.2% in the ranking of majority of Muslim all over the world)¹, have their own celebrations. One of the important festivals in the Islamic calendar is Eid-ul-Azha which marks at the 10th of Zilhaz of Hijri calendar. It is also known as festival of sacrifice day or Eid of Qurbani. This aim of sacrifice, like all other fundamentals of Islam, is to imbibe piety and self-righteousness. It also promotes the spirit of sacrifice for a right cause. To explain its purpose, God says in the Quran. "It is not their meat, nor their blood, that reaches God, It is their piety that reaches God?" (22:37).

Prophet Muhammad (Pbuh) said: On the 10th of Zil-Hijjah, there is no better act in the view of Allah than shedding the blood (of slaughtered animals). And verily sacrifice earns the approbation of Allah even before the drop of blood (of the slaughtered animal) falls on the ground. Hence you should offer it in good spirit. For every hair of the sacrificial animal, there is a blessing. The festival is a grand celebration in Bangladesh. In the period of Eid-ul-Azha Muslim people aim to sacrifice and they slaughter cattle like cows, camels, goats and lambs etc. to follow the sunnat e Ibrahim as per their capability. Some people go to Saudi Arabia to perform hajj. It increases the consumption of people of Muslim society hence saving depleted. It implies that the expenditures of Muslim society are very high from Zilcad to Zilhaz, MustafaKhalid (2011).

1. <http://nosharia.wordpress.com/list-of-muslim-majority-countries-with-sectstategovernment>

In this period, people spends a lump sum amount of money as composed to other months, it is interesting to examine the behavior of trading activity under these situations. The purpose of this study is to investigate the effect of Eid-ul- Azha on stock market.

II. Literature Review

Impacts of religious holidays on stock market have been examined by some people around the world. Frieder and Subrahmanyam (2004) investigated effect of different holidays on S&P500 index. These holidays focused on the Jewish High Holy Days of Rosh Hashanah and Yom Kippur and the Christian holy day of St. Patrick's. A significant effect on trading volume was found. They showed that returns are negative after Yom Kippur (Solemn) and positive after Rosh Hashanah (Joyful) and St. Patrick's. They also reported that trading volume turned down on Rosh Hashanah and Yom Kippur. Kumar Umesh (2012) tried to find out the effect of Diwali on Indian stock market. He calculated daily return on S&P CNX Nifty index and divided the returns into two groups: seven trading days before and after Diwali holiday. After conducting paired t- test he concluded

return in post-holiday (seven days) is significantly higher than before holiday (seven days). Chan et al (1996) also found a strong and positive effect of Chinese New Year in Chinese stock Market.

Some studies are available on the impact of Muslim calendar effects on stock returns. Mostafa Khalid (2011) examines that average return of Karachi stock market is smaller and significant in the month of Ramadan and there is no after Ramadan effect in Karachi stock market. He indicates that the consumption of people increases and their attention to invest in stock market decreases during Eid.

Dharani M. and Natarajan P. (2010) conclude that the seasonal anomalies exist to a large extent in Nifty Shariah Index. McGowan Carl B and Jakob Noor Azzudin (2010) investigate the Eid al-Fitr Calendar Effect in the Syariah Index of the Kuala Lumpur Stock Exchange from 2000 to 2003. This study does not support the existence of calendar effect in the Malaysian stock market. Seyyed, Abraham and Al-Hajji (2005) studied the Ramadan effect in Saudi Arabia's stock market and showed a decline in volatility and trading activity in terms of both volume and return, in the Saudi Arabian stock market during Ramadan. In an attempt to locate the impact of Ramadan in Pakistan's stock market Husain (1998) studied on Ramadan effect in Pakistan's stock market and found that there is less volatility during the Ramadan effect.

It is found that calendar anomalies already have been studied in different regions of the world. But in Bangladesh there is no study on religious calendar effect had been conducted yet. As a religious calendar effect this study has focused on effect of Eid-ul-Azha on Dhaka Stock Exchange.

III. Methodology And Source Of Data:

In this study we have used DSE General Index (DGEN) as market proxy. However, in the year 2013 DSE General Index was replaced by DSEX index. So, for the year 2013 we have considered DSEX index. To find the effect of Eid-ul-Azha on the market index return we have collected daily index data from 2005 to 2013. During this period there were 10 Eid-ul-Azhas. In year 2006 Eid-ul-Azha took place for two times. We have collected dates of Eid-ul-Azha from www.timeanddate.com. We have collected daily data of DSE General index. We have divided data of each year into four groups:

Group 1: 6 to 10 days before Eid-ul-Azha holiday,

Group 2: 1 to 5 days before Eid-ul-Azha holiday

Group 3: 1 to 5 days after Eid-ul-Azha holiday

Group 4: 6 to 10 days after Eid-ul-Azha holiday.

In this study daily percentage return has been calculated using following formula

$$R_t = (\text{Index}_t - \text{Index}_{t-1}) / \text{Index}_{t-1} * 100$$

Here,

R_t = Return in period t

Index_t = Index in period t

Index_{t-1} = Index in period t-1

Descriptive statistics have been used to find out the pattern of returns in each group. t- test have been use to compare mean return between two groups of trading days. The study has also employed dummy variable regression analysis to see the effect of different groups of trading days before and after Eid-ul-Azha holiday on market index. The result of F test has been used to observe whether any difference in market index return among the groups of trading days before and after Eid-ul-Azha holiday exist or not.

The regression model applied in the study is:

$$R_t = \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \beta_4 D_4 + \varepsilon$$

Here,

R_t = Market index return in time period t

D_1 = dummy variable which is 1 for 6 to 10 days before Eid-ul-Azha holiday, and 0 otherwise

D_2 = dummy variable which is 1 for 1 to 5 days before Eid-ul-Azha holiday, and 0 otherwise

D_3 = dummy variable which is 1 for 1 to 5 days after Eid-ul-Azha holiday, and 0 otherwise

D_4 = dummy variable which is 1 for 6 to 10 days after Eid-ul-Azha holiday, and 0 otherwise

ε = Error

This study has also tries to conduct qualitative research. Expert opinion has been acquired for better understanding. In depth interviews with mangers of five market intermediaries have been conducted.

IV. Result And Findings

This study has conducted descriptive analysis to discover the central tendency and dispersion in returns in different groups of trading days. We have omitted an extreme value in the year 2009 from the group1: 6 to 10 days before Eid –ul-Azha holiday.

The lowest mean return which is -.3790% is found in ‘6 to 10 days before Eid-ul-Azha holiday’. The highest mean return .4407% was observed in trading days which were 1 to 5 days before Eid-ul-Azha holiday. In ‘6 to 10 days before Eid-ul-Azha holiday’ people tend to utilize their money for the preparation of Eid–ul-Azha instead of making investment in stock market. So, buy pressure in stock market tends to be less. Besides some people sell securities to get money in ‘6 to 10 days before Eid-ul-Azha holiday’ and use those money to get prepared for Eid-ul-Azha celebration. So, a sell pressure pulls the index down. Investors need less liquid money for Eid-ul-Azha celebration in 1 to 5 days before Eid-ul-Azha holiday as they already got needed money beforehand. As a result, furthermore sell pressure in stock market is not created. Consequently the index becomes higher. The daily market index return again turns negative in ‘1 to 5 days before Eid-ul-Azha holiday’. Immediate after Eid-ul-Azha holiday investors’ participation in stock market is less.

Table 1: Descriptive analysis of returns in different groups of trading days in DSE before and after Eid-ul-Azha holiday

category of trading days	Number of trading days observed	Mean daily index return	Standard deviation of index return
6 to 10 days before Eid-ul-Azha holiday	49	-.3790%	1.88530
1 to 5 days before Eid-ul-Azha holiday	50	.4407%	1.33648
1 to 5 days after Eid-ul-Azha holiday	50	-.1666%	1.81517
6 to 10 days after Eid-ul-Azha holiday	50	.3569%	1.66237

During ‘6 to 10 days after Eid-ul-Azha’ holiday people restarted showing interest in actively participating in stock market. As a consequence of investors’ attention stock market becomes active again and index rises.

Regression Analysis:

This study has conducted linear regression through the origin using dummy variables to discover the effect of different group of days before and after Eid-ul-Azha holiday on the market index return in DSE.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	24.507	4	6.127	2.153	.076
Residual	554.989	195	2.846		
Total	579.496	199			

ANOVA does not show difference among return in different groups of trading days before and after Eid-ul-Azha holiday at 5% level of significance. But, at 10% level of significance, significant difference among return in different groups of trading days before and after Eid-ul-Azha holiday can be observed.

The regression analysis fails to validate presence of effect of Eid-ul-Azha on market return in DSE over ten years. Table 4 exhibits p values for all four groups of trading days are greater than .05. Therefore; at 5% level of significance result of regression for four groups of trading days is insignificant. The coefficient of ‘01 to 05 days before Eid-ul-Azha holiday’ has been found significant at 10% level of significance. The summary of regression analysis is presented by Table 3.

Table 3: Regression Analysis

Variables	Coefficient	Standard error	t	p value
06 to 10 days before Eid-ul-Azha holiday	-.379	.241	-1.573	.117
01 to 05 days before Eid-ul-Azha holiday	.441	.239	1.847	.066
01 to 05 days after Eid-ul-Azha holiday	-.167	.239	-.698	.486
06 to 10 days after Eid-ul-Azha holiday	.357	.239	1.496	.136

t- Test:

Independent sample t-test was done to test the null hypothesis: there is no difference between the mean market return of ‘6 to 10 days before Eid-ul-Azha holiday’ and that of ‘1 to 5 days before Eid-ul-Azha holiday’. The alternative hypothesis in this case will be: the mean market return of ‘6 to 10 days before Eid-ul-Azha holiday’ is less than that of ‘1 to 5 days before Eid-ul-Azha holiday’.

The result of t-test rejects the null hypothesis and accepts the alternative hypothesis. Therefore, it can be said that, the mean market return during ‘6 to 10 days before Eid-ul-Azha holiday’ is less than ‘1 to 5 days before Eid-ul-Azha holiday’. The result is statistically significant at 5% level of significance (p value < .025).

Table 4: Independent sample t-test for comparing mean market return of ‘6 to 10 days before Eid- ul-Azha holiday’ and that of ‘1 to 5 days before Eid-ul-Azha holiday’

	t	Degree of freedom	p value (2-tailed)
Equal variances assumed	-2.500	97	.014
Equal variances not assumed	-2.491	86.394	.015

Table 5 does not suggest significant difference between mean return in ‘1 to 5 days before Eid-ul-Azha holiday’ and in ‘1 to 5 days after Eid-ul-Azha holiday’.

Table 5: Independent sample t-test for comparing mean market return of ‘1 to 5 days before Eid-ul-Azha holiday’ and that of ‘1 to 5 days after Eid-ul-Azha holiday’

	t	Degree of freedom	p value(2-tailed)
Equal variances assumed	1.905	98	.060
Equal variances not assumed	1.905	90.060	.060

Table 6 exhibits no significant difference between mean return of ‘1 to 5 days after Eid-ul-Azha holiday’ and that of ‘6 to 10 days after Eid-ul-Azha holiday’. As p value is greater than .05.

Table 6: Independent sample t-test for comparing mean market return of ‘1 to 5 days after Eid-ul-Azha holiday’ and that of ‘6 to 10 days after Eid-ul-Azha holiday’

	t	Degree of freedom	p value (2-tailed)
Equal variances assumed	-1.504	98	.136
Equal variances not assumed	-1.504	97.252	.136

Results from Table 7 indicate difference between mean market return of ‘6 to 10 days before Eid-ul-Azha holiday’ and that of ‘6 to 10 days after Eid-ul-Azha holiday’ at 10% level of significance. It can be said at 90% level of confidence that, mean market return of ‘6 to 10 days before Eid-ul-Azha holiday’ is greater than that of ‘6 to 10 days after Eid-ul-Azha holiday’.

Table 7: Independent sample t-test for comparing mean market return of ‘6 to 10 days before Eid-ul-Azha holiday’ and that of ‘6 to 10 days after Eid-ul-Azha holiday’

	t	Degree of freedom	p value (2-tailed)
Equal variances assumed	-2.061	97	.042
Equal variances not assumed	-2.058	94.991	.042

In-depth interviews with market experts have provided idea about the market scenario before and after Eid-ul-Azha. A large number individual investor travels to their home districts outside Dhaka to celebrate vacation of Eid-ul-Azha. In this period, they spend a lot of money in transportation, shopping, and to buy sacrificial animal. Celebrating Eid-ul-Azha gets more priority to the Muslim investors. They want to sell their securities to collect money for smoothly celebrating Eid-ul-Azha event. And this encashment usually takes place during 6 to 10 days before Eid-ul-Azha. Our quantitative analysis has also revealed the lowest mean return (-.3790%) in ‘6 to 10 days before Eid-ul-Azha holiday’. In this period people tend to utilize their money for the preparation of Eid –ul-Azha rather than making investment in stock market. So, less buy pressure and greater sell pressure cause the downturn of market index. A very few institutional investors liquidize their fund on Eid-ul-Azha to provide salary & bonus as well as to meet demand of deposit withdrawal by depositors in case of liquidity crisis. After Eid-ul-Azha holiday, many investors who visited outside Dhaka enjoy extended holiday. After enjoying holiday they become busy with traveling to working station and remain inactive in stock market. Investors’ sluggish participation causes slow turnover as well as less return in stock market immediate after Eid-ul-Azha holiday. About a week after Eid-ul-Azha holiday people are back in market. And investors’ active

participation makes the index to move upward. According to market experts, Eid-ul-Azha mainly affect the decision of short term investors rather than long term investors.

Muslim holidays follows Hijri calendar. Hijri calendar has 354 or 355 days which is shorter than Gregorian calendar. Since Muslim holiday depends on sighting of moon, we can see that Muslim events are not fixed in Gregorian calendar. Over years, a Hijri calendar holiday changes month and day in Gregorian calendar. Eid-ul-Azhas can take place in different months and days in Gregorian calendar. It may be first, second, third or last week of a month. For example, in 2005 Eid-ul-Azha was on 25th January and it was on 15th October on 2013. As we know that many company of our country except bank provide salary to the employee during first 1 to 10 days of a month, and bankers get salary at the last week of a month. The fact is, an investor who gets salary within the first week of a month and Eid-ul-Azha takes place in the middle or last week of that month, is less interested to liquidize fund. When salary & bonus are not available on time they decide to liquidate their fund.

V. Conclusion

The lowest mean return (-.3790) is discovered in '6 to 10 days before Eid-ul-Azha holiday'. It can be inferred that, in this period people become busy in making arrangement of expenditures to be incurred for Eid-ul-Azha celebration. So, they invest less in stock market. Additionally, securities are sold for arranging needed fund for eid celebration. The highest mean return (.4407) was observed in trading days which were 1 to 5 days before Eid-ul-Azha holiday. In group 3 (1 to 5 days after Eid-ul-Azha holiday) index turned down as investors' participation in stock market is less. 6 to 10 days after Eid-ul-Azha holiday people restarted showing interest in stock market. As a consequence of investors' attention stock market becomes active again and index goes up.

Dummy variable regression analysis through the origin could not find any significant effect of groups of trading days: 6 to 10 days before Eid-ul-Azha holiday, 1 to 5 days after Eid-ul-Azha holiday, and 6 to 10 days after Eid-ul-Azha holiday. However, The coefficient of '01 to 05 days before Eid-ul-Azha holiday' has been found significant at 10% level of significance. This group of trading days proved to provide significantly higher return. ANOVA shows significant difference among return in different groups of trading days before and after Eid-ul-Azha holiday at 10% level of significance. The different four groups of trading days considered are respectively: 6 to 10 days before Eid-ul-Azha holiday, 1 to 5 days before Eid-ul-Azha holiday, 1 to 5 days after Eid-ul-Azha holiday, and 6 to 10 days after Eid-ul-Azha holiday. The result of t-test indicates that, the mean market return in '1 to 5 days before Eid-ul-Azha holiday' is greater than that in '6 to 10 days before Eid-ul-Azha holiday'. The result is statistically significant at 5% level of significance. can be said at 90% level of confidence that, mean market return of '6 to 10 days before Eid-ul-Azha holiday' is greater than that of '6 to 10 days after Eid-ul-Azha holiday'. So, an anomaly of return is evident in this case.

Since result of dummy regression shows significant positive change in index return in '01 to 05 days before Eid-ul-Azha holiday'. Independent sample t-test also suggested presence of anomaly index return in different trading days before and after Eid-ul-Azha holiday. Thus, we can say Eid-ul-Azha has an impact on market return in Dhaka Stock Exchange.

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