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Stock Market Anomaly: Day of the Week Effect in Dhaka Stock Exchange

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Abstract

This paper examines the presence of day of the week effect anomaly in Dhaka Stock Exchange (DSE). Several hypotheses have been formulated; dummy variable regression and the GARCH (1, 1) model were used in the study. The result indicates that Sunday and Monday returns are negative and only positive returns on Thursdays are statistically significant. Result also reveals that the mean daily returns between two consecutive days differ significantly for the pairs Monday-Tuesday, Wednesday-Thursday and Thursday-Sunday. Result also shows that the average daily return of every working day of the week is not statistically equal. Dummy variable regression result shows that only Thursdays have positive and statistically significant coefficients. Results of GARCH (1, 1) model show statistically significant negative coefficients for Sunday and Monday and statistically significant positive coefficient for Thursday dummies. The conclusion of all the findings is that significant day of the week effect present in DSE.

Keywords: Stock market anomaly, Day of the week effect, Dhaka Stock Exchange, Dummy variable regression, GARCH (1, 1) model

1. Introduction

The famous efficient market hypothesis (EMH) was introduced by Fama (1965) few decades ago which claims that in an efficient market stock prices always fully reflect available information. If the stock markets are efficient, stock prices are supposed to follow random walk. The random walk hypothesis states that future prices are not predictable on the basis of past prices, that is, stock price changes are unpredictable. The information contained in the past prices is fully and instantaneously reflected in current prices in an efficient market as argued by Fama (1965). Subsequent to study of Fama (1965) a good number of researches have been conducted to examine the randomness of stock price behavior to conclude about the efficiency of a capital market. More recently one of the popular areas of research in finance literature is finding out a particular seasonality or pattern in stock returns which demonstrate the inefficiency of the market. Since the introduction of EMH by Fama (1965) which states that the expected return on a financial asset should be uniformly distributed across different units of time, researchers have documented several calendar anomalies in the stock returns such as January effect, Turn of the month effect and Day of the week effect or Monday effect, Holiday effect and so on. The existence of the calendar anomalies is a denial of the weak form of efficient market hypothesis which states that stock returns are time invariant which means that there is no short-term seasonal pattern in the stock returns. The subsistence of seasonal pattern in the stock return infers that a market is inefficient and investors should be able to earn abnormal return. That's why finance researchers have been interested to find out the existence of the calendar anomalies or seasonality in the stock returns in different markets. Among the calendar anomalies day of the week effect is most widely documented anomaly and have been comprehensively investigated by the finance researchers in different markets of different countries considering different securities and indices and different institutional framework. Empirical studies have shown that day of the week anomaly not only present in the financial markets of the developed counties [for example, Gibbons and Hess (1981), Keim and Stambaugh (1984) Jaffe and Westerfield (1985) Lakonishok and Smidt (1988)] but also in the developing markets [for example, Aggarwal and Rivoli (1989), Islam and Gomes (1999), Choudhry (2000), Aly, et al. (2004), Nath and Dalvi (2004), Hossain (2007), Agathee (2008)].

The specific objective of this study is to investigate the existence of day of the week effect anomaly in Dhaka Stock Exchange (DSE) which is the prime stock market in Bangladesh. The results of this study will have important practical implications for capital market participant like investors, managers and regulatory authorities.

A good number of empirical studies have been conducted so far to examine the existence of day of the week effect in various markets of various countries for the last few decades. Researchers have found day of the week effect in a variety of forms in different markets. In most of the developed markets, empirical studies found negative Monday returns and positive Friday returns such as Cross (1973), French (1980), Gibbons & Hess (1981), Lakonishok and Levi (1982), Rogalski (1984), Keim & Stambaugh (1984), Theobald and Price (1984), Jaffe & Westerfield (1985), Harris (1986), Simrlock & Starts (1986), Board and Sutcliffe (1988), Lakonishok and Smidt (1988), Kim (1988), Jaff, Westerfield and Ma (1989), Cohers and Cohers (1995),Tang and Kwok (1997), Mehdian and Perry (2001) and so on. One possible explanation for such day of the week effect anomaly may be that most of the positive economic news comes at the week end and investors show affirmative and hopeful investment behavior which result in a positive return on Fridays. On the other hand, most of the negative economic news comes at the beginning of the week and investors try to sell their investment which result in a negative return on Mondays. Some other studies found day of the week effect in different forms specifically negative returns on Tuesday such as Condoyanni, O'Hanlon & Ward (1987), Solnik & Bousqet (1990), Kato (1990), Athanassakos & Robinson (1994), Kim (1988), Aggarwal & Rivoli (1989), Ho (1990) Wong, Hui and Chan (1992), Agrawal and Tandon (1994), Balaban (1995), Bildik (1997) and Özmen (1997) and so on. Some other studies found no day of the week effect existed in capital markets such as Santemases (1986), Malaikah (1990), Aybar (1992), Pena (1995) and Gardeazabal and Regulez (2002) and so on. So there is no empirical harmony among the researchers regarding the issue which justifies the need of more research in this area.

In a country like Bangladesh where the economy is still emerging and capital market is in a vulnerable condition, empirical studies to examine the presence of day of the week effect in this market is very few such as Islam and Gomes (1999) and Hossain (2007). No study has yet been made to examine the presence of day of the week effect considering all the three indices of DSE which has encouraged us to conduct the study to contribute to finance literature.

The remainder of the paper is organized as follows. Section 2 provides literature review. Section 3 discusses testable hypotheses, the data, time frame considered right through the study and methodological issues. Section 4 provides empirical results and findings. A summary is given in section 5.

2. Literature Review

Extensive literature is available regarding day of the week effect and other market anomalies across the globe. In an early attempt French (1980) investigated two alternative models of the process generating stock returns. He concluded that during most of period studied from 1953 through 1977, the daily returns to the Standard and Poor's composite portfolio are inconsistent with both models. He also found out that the average return for Monday was significantly negative but the average return for the other four days of the week was positive. Gibbons and Hess (1981) examined the existence of day of the week effect in the US market using Dow Jones Industrial Average. They found strong and persistent negative mean returns on Monday for stocks and below average returns for bills on Mondays. Keim and Stambaugh (1984) made a similar study using longer time period and additional stocks and found consistently negative returns for the S & P composite as early as 1928, for exchange traded stocks of firms of all sizes and for actively traded over the counter (OTC) stocks. Jaffe and Westerfield (1985) examined daily stock market return for the U.S., U.K., Japan, Canada and Australia. They found so called week-end effect in each country. They contrasted the previous studies of the U.S and concluded that lowest mean returns for both the Japanese and Australian markets occur on Tuesday. Harris (1986) examined weekly and intraday patterns in common stock prices using transaction data. He found that for large firms, negative Monday return accrue between the Friday close and the Monday open and for small firms they accrue primarily during the Monday trading day. He also concluded that on Monday morning, prices drop, while on the other weekday mornings, they rise. In some related studies Thoebald and Price (1984), Simrlock and Starts (1986), Board and Sutcliffe (1988), Cohers and Cohers (1995) and Tang and Kwok (1997) and many others support the previous studies and concluded that Mondays average return are negative and Fridays average return are positive. That means, share prices tend to decline on opening day (Monday) of the week and tend to increase on the closing day (Thursday) of the week.

Lakonishok and Smidt (1988) used 90 years of daily data on the Dow Jones Industrial Average to test the existence of persistent seasonal patterns in the rates of return. They found evidence of persistently anomalous returns around the turn of the week. Aggarwal and Rivoli (1989) examined seasonal and daily patterns in equity returns of four emerging markets: Hong-Kong, Singapore, Malaysia and the Philippines. Their results support the existence of a seasonal pattern in these markets. They found a robust day of the week effect. They concluded that these markets exhibit a weekend effect of their own in the form of low Monday returns. Lakonishok and Maberly (1990) documented regularities in trading patterns of individual and institutional investors related to the day of the week. They found a relative increase in trading activity by individuals on Mondays. They also concluded that there is a tendency for individuals to increase the number of sell transactions relatively to buy transactions, which might explain at least part of the weekend effect. Agarwal and Tandon (1994) examined five seasonal patterns in the stock markets of eighteen countries. They found a

daily seasonal in nearly all the countries but a weekend effect in only nine countries. Dubois and Louvet (1996) re-examined the day of the week effect for eleven indices from nine countries from 1969-1992 period. They found that the returns to be lower at the beginning of the week for full period but may not be on Monday. They also found that the anomaly disappears for most recent period in the USA but the effect is still strong for European countries, Hong-Kong and Toronto. Wang and Erickson (1997) showed that the well-known Monday effect occurs primarily in the last two weeks of the month. They also concluded that the mean Monday return of the first three weeks of the month is not significantly different from zero. Islam and Gomes (1999) examined the day of the week effect in the Dhaka Stock Exchange. They found the presence of daily return variations and large positive returns for the last day of the week. The week end effect found to be significantly large and positive. Choudhry (2000) investigated the day of the week effect in seven emerging Asian markets: India, Indonesia, Malaysia, Philippines, South Korea, Taiwan and Thailand from January 1990 to June 1995. Their result indicates the presence of significant day of the week effect on both stock returns and volatility although the result involving both the return and volatility are not identical in all seven cases. Mehdian and Perry (2001) re-examined the Monday effect in the US stock market from 1964 to 1999 using daily returns. Result obtained indicates that Monday returns are significantly negative in all five stock indices for a period before 1987. But in the post 1987 period they found a significant reversal of the Monday effect since Monday returns are significantly positive. Lyroudi, Subeniotis and Komisopoulos (2002) examined day of the week effect in Greek stock market for the period January 1, 1997 to December 30, 1999. They found that the day-of-the-week effect was existent in the Greek stock market. They found positive and statistically significant returns on Tuesdays and Wednesdays. On the other hand, they also found negative and statistically insignificant returns on Thursdays.

Patev, Lyroudi and Kanaryan (2003) investigated the existence of the day-of-the-week effect in eight Central European stock markets: Romania, Hungary, Latvia, Czech, Russia, Slovakia, Slovenia and Poland for the period September 22, 1997 to March 29, 2002. They found mixed results in their study. They found that the Czech and Romanian markets have significant negative returns on Monday and the Slovenian market has significant positive returns on Wednesday and has insignificant negative returns on Fridays. They also concluded that the Polish and Slovak markets have no day-of-the week effect anomaly. Aly, et al. (2004) investigated the existence of the day-of-the week effect in the Egyptian stock market, for a period of April 26, 1998 until June 6, 200. Egyptian stock market has only four trading days (Monday to Thursday).. They accomplished that Monday returns in the Egyptian stock market are positive and significant on average, but are not significantly different from returns of the rest of the week. Nath and Dalvi (2004) examined the day of the week effect in the Indian equity market. They found significant day of the week effect in the market before rolling settlement in 2002. Chukwuogor-Ndu (2006) examined the financial markets' trends in 15 emerging and developed European financial markets. He found the presence of day of the week effect during the period of 1997 to 2004. He also found that seven of the European financial markets experienced negative returns on Monday and seven others experience negative returns on Wednesday. They also concluded that generally there was high volatility of returns in the European financial markets. Hossain (2007) investigated day of the week effect in small portfolios in Bangladesh. The result showed that the strategy "buy on day 1 and sell on Monday" generates the highest mean daily return from D1-D6 strategy-buy on day one and sell on day six. The study also found that on average, above average return is not possible if portfolios are sold on Saturdays and Mondays. Agathee (2008) investigated the existence of day of the week effect in the emerging market of Mauritius using observations from Stock Exchange of Mauritius for a period of 2006. The study found that the Friday returns are higher relative to other trading days. The study also concluded that the mean returns across the five week days are jointly not significantly different from zero.

3. Testable hypothesis, Data and Methodology

To study whether the day of the week effect anomaly is experimental in Dhaka Stock Exchange or not, the following hypotheses have been formulated.

3.1 Testable Hypotheses

3.1.1 Hypothesis 1

H_0: The average daily return of every working day of the week is not statistically different from zero.

H_1: The average daily return of every working day of the week is statistically different from zero.

That is,

Null Hypothesis is H_0: $\mu_{ij} = 0$

Alternative Hypothesis is H_1: $\mu_{ij} \neq 0$

i= 1, 2, 3 (the examined index)

j= 1, 2 …5 (the working weekdays from Sunday to Thursday)

3.1.2 Hypothesis 2

H_0: The average daily returns between two sequential working days are not statistically different.

H_1: The average daily returns between two sequential working days are statistically different.

That is,

Null Hypothesis is H_0: $\mu_1 - \mu_2 = 0$

Alternative Hypothesis is H_1: $\mu_1 - \mu_2 \neq 0$

If μ_1 and μ_2 are the population means of these sequential days.

3. 1.3 Hypothesis 3

H_0: The average daily return of every working day of the week is statistically equal

Hı: The average daily return of every working day of the week is statistically different

Null hypothesis is Ho: μ1= μ2= μ3= μ4= μ5

μ1= Average return of Sunday

μ2= Average return of Monday

μ3=Average return of Tuesday

μ4=Average return of Wednesday

μ5=Average return of Thursday

Alternative hypothesis: Hı: μ1# μ2#μ3#μ4# μ5

μ1= Average return of Sunday

μ2= Average return of Monday

μ3=Average return of Tuesday

μ4=Average return of Wednesday

μ5=Average return of Thursday

3.2 Data

Data used in the study include daily closing prices of DSE indices such as DSE all share prices index (DSI), DSE general index (DGEN) and DSE 20 index DSE 20)for a period of 04.09.2005-08.10.2008. All the data have been collected from DSE library.

3.3 Methodology

First of all, the following equation is used to determine the average daily return of the particular index for each working day of the week.

$$R_{it} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} \quad (1)$$

$R_{i,t}$ is the return of index i on day t, $P_{i,t}$ is the price of index i on day t and $P_{i,t-1}$ is the price of index i on day t-1.

In the next step, we tested whether the average daily return of all the week days are statistically different from zero or not. In order to test this hypothesis we use one-sample t-test. The t-statistic is calculated according to the following formula:

$$t = \frac{\overline{X} - \mu}{\frac{\delta}{\sqrt{n}}} \quad (2)$$

Where, x is the average return for each day of the week from Sunday to Thursday and for each index, μ is hypothetical mean which equal to zero, δ is the standard deviation of the each day's return from Sunday to Thursday, n is the number of observations of each week day from Sunday to Thursday and $\frac{\delta}{\sqrt{n}}$ is the standard error.

In the next step, we tested whether the average daily returns between two sequential working days are statistically different from zero or not. To test this hypothesis we use two-sample t-test. The t-statistic is calculated according to the following formula:

$$t = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{\frac{SD_1^{\,2}}{\eta_1} + \frac{SD_2^{\,2}}{\eta_2}}} \tag{3}$$

Where, $\overline{x}_1$ is the average return of day 1 (e.g. Sunday's average return), $\overline{x}_2$ is the average return of day 2 (e.g. Monday's average return), $SD_1^{\,2}$ is the standard deviation of returns of day 1(e.g. Sunday), $SD_2^{\,2}$ is the standard deviation of returns of day 2 (e.g. Monday), η_1 is sample size of day 1(e.g. Sunday) and η_2 is sample size of day 2 (e.g. Monday).

In the next step, we tested whether the average daily return of every working day of the week is statistically equal or not. In order to test this hypothesis we use single factor ANOVA. The standard F-statistic is calculated as following:

$$F = \frac{BSS \ / df_B}{WSS \ / df_W} \tag{4}$$

where, BSS is between sum of squares, WSS is within sum of squares and df_B is degrees of freedom between groups and df_w is degrees of freedom within groups.

BSS and WSS are calculated as follows:

$$BSS = \eta_1 \left(\overline{x}_1 - \overline{x}\right)^2 + \eta_2 \left(\overline{x}_2 - \overline{x}\right)^2 + \ldots\ldots\ldots\ldots\ldots\ldots + \eta_n \left(\overline{x}_n - \overline{x}\right)^2 \tag{5}$$

where, η_1, η_2 ……. η_n is the sample size of every working day from Sunday to Thursday, $\overline{x}_1, \overline{x}_2$ …….. $\overline{x}_n$ is the mean return of every working day from Sunday to Thursday, and $\overline{x}$ is the population mean.

$$WSS = (\eta_1 - 1)SD_1^{\,2} + (\eta_2 - 1)SD_2^{\,2} + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots + (\eta_n - 1)SD_n^{\,2} \tag{6}$$

where, η_1 , η_2 ……. η_n is the sample size of every working day from Sunday to Thursday, $SD_1^{\,2}$, $SD_2^{\,2}$ …… $SD_n^{\,2}$ is the standard deviation of returns of each working day from Sunday to Thursday.

To detect the presence of day of the week we use the following dummy variable regression:

$$R_{it} = \beta_1 D_{1t} + \beta_2 D_{2t} + \beta_3 D_{3t} + \beta_4 D_{4t} + \beta_5 D_{5t} + \varepsilon_t \tag{7}$$

Where,

R_{it} is the daily index return

D_1 – dummy variable equal to 1 if t is a Sunday and 0 otherwise;

D_2– dummy variable equal to 1 if t is a Monday and 0 otherwise;

D_3– dummy variable equal to 1 if t is a Tuesday and 0 otherwise;

D_4– dummy variable equal to 1 if t is a Wednesday and 0 otherwise;

D_5– dummy variable equal to 1 if t is a Thursday and 0 otherwise;

ε_t is the stochastic disturbance term

β_1= Average return of Sunday

β_2= Average return of Monday

β_3=Average return of Tuesday

β_3=Average return of Wednesday

β_3=Average return of Thursday

The hypothesis to be tested for testing the presence of the day of the week effect is as follows:

$$\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 \tag{8}$$

If the daily returns are drawn from an idendical distribution, they will be expected to be equal. The null hypothesis will indicate a specfic pattern in the stock return thus the presence of day of the week anomaly.

The above regression equation has a limitation that it assumes the existence of constant variance. So if there is a time varying variance it may result in inefficient estimates. For this reason, we include the changing variance in the estimation. Our assumptions is that the error term of the return equation has a normal distribution with zero mean and time varying conditional variance. To model conditional variance we regress the stock return to day of the week dummy variables. We include AR terms and GARCH (1, 1) terms in the regression to take into account the conditional mean and conditional volatility. The regression model is as follows:

$$R_t = \sum_{i=1}^{5} \alpha_i R_{t-i} + \sum_{j=1}^{5} \lambda_j D_j + \varepsilon_t \tag{9.1}$$

where,

$$\varepsilon_t / \varepsilon_{t-1} \approx N\left(0, h_t^{\,2}\right) \tag{9.2}$$

$$h_t^{\,2} = \omega + \gamma_1 \varepsilon_{t-1} + \gamma_2 h^2{}_{t-1} \tag{9.3}$$

where Dj are significant dummy variables from equation which take the value 1 if the corresponding day is Sunday, Monday, Tuesday, Wednesday or Thursday and 0 otherwise and α is the market price of risk.

The gamma coefficients in the conditional variance equation, γ measure the seasonality in volatility of the market. If the inclusion of h_t in the conditional mean equation renders the dummy variables in the mean equation insignificant, we could explain that the significant dummy variables due to daily variation in stock market risk. Alternatively, if the dummy variables remain significant as explanatory variables in spite of the inclusion of h_t in the conditional mean equation, we can conclude that the seasonality in the daily returns is not due to temporal variation in stock market risk, as proxied by the GARCH (1, 1) model.

4. Empirical Results and Findings

Table 1.1, 1.2 and 1.3 represent daily mean returns, standard deviation of returns and coefficient of variation. To test the first hypothesis, the tables also represent t-values and their corresponding p-values for DSI, DSE-20 and DGEN index respectively. From the tables we can see that for all the three indices mean returns for Sunday and Monday are negative and for all other days mean returns are positive. It is also evident that only positive returns on Thursdays are statistically significant at 1% significance level for all the three indices thus our testable first hypothesis is rejected for all the three indices. So we can say that significant day of the week effect observed in DSE for all the three indices

Table 2.1, 2.2 and 2.3 represent daily mean returns for the pair of days. To test the second hypothesis, the tables also represent t-values and their corresponding p-values for DSI, DSE-20 and DGEN index respectively. It is apparent from the tables that the mean daily returns between two consecutive days differ significantly for the pairs Monday-Tuesday, Wednesday-Thursday and Thursday-Sunday for all the three indices thus the second hypothesis is rejected for these pair of days. For the other pair of days mean returns do not differ significantly thus the null hypothesis is accepted. So we can draw the similar conclusion that the DSE is experiencing significant day of the week effect.

Table 3.1, 3.2 and 3.3 represent ANOVA tables for DSI, DSE-20 and DGEN index respectively. It is obvious from the tables that for all the three indices calculated F-values are greater than critical F-values thus our third hypothesis is rejected for all the three cases. So we can infer that the average daily return of every working day of the week is not statistically equal which supports the existence of day of the week effect in DSE.

Table 4.1, 4.2 and 4.3 represent OLS regression results for DSI, DSE-20 and DGEN index respectively. It is clear from the tables that only Thursdays have positive and statistically significant coefficients for all the three indices which is consistent with our previous results. Sundays and Mondays have statistically significant and negative coefficients which is also consistent with our previous result. Thus we can further conclude that significant day of the week effect present in DSE.

Table 5.1, 5.2 and 5.3 represent parameter estimates of equation 8.1 for DSI, DSE-20 and DGEN index respectively. From the table we can see statistically significant negative coefficients for Sunday and Monday and statistically significant positive coefficient for Thursday dummies for all the three indices. The Thursday coefficient is 0.320607, 0.390151 and 0.38385 which implies that the conditional mean return on Thursday is 32%, 39% and 38% points higher than the conditional mean return for all the week days of the week taken together for DSI, DSE-20 and DGEN index

respectively. Results also indicate that the conditional mean return tends to shift to the positive direction on Thursdays and negative direction on Sundays and Mondays.

5. Conclusion

In this paper we have examined the presence of day of the week effect in DSE. We considered daily closing values of DSE indices for a period of 04.09.2005-08.10.2008. We formulated several hypotheses and used one-sample t-test, two-sample t-test and ANOVA to test those hypotheses. We used dummy variable regression to infer whether day of the week anomaly exist in DSE. We also used the GARCH (1, 1) model to test the volatility of return. The result indicate that for all the three indices mean returns for Sunday and Monday are negative and for all other days mean returns are positive. It is also evident that only positive returns on Thursdays are statistically significant for all the three indices. Result also reveals that the mean daily returns between two consecutive days differ significantly for the pairs Monday-Tuesday, Wednesday-Thursday and Thursday-Sunday for all the three indices. For the other pair of days mean returns do not differ significantly. It is obvious from the result that for all the three indices calculated F-values are greater than critical F-values thus we can infer that the average daily return of every working day of the week is not statistically equal which supports the existence of day of the week effect in DSE. Dummy variable regression result shows that only Thursdays have positive and statistically significant coefficients for all the three indices which is consistent with our previous results. Sundays and Mondays have statistically significant and negative coefficients. Results of GARCH (1,1) model shows statistically significant negative coefficients for Sunday and Monday and statistically significant positive coefficient for Thursday dummies for all the three indices. Results also indicate that the conditional mean return tends to shift to the positive direction on Thursdays and negative direction on Sundays and Mondays. We can conclude from all the results that statistically significant negative returns occur on Sundays and Mondays where as high and statistically significant positive return occur on Thursdays which reveals that significant day of the week effect present in DSE for all the three indices for the period examined. One possible explanation for such day of the week effect anomaly may be that most of the positive economic news comes at the week end and investors show affirmative and hopeful investment behavior which result in a positive return on Thursdays. On the other hand, most of the negative economic news comes at the beginning of the week and investors try to sell their investment which result in a negative return on Sundays and Mondays.

The results have important practical implications to different capital market participants such as investors, managers and regulatory authorities. Investors can formulate their investment strategies and timing on the basis of this result and can earn some abnormal return by predicting future prices. More specifically said, as we conclude negative Sunday and Monday returns and significantly positive return on Thursday so investors can buy the shares on Sunday and Monday and can sell the share on Thursday. By following this trading strategy investors are expected to earn some abnormal return. One weakness of the study is that it does not consider individual share price rather it considers market index. So investment strategy on the basis of the finding of this study in case of individual share may not provide expected result. But if the size of the portfolio is larger that closely represent the market then investment strategy on basis of the finding of this study is expected to provide some abnormal return to the investors. As the presence of the day of the week anomaly indicates inefficiency of the market, it informs the regulators and policy markers that appropriate measures should be taken to bring informational and operational efficiency in the market. It is argued by Islam and Gomes (1999) that a combination of factors like inadequate financial information, thin and discontinuous trading, reliance on price momentum as a basis for trading and manipulation by the market makers creates the conditions that lead to the positive weekend effect. Thus the regulators should take appropriate steps to remove such anomaly to bring the efficiency of the market.

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Table 1.1 Mean Daily Return of DSI

Day	Obs.	Mean Return (%)	Standard Deviation (%)	Coefficient Of Variation	t-value	p-value
Sunday	140	-0.0717	1.271334	1773	-0.67	0.5057
Monday	146	-0.15751	1.125504	714	-1.69	0.0930
Tuesday	145	0.195425	1.238948	633	1.90	0.0595
Wednesday	147	0.149072	0.99324	666	1.82	0.0709
Thursday	143	0.391211	0.989469	253	4.73***	0.0001

*** denotes significant at 1% significance level

Table 1.2 Mean Daily Return of DSE-20

Day	Obs	Mean Return (%)	Standard Deviation (%)	Coefficient Of Variation	t-value	p-value
Sunday	140	-0.04093	1.375521	3361	-0.35	0.7253
Monday	145	-0.20223	1.145441	566	-2.13**	0.0352
Tuesday	145	0.092911	1.052477	1133	1.06	0.2896
Wednesday	147	0.076727	1.015188	1323	0.92	0.3610
Thursday	143	0.369396	1.006851	273	4.39***	0.0001

*** denotes significant at 1% significance level and ** denotes significant at 5% significance level

Table 1.3 Mean Daily Return of DGEN

Day	Obs	Mean Return (%)	Standard Deviation (%)	Coefficient Of Variation	t-value	p-value
Sunday	140	-0.06477	1.306767	2018	-0.59	0.5585
Monday	145	-0.14333	1.182611	825	-1.46	0.1466
Tuesday	145	0.122094	1.106028	906	1.33	0.1859
Wednesday	147	0.141989	1.027941	724	1.67	0.0961
Thursday	143	0.398971	0.957339	240	4.98***	0.0001

*** denotes significant at 1% significance level

Table 2.1 Mean Return of Two Sequential Days of DSI

Pair days	Mean return	t-value	p-value
Sunday Monday	-0.0717 -0.15751	0.60	0.5457
Monday Tuesday	-0.15751 0.195425	-2.54**	0.0115
Tuesday Wednesday	0.195425 0.149072	0.35	0.7244
Wednesday Thursday	0.149072 0.391211	-2.08**	0.0385
Thursday Sunday	0.391211 -0.0717	3.41***	0.0007

*** denotes significant at 1% significance level and ** denotes significant at 5% significance level

Table 2.2 Mean Return of Two Sequential Days of DSE-20

Pair days	Mean return	t-value	p-value
Sunday Monday	-0.04093 -0.20223	1.07	0.2823
Monday Tuesday	-0.20223 0.092911	-2.28**	0.0231
Tuesday Wednesday	0.092911 0.076727	0.13	0.8937
Wednesday Thursday	0.076727 0.369396	-2.46**	0.0143
Thursday Sunday	0.369396 -0.04093	2.86***	0.0044

*** denotes significant at 1% significance level and ** denotes significant at 5% significance level

Table 2.3 Mean Return of Two Sequential Days of DGEN

Pair days	Mean return	t-value	p-value
Sunday Monday	-0.06477 -0.14333	0.53	0.5948
Monday Tuesday	-0.14333 0.122094	-1.97**	0.0494
Tuesday Wednesday	0.122094 0.141989	-0.16	0.8736
Wednesday Thursday	0.141989 0.398971	-2.20**	0.0285
Thursday Sunday	0.398971 -0.06477	3.40***	0.0007

*** denotes significant at 1% significance level and ** denotes significant at 5% significance level

Table 3.1 ANOVA table of DSI

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	27.61233	4	6.903082	5.416906	0.000267***	2.384368
Within Groups	912.4409	716	1.274359			
Total	940.0533	720				

***denotes significant at 1% significance level

Table 3.2 ANOVA table of DSE-20

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	25.28322	4	6.320804	4.989042	0.00057***	2.38439
Within Groups	905.8602	715	1.266937			
Total	931.1434	719				

***denotes significant at 1% significance level

Table 3.3 ANOVA table of DSE-20

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	25.44458	4	6.361146	5.057365	0.000505***	2.38439
Within Groups	899.3259	715	1.257799			
Total	924.7705	719				

***denotes significant at 1% significance level

Table 4.1 Regression Result of DSI Index

Variable	Coefficient	Std. Error	t-statistic	Prob.
Intercept	0.3912	0.0944	4.1441	0.0000
Sunday	-0.4630	0.1342	-3.44953***	0.0006
Monday	-0.5487	0.1328	-4.1315***	0.0000
Tuesday	-0.1958	0.1330	-1.4716	0.1416
Wednesday	-0.2421	0.1326	-1.8262	0.0682
Thursday	0.3614	0.1059	3.41178***	0.0007
R-squared	0.029373	Sum squared resid		912.4409
Adjusted R-squared	0.023951	F-statistic		5.416906
Standard Error	1.128875	Prob (F-statistic)		0.000

***denotes significant at 1% significance level

Table 4.2 Regression Result of DSE-20 Index

Variable	Coefficient	Std. Error	t-statitic	Prob.
Intercept	0.369396	0.094126	3.924489	0.0001
Sunday	-0.41033	0.133825	-3.06613***	0.00225
Monday	-0.57162	0.132654	-4.30912***	1.87E-05
Tuesday	-0.27649	0.132654	-2.08425	0.037492
Wednesday	-0.29267	0.132206	-2.21375	0.027161
Thursday	0.387251	0.105393	3.67436***	0.000256
R-squared	0.027153	Sum squared resid		905.8602
Adjusted R-squared	0.02171	F-statistic		4.989042
Standard Error	1.125583	Prob (F-statistic)		0.00057

***denotes significant at 1% significance level

Table 4.3 Regression Result of DGEN Index

Variable	Coefficient	Std. Error	t-statitic	Prob.
Intercept	0.398971	0.093786	4.254063	0.0000
Sunday	-0.46374	0.133342	-3.47786***	0.0005
Monday	-0.5423	0.132175	-4.10291***	0.0000
Tuesday	-0.27688	0.132175	-2.09478	0.0365
Wednesday	-0.25698	0.131728	-1.95085	0.0515
Thursday	0.38385	0.105042	3.654251***	0.0003
R-squared	0.027514	Sum squared resid		899.3259
Adjusted R-squared	0.022074	F-statistic		5.057365
Standard Error	1.121516	Prob (F-statistic)		0.000505

***denotes significant at 1% significance level

Table 5.1 Stock Market Volatility using DSI Index

	Coefficient	Std. Error	z-Statistic	Prob.
GARCH	-0.002911	0.153969	-0.018907	0.9849
C	0.342524	0.197721	1.732361	0.0832
SUNDAY	-0.439782	0.127687	-3.4442***	0.0006
MONDAY	-0.543117	0.121274	-4.4784***	0.0000
TUESDAY	-0.117421	0.127783	-0.918911	0.3581
WEDNESDAY	-0.214626	0.123772	-1.734038	0.0829
THURSDAY	0.320607	0.102164	3.138166***	0.0017
Variance Equation				
C	0.285207	0.17259	1.652513	0.0984
RESID(-1)^2	0.090126	0.04649	1.938626	0.0525
GARCH(-1)	0.689909	0.159425	4.327495	0.0000
T-DIST. DOF	6.901892	1.946925	3.545021	0.0004
R-squared	0.028303	Mean dependent var		0.101454
Adjusted R-squared	0.016003	S.D. dependent var		1.142641
S.E. of regression	1.133462	Akaike info criterion		3.048697
Sum squared resid	913.4473	Schwarz criterion		3.112229
Log likelihood	-1089.055	F-statistic		2.301033
Durbin-Watson stat	1.856571	Prob(F-statistic)		0.014995

***denotes significant at 1% significance level

Table 5.2 Stock Market Volatility using DSE-20 Index

	Coefficient	Std. Error	z-Statistic	Prob.
GARCH	0.509417	0.347525	1.465842	0.1427
C	-0.311955	0.446382	-0.698852	0.4846
SUNDAY	-0.491927	0.126466	-3.889809***	0.0001
MONDAY	-0.568054	0.125463	-4.527665***	0.0000
TUESDAY	-0.230353	0.12105	-1.902952	0.0570
WEDNESDAY	-0.300983	0.122701	-2.452985	0.0142
THURSDAY	0.390151	0.100336	3.888452***	0.0001
Variance Equation				
C	0.543355	0.307784	1.765378	0.0775
RESID(-1)^2	0.072625	0.044546	1.630319	0.1030
GARCH(-1)	0.506718	0.251595	2.014019	0.0440
T-DIST. DOF	5.227122	1.165668	4.484228	0.0000
R-squared	0.027786	Mean dependent var		0.059058
Adjusted R-squared	0.015462	S.D. dependent var		1.138004
S.E. of regression	1.129172	Akaike info criterion		3.02185
Sum squared resid	905.2706	Schwarz criterion		3.085451
Log likelihood	-1077.866	F-statistic		2.254658
Durbin-Watson stat	1.789687	Prob(F-statistic)		0.017272

***denotes significant at 1% significance level

Table 5.3 Stock Market Volatility using DGEN Index

	Coefficient	Std. Error	z-Statistic	Prob.
GARCH	0.241758	0.2197	1.100401	0.2712
C	0.08316	0.266682	0.311832	0.7552
SUNDAY	-0.525563	0.138793	-3.786674***	0.0002
MONDAY	-0.579945	0.130695	-4.437404***	0.0000
TUESDAY	-0.247839	0.13049	-1.899296	0.0575
WEDNESDAY	-0.237057	0.127148	-1.864416	0.0623
THURSDAY	0.38385	0.105042	3.654251***	0.0003
Variance Equation				
C	0.094316	0.070855	1.331113	0.1832
RESID(-1)^2	0.040726	0.023277	1.749617	0.0802
GARCH(-1)	0.884998	0.069885	12.66371	0.0000
T-DIST. DOF	8.707873	3.081067	2.826253	0.0047
R-squared	0.027753	Mean dependent var		0.091358
Adjusted R-squared	0.015428	S.D. dependent var		1.134103
S.E. of regression	1.12532	Akaike info criterion		3.050506
Sum squared resid	899.1057	Schwarz criterion		3.114107
Log likelihood	-1088.182	F-statistic		2.25187
Durbin-Watson stat	1.838079	Prob(F-statistic)		0.017418

***denotes significant at 1% significance level