Is There Any Diwali Effect?

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INTRODUCTION

The question - *`Does the stock market overreact?'* (De Bondt and Thaler, 1985) gave start to a new wave of thinking known as behavioural finance. Weak form inefficiency of the stock market was discovered by them after analyzing how people are systematically overreacting to unexpected and dramatic news events, which was surprising and profound. The Efficient Market Hypothesis, as proposed by Fama (1970) asserts that the stock prices fully reflect the relevant information. The asset prices follow a random walk path[1] i.e. they are merely random numbers. The study conducted by Caginalp, G. and H. Laurent (1998) by the predictive power of price patterns finds patterns and confirms that they are statistically significant, even in out-of-sample testing and report.

The pattern of the stock index might help in predicting some of the effects of the various events. The calendar anomalies tend to exist, which goes against the efficient market hypothesis. The researchers have used the Gregorian calendar to investigate the calendar anomalies. There are various countries and societies, which follow their own calendar on the basis of their religion. For example, the Hebrew calendar is followed by the Jewish society, which is strictly based on luni-solar calendar; the Christian society follows the Gregorian calendar, which is based on the solar calendar, similarly the Hindu and Chinese follow their own calendars.

The Hindu Calender[2] is called "*Panchanga"* and it is based on both movements of the sun and the moon. The festival called *"Diwali"* (Festival of Lights) is typicallycelebrated during the end of October and the beginning of November.

The special Ritual called "*Mahurat Trading*" can be observed on major stock exchanges like NSE, BSE, NCDEX to name a few, which lasts for about an hour. It is performed as a symbolic ritual since many years. It marks a link with the rich past and brokers look forward to it on a positive note. The investors place token orders and buy stocks for their children, which are sometimes never sold and intra day profits are booked, however small they may be. Thus, it is widely believed that trading on this day will bring wealth and prosperity throughout the year.[3]

It has become quite interesting to note the behaviour of trading activities during the period preceding and succeeding *Mahurat Trading*. The purpose of this study is to examine the effect of the festival prior and post Diwali on the trading activities and on the returns.

REVIEW OF LITERATURE

A lot of literature can be found on calendar anomalies showing the various patterns like the month of the year effect, day of the week effect, intra month effect, turn of the month effect, holiday effect, Halloween effect and daylight savings' effect. Stock returns are abnormally high on Fridays and abnormally low on Mondays (Wachtel, 1942). Similarly, for the month of the year effect, it was found that returns are higher in January as compared to other months (Rozeff and Kinney, 1976).

Turn of the month effect was found to be higher on turn-of-the-month trading days (Ariel, 1987). Lakonishok and Smidt (1988) found that returns are significantly higher around the turn of the year. The Futures market (Gay and Kim, 1987), bond markets (Jordan and Jordan, 1991) and foreign exchange market (Corhay et al., 1995) studies are testimony to the fact that the studies are not only limited to stock markets (see, for instance, Cross (1973); Linn and Lockwood (1988); and Ogden (1990)).

Studies of calendar anomalies have been pursued not only of stock markets (see, for instance, Cross (1973); Linn and Lockwood (1988); and Ogden (1990)), but have also been extended to other markets, such as the foreign exchange market (Corhay et. al, 1995), the futures market (Gay and Kim, 1987), and bond markets (Jordan and Jordan, 1991).

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[1] The theory of random walk hypothesis was first postulated by Bachelier (1900).

[2] http://www.sanskrit.org/www/Hindu%20Primer/hinducalendar.html contains the information on Hindu calendar, viewed on August 8, 2011

[3] http://articles.economictimes.indiatimes.com/2007-11-04/news/27687491_1_muhurat-trading-lakshmi-puja-trading-session, viewed on August 10,2011.

Studies are not only conducted for markets in the United States, but go beyond the Pacific and Atlantic oceans (see Gultekin and Gultekin (1983), Jaffe and Westerfield (1989), Agrawal and Tandon (1994), and Dubois and Louvet (1996)). In general, most of the documented empirical findings are consistent with the presence of a calendar effect. These findings spur further investigations into the issue by extending the scope of the study beyond western calendar effects. There are various Indian literature also studying the effect on the Indian Stock Market.

Vigg, Kaur, Nathani and Holani (2008) concluded that the Bombay Stock Exchange is weak form efficient, factoring the previously available information. Kapil Choudhary (2008) was able to find the month of the year and day of the weak effect from the period of January 1996 till December 2006. Selvarani and Shree (2009) were able to find the day of the week effect on NSE and selected pharmaceutical companies. Parthapratim Pal (2005) concluded that the influence of Flls on the movement of the Sensex became apparent after the 2004 general elections in India, when the sudden reversal of FII flows triggered a panic reaction, which resulted in very high volatility in the Indian stock market. Susan Thomas and Ajay Shah, 2002 examined the impact of the news about the Union Budget. The Indian stock market index gives an enormous importance to the Union Budget in influencing prices and volatility. The emerging market got a negative response in relation to the seasonal effect (Aggarwal and Rivoli, 1989; Ho, 1990; Lee Pettit and Swankoski, 1990; Lee, 1992; Ho and Cheung, 1994; and Islam, Duangploy and Sitchawat, 2002). Ramachanran (1997) rejected the seasonal effect for the stock market in Jamaica. Stock return volatility in India seems to be influenced more by domestic, political and economic events, rather than by global events. Further, stock market cycles in India have not intensified after financial liberalization (Amita Batra, 2004).

The various religious festivals follow a different calendar, and studies have been conducted to examine the effect (Chan et al., 1996 and Cadsby and Ratner, 1992). There was an effect observed on the various countries varying across their holidays. The Chinese New Year (CNY) effect is the focus of study in Asia, as there is strong presence of Chinese population as compared to others. The Major places where the festival is observed includes Hongkong, Taiwan, Singapore and Malaysia. The evidence is small in countries like Philippines and Thailand due to less number of Chinese population. Gao and King examined the CNY effect till 1991, after which it disappeared. The majority of the study conducted by Wong et al. (1990), Tong (1992), Lee et al. (1992), Yen and Shyy (1993) and Ahmad and Hussain (2001) identified the strong presence of CNY effect across Southeast Asian countries.

Frieder and Subrahmanyam (2004) tried to find out the effect of Jewish High holy Days of Rosh Hashanah and Yom Kippur and the Christian holy day of St. Patrick's by studying the data of S&P 500 index and NYSE trading volumes. There was an increase in prices two days preceding Rosh Hashanah and St. Patrick's as compared to declines on Rosh Hashanah and Yom Kippur. Kim, Chan-Wung and Jinwoo Park, 1994 reported abnormally high returns on the trading day before holidays in all three major stock markets in the U.S.: the NYSE, AMEX, and NASDAQ. The holiday effect is also present in the U.K. and the Japanese stock markets, even though each country has different holidays and institutional arrangements. Stulz and Williamson (2003) consider interesting comparative cultural features, and their effects on creditor's rights. Nofsinger (2003), Alper and Aruoba (2001) conducted research on the macroeconomic variables on Turkey and reached the conclusion that the seasonal adjustment procedures is not fully removed when fixed calendar holiday is compared to moving calendar holiday like Ramadan.

Studies have been conducted on the Islamic calendar, testing the Ramadan Effecting Pakistan's stock market (Husain, 1998) and concluded that there is less volatility during the Ramadan week. Similarly, the Ramadan effect was studied in Saudi Arabia's stock market (Seyyed, Abraham, and Al-Hajji, 2005), where they analyzed various sector indices and reached the conclusion that volatility and trading activities disappeared during Ramadan. Both of them failed to compare returns before and after Ramadan.

There was a presence of greater returns during the period prior to CNY (Chan et al.,1996), which gave the argument that Chinese employees get Cash bonuses wrapped in small red envelopes called Ang Pow. The enterprise owners may have liquidated a part of their investment portfolios, which results in decline of their stock prices before returning normal. This gives an annual opportunity to other investors to make profit. Similar results were also found in the Malaysian market during Eid-ul-Fitr (Carl B. McGowan and Noor Azzudin Jakob, 2010). They reported that Muslims also had the same tendency of giving cash bonuses as reward to their employees in small green envelopes.

The festival of Diwali is a grand celebration in India, and huge exchange of gifts among families, relatives and friends takes place. Bonuses are given to employees during this week, which is consistent as per the previous studies of Eid-ul-Fitr and CNY. The researcher looked for various literature in order to find out any study that has been study done in relation to before and after Diwali returns and Volatility. The only close resemblance the author could find was with

that of CNY (Chan et al.,1996).

ECONOMETRIC METHODOLOGY AND OBJECTIVE

The researcher measured the stock return as the continuously compounded daily percentage change in the share price index (S&P CNX NIFTY)[4] as shown below:

$$R_t = (\ln P_t - \ln P_{t-1}) \times 100$$

where, R_t = return at time t;

P_t , P_{t-1} = closing value of the stock price index at time t, t-1.

The researcher used S&P CNX Nifty, as it has got the most liquid stocks in its portfolio. Further, the National Stock Exchange is the largest in terms of Market capitalization and Volume.

There are two questions which the researcher tried to infer from the data, which are as follows:

1. Is there any excess return post the Mahurat Trading Period?

2. Does the volatility increases post the Mahurat Trading Period?

1. Returns Post The Mahurat Trading Period : The researcher has used the data of the returns of 8 trading days (inclusive of Mahurat trading day) and 7 trading days after Mahurat trading (excluding Mahurat trading day). Further, the researcher used Paired t-test in order to check whether there is an existence of positive returns post the Mahurat Trading days.

2. Volatility - Pre and Post Mahurat Trading Period : The researcher took the returns from the period of January 1997 till 2010. Further, the researcher used dummies for 15 trading days prior to the Mahurat trading and post it (excluding Mahurat Trading day) in order to check their effects. The author also used ADF in order to check the stationarity of the residual for unit roots. The presence of unit root in a time series was tested using the Augmented Dickey-Fuller test. It tests for a unit root in the univariate representation of the time series. For a return series Rt, the ADF test consists of a regression of the first difference of the series lagged k times as follows:

$$\Delta r_t = \alpha + \delta r_{t-1} + \sum_{i=1}^{p} \beta i \Delta r_{t-1} + \varepsilon_t$$

or

$$\Delta r_t = r_t - r_{t-1} \; ; \; r_t = \ln (R_t)$$

If the ADF test rejects the null hypothesis of a unit root in the return series - that is, if the absolute value of ADF statistics exceeds the McKinnon critical value, the series is stationary, and we can continue to analyze the series. Further, the researcher has used Jacque Bera test in order to check for non-normality of data. Black's (1976) Garch Model fails to identify the future volatility and current returns in terms of their negative relationship. Bollerslev et al. , 1992 indicate that the negative shocks lead to greater volatility, as compared to the positive shocks of the same size termed as leverage effect (Negative effect).

The limitation of this model is that it may not be able to capture the leverage effect, as the assumption is made of symmetric behaviour. We re-consider the anomalies, taking asymmetries into account using the Exponential GARCH or EGARCH model introduced by Nelson (1991). After checking the results of both, the researcher applied the Exponential Generalized Autoregressive Conditional Heteroskedasticity model (EGarch model) to check the volatility during this period.

To study the leverage effects using the EGarch model, the EGARCH (1,1) is specified as follows:

$$r_t = \mu + \Phi r_{t-1} + \varepsilon_t$$

$$\ln h^2_t = \omega + \alpha \left| \varepsilon_{t-1} / h_{t-1} \right| + \gamma \, \varepsilon_{t-1} / h_{t-1} + \beta \ln h^2_{t-1}$$

To accept the Null hypothesis of no leverage effect in the EGARCH model, the Υ coefficient must not be negative, otherwise, alternative hypothesis will be accepted. In other words, if the Υ coefficient is negative, there is evidence of leverage effect in the series.

[4] The Data has been taken from the NSE website from the period 1996 till 2010.

EMPIRICAL FINDINGS AND INTERPRETATION

1) Returns Post Mahurat Trading Period : The Paired t test was applied to the data relating to the period as specified earlier. The preliminary findings from the below data suggest that the mean returns are greater, as compared to the mean returns prior to the Mahurat Trading days.

Table 1: Results Of The Test Pre and Post Diwali (7 days period)

Paired t-test								
Variable	**obs**	**Mean**	**Std. Error**	**Std. Dev.**	**(90 % confidence interval)**			
w2	15	0.882058	0.497386	1.926368	0.006007	1.758109		
Avgw1mh	15	-0.2314575	0.2688166	1.041122	-0.7049269	0.2420118		
diff	15	1.113516	0.6628267	2.567117	-0.0539278	2.280959		
	mean(diff)=mean(w2-avgw1mh)				t=	1.6799		
Ho:	mean(diff)=	0		degrees of freedom=		14		
Ha:	mean(diff)<	0	Ha:	mean(diff)! =	0	Ha:	mean(diff) >	0
Pr(T<t)=	0.9424		Pr(T>t)=	0.1151		Pr(T> t)=	0.0576	

Ho: Mean(W2-avgw1mh) = 0

Ha: Mean(W2-avgw1mh) ≠0

At 90 % confidence interval, the researcher rejects the null hypothesis that mean difference between average returns of 8 days, including Diwali, is statistically significant as compared to logarithms average of the post 7 days after the Mahurat trading. Thus, we can say that the returns post mahurat trading are higher as compared to 8 days prior to it. In order to avoid the existence of sample bias and data mining, the researcher checked for out of sample data for 15 and 20 days.

Table 2: Results of The Test Pre and Post Diwali (20 days Period)

Paired t-test								
Variable	**obs**	**Mean**	**Std. Error**	**Std. Dev.**	**(90 % confidence interval)**			
avg_post	15	0.0557786	.0329832	.1277432	-.0023149	.1138722		
avg_pre	15	-.0548564	.0675661	.2616822	-.1738612	.0641484		
diff	15	.1106351	.0770557	0.2984353	-.0250838	0.246354		
	mean(diff) = mean(avg_post - avg_pre)				t=	1.4358		
Ho:	mean(diff)=	0		degrees of freedom=		14		
Ha:	mean(diff)<	0	Ha:	mean(diff)!=	0	Ha:	mean(diff) >	0
Pr(T<t)	=	0.9135		Pr(T>t)=	0.1730		Pr(T> t)= 0.0865	

Here, we can reject the null hypothesis that the returns are equal, with 0.1 significance for the 20 days sample period of Pre and Post Diwali. Similarly, the researcher has done for out of sample data for 15 days and came out with the same results. The above results confirm the finding that there is an existence of excess return post mahurat trading days as compared to pre mahurat trading days.

2) Volatility Post and Pre *Mahurat* Trading Period : There is an increase in the future price volatility due to negative information as compared to positive information. Chelley-Steeley & Steeley, 1996; Sentana and Wadhwani , 1992 reached the conclusion that herding behaviour of traders is the main driver of it ; while Lo and MacKinlay (1987) concluded that it's the result of non-synchronous trading. Thus, there are various views but still, there are no concrete answers to the existence of leverage effects, which causes asymmetric volatility in the stock market returns. We would first try to see the data for the whole period including pre and post Mahurat trading days (excluding Mahurat trading

days). Augmented Dickey-Fuller (ADF) statistics clearly reject the hypothesis of a Unit Root at 1% level of significance, which is also consistent with the findings of the earlier studies. According to the central limit theorem, the lack of the normal distribution should not cause any problems here, since the theorem states that the OLS regression is approximately normally distributed for large samples (Luetkepohl, Kraetzig and Phillips, 2004: pp. 45-46). The importance is to analyze the characteristics of the series. The variance is a measure of how much the variable deviates from its mean value. Skewness is a measure of the symmetry of the probability distribution curve. Zero skewness means a curve is symmetrical around its mean. The kurtosis describes the peak of the distribution curve. The normal distribution has a zero skewness and kurtosis equal to three (Watsham and Parramore, 1997: pp. 49-63).

Table 3: Descriptive Statistics Of Returns Since 1997

LOG_RET	
Mean	0.023315
Median	0.054207
Maximum	7.093903
Minimum	-5.669220
Std. Dev.	0.753336
Skewness	-0.212332
Kurtosis	9.452421
Jarque-Bera	6089.175***
Probability	0.000000
Sum	81.48593
Sum Sq.	
Dev.	1982.895
Observations	3495

The Table 3 depicts that the average Return during the entire period ranging from 1997 till 2010 comes out to be 0.02% on a lognormal scale. The value of Kurtosis of 9.45 describes that its leptokurtic distribution. Further, there is an existence of negative skewness. There is a rejection of Null hypothesis of normality by Jacque Bera test*** with .01, .05, 0.1 significance. In order to analyze results, we first test for stationarity of the return and volatility time series. The researcher performed Augmented Dickey and Fuller (1981) unit root tests using a modified Akaike to select the

Table 4: Result of the ADF Test

Null Hypothesis: LOG_RET has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on SIC, maxlag=29)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-55.79848	0.0001
Test critical values:	1% level		-3.432034	
	5% level		-2.862170	
	10% level		-2.567149	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LOG_RET)				
Method: Least Squares				
Date: 08/22/11 Time: 08:16				
Sample (adjusted): 1/03/1997 12/31/2010				
Included observations: 3494 after adjustments				

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG_RET(-1)	-0.942613	0.016893	-55.79848	0.0000
C	0.022154	0.012732	1.739974	0.0820
R-squared	0.471347	Mean dep. Var		0.000233
Adjusted R-squared	0.471196	S.D. dependent var		1.034448
S.E. of regression	0.752240	Akaike info criterion		2.269049
Sum squared resid	1975.999	Schwarz criterion		2.272574
Log likelihood	-3962.028	Hannan-Quinn criter.		2.270307
F-statistic	3113.471	Durbin-Watson stat		1.994811
Prob(F-statistic)	0.000000			

optimal number of lags as suggested in Ng and Perron (1995, 2001). Augmented Dickey-Fuller (ADF) statistics clearly reject the hypothesis of a Unit Root at the 1% level of significance in the given data, also consistent with the findings of the earlier studies. We can say that the absolute value of ADF statistics exceeds the McKinnon critical value, the series is stationary and we can continue to analyze the series.

Table 5: Result of ARCH LM Test

Heteroskedasticity Test: ARCH				
F-statistic	151.4471	Prob. F(1,3492)		0.0000
Obs*R-squared	145.2350	Prob. Chi-Square(1)		0.0000
Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Date: 08/22/11 Time: 08:25				
Sample (adjusted): 1/03/1997 12/31/2010				
Included observations: 3494 after adjustments				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.451706	0.028902	15.62862	0.0000
RESID^2(-1)	0.203882	0.016567	12.30638	0.0000
R-squared	0.041567	Mean dep. Var		0.567410
Adjusted R-squared	0.041293	S.D. dependent var		1.649934
S.E. of regression	1.615510	Akaike info criterion		3.797751
Sum squared resid	9113.674	Schwarz criterion		3.801276
Log likelihood	-6632.670	Hannan-Quinncriter.		3.799009
F-statistic	151.4471	Durbin-Watson stat		2.046429
Prob(F-statistic)	0.000000			

The P value is very small at 1% level of significance, which rejects the null hypothesis in favour of homoscedasticity of residuals in favour of ARCH alternative. This fat-tailed character is consistent with earlier studies (see Huisman and Huurman (2002), Higgs and Worthington (2005), and Wolak (2000)) and like price, is driven by the prevalence of extremely large spikes in returns. We can now use the EGarch Model as the data is stationary as proved from ADF. In the exponential GARCH (EGARCH) model of Nelson (1991), under the E-GARCH methodology, two distinct specifications for mean and variance are made. These are as follows:

Mean specification:

❁ In the first step, we specify the conditional mean equation for returns as:

$$\gamma_t = \mu + \varepsilon_t$$

Variance Specification:

❁ In the second step, we identify the conditional variance equation for returns.

In the model specification, α is the GARCH term that measures the impact of last period's forecast variance. A positive α indicates volatility clustering, implying that positive stock price changes are associated with further positive changes and vice versa. ϒ is the ARCH term that measures the effect of news about volatility from the previous period on current period volatility. β measures the leverage effect. Ideally, β is expected to be negative, implying that bad news has bigger impact on volatility than good news of the same magnitude. The sum of the ARCH-GARCH coefficients indicates the extent to which a volatility shock is persistent over time. A persistent volatility shock raises the asset price volatility.

❁ The general specification of the conditional variance in the E-GARCH(p,q) model is as follows:

$$\text{Log}(\sigma^2_t) = \omega + \alpha \log(\sigma^2_{t-1}) + \gamma |\varepsilon_{t-1}/\sigma_{t-1}| + \beta \, \varepsilon_{t-1}/\sigma_{t-1}$$

Table 6: Result of the EGARCH

Dependent Variable: LOG_RET				
Method: ML - ARCH (Marquardt) - Student's t distribution				
Date: 08/22/11 Time: 08:28				
Sample (adjusted): 1/02/1997 12/31/2010				
Included observations: 3495 after adjustments				
Convergence achieved after 13 iterations				
Presample variance: backcast (parameter = 0.7)				
LOG(GARCH) = C(2) + C(3)*ABS(RESID				
(-1)/@SQRT(GARCH(-1))) + C(4) *RESID(-1)/@SQRT(GARCH(-1)) + C(5)*LOG(GARCH(-1))				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
C	0.046423	0.009275	5.005413	0.0000
	Variance Equation			
C(2)	-0.233642	0.020728	-11.27206	0.0000
C(3)	0.250069	0.023557	10.61532	0.0000
C(4)	-0.101663	0.013886	-7.321195	0.0000
C(5)	0.952159	0.007564	125.8765	0.0000
T-DIST. DOF	6.743422	0.593689	11.35852	0.0000
*R-squared	-0.000941	Mean dep. Var		0.023315
Adjusted R-squared	-0.000941	S.D. dependent var		0.753336
S.E. of regression	0.753690	Akaike info criterion		1.950933
Sum squared resid	1984.762	Schwarz criterion		1.961507
Log likelihood	-3403.255	Hannan-Quinn Criteria		1.954707
Durbin-Watson stat	1.883250			

*Note that R-squared measure may not be meaningful if there are no regressors in the mean equation. Here, it is negative.

This implies that the leverage effect is exponential and its presence can be tested by the hypothesis that C(5)>0.

C(3) : is the ARCH term that measures the effect of news about volatility from the previous period on current period volatility (ϒ).

C(4): measures the leverage effect. Ideally, C(4) is expected to be negative, implying that bad news has a bigger impact on volatility than good news of the same magnitude (β).

C(5) : A positive a indicates volatility clustering, implying that positive stock price changes are associated with further positive changes and vice versa (α).

The overall volatility during the period constituted of α+ β=0.8504, which is quite high.

In the next section, the researcher checks the data Post Diwali as well as Pre Diwali for volatility.

❁ **Post and Pre Diwali Volatility :** The researcher has already checked the data for the stationarity for unit roots and also did the ARCH LM test. ARCH LM rejects the null hypothesis in favour of homoscedasticity of residuals in favour of the ARCH alternative. ADF statistics clearly reject the hypothesis of a Unit Root at the 1% level of significance in the given data. We can now use the EGarch Model for checking the volatility during this period.

Table 7: Result of the EGARCH Pre and Post Diwali

Dependent Variable: LOG_RET				
Method: ML - ARCH (Marquardt) - Student's t distribution				
Date: 08/22/11 Time: 09:11				
Sample (adjusted): 1/02/1997 12/31/2010				
Included observations: 3495 after adjustments				
Convergence achieved after 12 iterations				
Presample variance: backcast (parameter = 0.7)				
LOG(GARCH) = C(4) + C(5)*ABS(RESID(-1)/@SQRT(GARCH(-1))) + C(6) *RESID(-1)/@SQRT(GARCH				
(-1)) + C(7)*LOG(GARCH(-1)) + C(8) *DUM_WHOLE_NOT40_POST + C(9)*DUM_PRE				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
C	0.036606	0.010687	3.425383	0.0006
DUM_POST	0.057380	0.022972	2.497843	0.0125
DUM_PRE	-0.101797	0.043646	-2.332339	0.0197
	Variance Equation			
C(4)	-0.231276	0.020705	-11.16980	0.0000
C(5)	0.250466	0.023606	10.61011	0.0000
C(6)	-0.100955	0.013965	-7.229175	0.0000
C(7)	0.951867	0.007596	125.3152	0.0000
C(8)	-0.019103	0.013219	-1.445195	0.1484
C(9)	0.030632	0.030946	0.989857	0.0222
T-DIST. DOF	6.740523	0.597273	11.28549	0.0000
R-squared	0.001390	Mean dep. var		0.023315
Adjusted R-squared	0.000818	S.D. dependent var		0.753336
S.E. of regression	0.753027	Akaike info criterion		1.950766
Sum squared resid	1980.140	Schwarz criterion		1.968389
Log likelihood	-3398.964	Hannan-Quinn criter.		1.957056
Durbin-Watson stat	1.888370			

The researcher tested for the significance of volatility Pre and Post Diwali by introducing the dummy variables called DUM_Post (Post Diwali Period) and DUM_PRE (Pre Diwali Period) as variance regressors. We can clearly see that one of them is significant at 1%, 5% and 10% significance level. The C(8) and C(9) represents the variance regressors of Pre-diwali and Post Diwali period. The coefficient that one is contributing positively towards the returns as compared to the other, is contributing negatively at 5% and 10% level of significance. Further, the effect of pre diwali contributing towards volatility is insignificant, as compared to the post Diwali period, which can be seen from the variance regressors. The Post Diwali period contributes significantly, and its coefficient is positive.

The above helps us in concluding that the post diwali period is having higher level of volatility, which is further substantiated by the level of trading activity.

VOLUME CHANGE

The above data clearly shows that the mean of volume post trading is higher, as compared to the pre mahurat trading days. There is a surge in the trading activity during this period.

Table 8: Result Of The Mean Volume		
	POST_VOL_CH	PRE_VOL_CH
Mean	3.308718	0.256515
Median	0.662139	0.780280
Maximum	84.89522	57.31445
Minimum	-85.23575	-54.72356
Std. Dev.	19.79241	11.46761
Skewness	0.967370	0.044396
Kurtosis	9.154926	7.098495
Jarque-Bera	367.6993	148.4490
Probability	0.000000	0.000000
Sum	701.4483	54.38120
Sum Sq. Dev.	82657.03	27747.77
Observations	212	212

CONCLUSION

In this paper, the researcher has examined the seasonality in the Indian stock market during the period of Diwali. He used paired t-test and E-Garch model in order to see the effect of the behaviour of returns as well volatility respectively during this period. The findings clearly show that there is an increase in the level of returns as well volatility in the post diwali period. The level of trading activity pre diwali and post diwali period is also shown by using the amount of volume in order to further support the findings along with the results obtained.

The results of the findings clearly show that there is an existence of excess returns and volatility during the post mahurat period. Further, the market is not informationally efficient, and investors can time their investment in shares on S&P CNX NIFTY index in order to obtain greater returns. The findings are similar to that of CNY effect (Chan et al. ,1996). There are various reasons which help in understanding the results as well behavior of investors during this period. Firstly, in India, as during the Chinese New Year, we also have a trend of distribution of bonuses to the employees. The enterprise might have liquidated their investment portfolios, which results in the decline of their stock prices, which is reflected in the index. The investors have excess cash bonuses, and would flock the market taking various positions, thus driving up the volatility in the market. Secondly, newspapers get flooded with various buy recommendations by the brokers, which may lure some of the investors during the period, as they have cash balances. Thirdly, there are various brokers, who tend to buy in token amount of shares, which does not severely affect the index during the period prior to Diwali. Fourthly, the people are cash strapped pre Diwali as there are a large number of expenses made by them. As we know that one person's expenses is another person's income. The money goes into the hands of the various sellers of goods in the market. They have excess cash post this period, which is reflected in the trading activity (volume) as well as in the stock volatility. These people invest in the stock market, leading to an increase in the volatility.

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