

An Empirical Analysis of Day of the Week Effect in BSE BANKEX

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Abstract

Market efficiency is one of the most discussed issues in financial literature. Predicting the behavior of stock returns is considered one of most challenging task performed by academicians and security analysts. Numerous studies have been carried to prove that market inefficiencies do exist and these inefficiencies are called anomalies and these anomalies may be in form of seasonal effect and the most popular anomaly is Day of the Week Effect which says that average return on Monday is lower than the other days of the week. The research paper is going to investigate the Day of the Week Effect in BSE Bankex. The index has been analyzed for 10 years from 2005 April 1 to 2015 March 31. The study applies various different tools like dummy variable regression, ANOVA to examine the Day of the Week Effect. The study found that significant day of week effect does not exist in BSE Bankex; as a result abnormal profit cannot be generated.

Keywords

Day of the Week Effect, Calendar Anomalies, Dummy Variable Regression

I. Introduction

The efficient market hypothesis is one of the most influential concepts of modern finance and it has become a foundation of financial economics but many researchers found few anomalies which are contrary to the efficient market hypothesis theory and this contradiction is known as market anomaly. It is seen that stock returns are intimately tied to the day of the week. The stock market has a tendency to give maximum return on Friday and minimum return on Monday. It is often referred as weekend or blue Monday effect. It is bias towards positive Friday return and it is seen a common phenomenon in many stock market. Fundamentally there is no any valid reason for this discrepancy but some psychological reasons may be that an end-of-week optimism permeates the market as traders and investors look forward to the weekend. Alternatively, perhaps the weekend gives investors a chance to catch up on their reading, stew and fret about the market, and develop pessimism going into Monday. (Investopedia) nevertheless there is no universally accepted reasons. First study of this Monday effect was published by M.J.Fields in 1931 in the journal of Business at time when stock were also traded on Saturdays. Field found that DJIA showed advance return before holiday. Several researchers also validated the same pattern that Monday returns are worse than other days of the week.

II. Literature Review

Rahman(2009) analyzed Day of the week effect in Dhaka Stock Exchange by using dummy variable regression and GARCH (1,1) model and concluded that positive returns of the Thursday were significantly different than other days of the week. He also found that mean daily returns between two consecutive days differ significantly.

Shahid and Mehmood (2015) investigated calendar anomalies in Karachi Stock Exchange 100 and found no Monday effect in

KSE 100 but returns on Friday were positive as well as statistically significant, it confirm Day of the Week Effect were present in KSE 100.

Sarma (2014) explored day of the week effect on Indian stock market in the post reform era and found the highest variance in Monday returns and confirmed the futility of trading strategy based on regular patterns of returns.

Nik Muhammad and Abd.Rahman(2010) studied day of the week effect in Malaysian Stock market using dummy variable regression which indicates the presence of weekend effect in Malaysian market and the pattern of effect changed over time from negative Monday and Wednesday, positive Friday to negative Monday and positive Friday and returns showed irregular pattern market around the crash of 1997.

Patel, Radadia and Dhawan (2012) examined day of the week effect in four Asian stock exchange, Bombay stock exchange, Hong Cong stock exchange, Tokyo stock exchange and Shanghai stock exchange and found that highest return in BSE was on Monday, Nikki had highest return on Thursday, SES has highest return on Wednesday and Hang Seng has highest return on Friday but regression results does not confirm the presence of day of the week effect.

Amarnani and Vaidya (2014) empirically tested week effect in BSE and NSE and concluded that day of the week effect and negative Monday effect were observed in NIFTY but not in SENSEX. The variance in seasonality in Indian stock market as compared to other developed stock market implies that Indian stock market is not fully integrated with other developed market.

Narayan Sah ruminated on seasonal anomalies in S & P CNX Nifty and tested whether seasonal anomalies are present in Nifty and Nifty Junior or not. He found that Friday effect in Nifty, Nifty Junior observed Monday, Wednesday and Friday have significant results.

Raj and Kumari (2006) examined market anomalies in BSE and NSE and they observed that there were no seasonal anomalies like Monday effect or January effect. The reason behind the absence of Monday effect could be that the 14th day settlement period in India used to start on Monday and end on a Friday.

Dong Loc (2012) studied day of the week effect on stock returns and volatility in Ho Chin Minh Stock Exchange by using GARCH Model and OLS regression and found that Day of the Week Effect were present in stock exchange because negative effect was observed on Tuesday and positive returns occurred on Monday. The highest volatility occurred on Thursday, and the lowest volatility was observed on Monday.

III. Objective of the Study

The study has been done with the aim of investigating Day-of-the-Week anomaly in BSE Bankex.

A. Hypothesis of the Study

The following hypothesis has been tested for the study-

Ho:- There is no significant difference between the returns among the different days of the week.

$$\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5$$

H1:- There is significant difference between the returns among the different days of the week.

$$\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5$$

B. Period of Study

The data used in the study consist of daily closing prices of BSE Bankex from April 1, 2005 to March 31, 2015. All the data collected for the study was secondary.

C. Sources of Data

All information regarding market price of stock were obtained from www.bseindia.com, www.moneycontrol.com and in.finance.yahoo.com. Other relevant information was also collected from the books and journal

D. Methodology

IV. Returns

First of all, the following equation has been used to compute the return in BSE Bankex.

$$R_t = \ln(I_t / I_{t-1})$$

Where

R_t = Daily Return on the Index (I)

ln = Natural log of underlying market series

I_t = Closing Value of Index on a specific trading day

I_{t-1} = Closing Value of Index on preceding trading day

The reason for selecting log return is that logarithmic returns are more likely to be normally distributed and conform the assumptions of standard statistical technique. (Strong)

V. Descriptive Statistics

Descriptive statistics like Mean, Median, Standard Deviation, Skewness, Kurtosis, Jarque-Bera has been used for purpose of Analysis.

VI. ANOVA (Analysis of Variance)

ANOVA helps in determining significance of variation mean of more than two groups.

VII. Dummy Variable Regression

Donald B. Keim (1983) suggested regression model with dummy variables as a method of testing the anomalies. Mehdian and Perry (2001) detected the presence of month of year anomalies by using the same model

$$R_{it} = \beta_{1i}D_1 + \beta_{2i}D_2 + \beta_{3i}D_3 + \beta_{4i}D_4 + \beta_{5i}D_5 + \mu_{it}$$

Where R_{it} is the return of index I on the day t, β_{1i} represents return on the Monday and so on. D_1 is a dummy variable for Monday and zero otherwise and so on. μ_{it} represents an error term.

VIII. Empirical Results

Table 1 report the descriptive statistics of each day returns for BSE Bankex over the entire 10 year period. Table 1 shows mean, median, maximum, minimum, standard deviation Kurtosis Jarque-Bera and its associated p-value of every day during the entire study period. From the table it is clear that all the day has positive returns and Friday have highest return but contrary to the theoretical principle Monday effect, here return is not negative on Monday. So the discrepancy which has found by many researchers that reruns are tend to be highest on Friday and lowest on Monday has not been found in BSE Bankex. The highest value of standard deviation (0.023367) was recorded on Monday and lowest on Wednesday (0.018598), it shows that market was more volatile on Monday and least volatile on Wednesday during the study period. Stock returns have negative skewness for threedays and positive skewness for twodays. The kurtosis value of all the days is very high which indicates leptokurtic hence it is more peaked at the mean than the normal distribution. The JarqueBera test results are showing that returns were asymmetric and did not follow normal distribution.

Table 1: Descriptive Statistics for BSE Bankex

Days	Mean	Median	Max.	Min.	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
Monday	0.001116	0.00188	0.175483	-0.094951	0.023367	0.552078	11.24964	1454.788	0.00
Tuesday	0.000167	0.00091	0.07785	-0.086807	0.019583	-0.104385	5.389444	119.6151	0.00
Wednesday	0.000804	0.00044	0.095258	-0.084006	0.018598	0.179025	5.702245	153.5601	0.00
Thursday	0.000636	0.00129	0.088968	-0.068354	0.01947	-0.030469	5.02626	83.72992	0.00
Friday	0.001379	0.00124	0.077459	-0.134848	0.021011	-0.397576	7.371992	399.8682	0.00

Fig. 1 shows plot of return series which depicts variation in the daily returns. It is evident from the figure that there was high oscillation in returns between of 2008 to 2010. The reason behind this fluctuation was global recession which severely affected all the global stock markets

Fig. 1: Time Series Plot

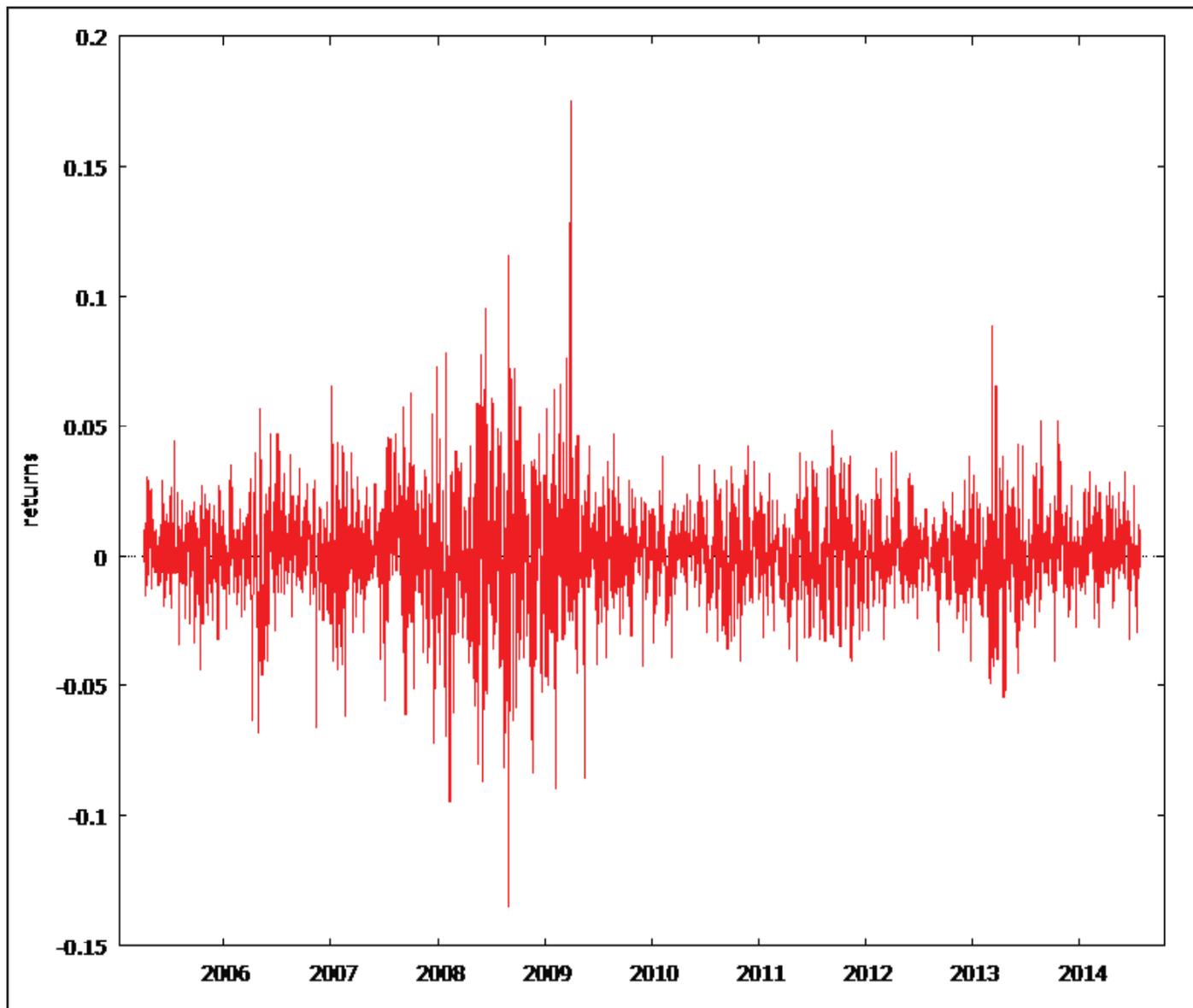


Table 2 shows ANOVA analysis of BSE Bankex. It is clear from the table that calculated F value is less than critical F value and F value is not statistically significant. So we can't infer that average return of any day is statistically different than other days which supports the day of the week effect in BSE Bankex.

Table 2: ANOVA for BSE Bankex

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.000425439	4	0.00010636	0.25349432	0.907638327	2.375531974
Within Groups	1.035928607	2469	0.000419574			
Total	1.036354045	2473				

Table 3 shows the result of Dummy variable regression model which has been used to analyze day wise returns in BSE Bankex during the study period from April 2005 to March 2015. The table indicates coefficient value of returns are positive on every working day and highest coefficient value is earned on Friday. The study found that none of the coefficients were significant means insignificant at 5% level of confidence. Because here p value is more than 0.05 so our null hypothesis cannot be rejected. Durbin-Watson test value is more than 2 which clearly indicates that there is no autocorrelation in residuals. Although daily returns are different to each other but there is no a negative return on Monday or lowest return on Monday, hence day of the week effect theory has no relevance in the context of BSE Bankex. ANOVA table and regression model also confirming the absence of Day of the Week Effect in BSE Bankex.

Table 3: Regression Results for BSE Bankex

Variable	Coefficient	Std. Error	t-ratio	p-value
Monday	0.00114422	0.000934024	1.225	0.2207
Tuesday	0.000243367	0.000934024	0.2606	0.7945
Wednesday	0.000855417	0.000934024	0.9158	0.3598
Thursday	0.000719092	0.000934024	0.7699	0.4414
Friday	0.00137907	0.000934024	1.4765	0.1399
Mean dependent var	0.000868		S.D. dependent var	0.020578
Sum squared resid	1.028167		S.E. of regression	0.020591
R-squared	0.000354		Adjusted R-squared	-0.001295
F(4, 2425)	0.214921		P-value(F)	0.930244
			Durbin-Watson	2.03314

IX. Conclusion

The research paper investigates the day of the week effect in BSE Bankex which is very important representative index of top banks in India. The study analyzes the Day of the Week Effect for the period April 1, 2005 to March 31, 2015. On the basis of empirical result we can say that there is no day of the week effect in index means market is efficient in the context of week day anomaly. Monday returns and Friday returns are not significant while comparing with other days of the week. Investors use seasonal anomalies for gaining higher profit which motivates them to study about right time of purchase and sale but here technical analysis will not be fruitful. The findings of the study are following the concept of efficient market hypothesis because this phenomenon cannot be used for excess return.

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