DAY OF THE WEEK EFFECT OF ASIAN STOCK MARKETS

Nikunj R. Patel,

Associate Professor,
S.V. Institute of Management,
S.V. Campus, North Gujarat, India

Nitesh Radadia,

Student,
S.V. Institute of Management,
S.V. Campus, North Gujarat, India

Juhi Dhawan,

Student,
S.V. Institute of Management, S.V. Campus,
North Gujarat, India

ABSTRACT

The objective of this paper is to observe the descriptive statistics and examine day of the week effect in four selected stock markets of Asian countries namely: India (Bombay Stock Exchange), Hong Kong (Hong Kong Stock Exchange), Japan (Tokyo Stock Exchange) and China (Shanghai Stock Exchange). The data includes daily adjusted closing index prices of Asian stock markets understudy. We have taken sample period of daily data from 1st Jan. 2000 to 31st March. 2011. We have also divided the data in three sub-periods, 1. Period 1: Sample from 05/01/2000 to 20/10/2003 2. Period 2: Sample from 21/10/2003 to 29/06/2007 3. Period 3: Sample from 03/07/2007 to 31/03/2011. We have used logarithm transformed stock price indices to neutralize their returns. BSE has given maximum average return on Wednesday; Hang Seng has given highest returns on Friday whereas, Nikkei and SSE Composite have given highest returns on Thursday and Wednesday respectively. The Monday was a day of high volatility in Asian markets understudy. The return distributions in all market were not normally distributed. The research suggests that there is no evidence of "day of the week effect" in the markets understudy during the period. This finding is also similar in all sub-periods

Keywords: Day of the week effect, Augmented Dickey-Fuller, OLS Regression

JEL Classification: C12, C22, G14, G15, O53

INTRODUCTION:

BSE SENSEX:

The full form of BSE is The Bombay Stock Exchange; it is offering the index known as SENSEX. The acronym of SENSEX is Sensitive Index. BSE is offering vide varieties of indices but BSE 30 is the basic barometer of the overall market performance as it covers most of the diversified companies. The BSE is the oldest stock exchange in Asia, Sensex follows free-float market capitalization-weighted index. The Index is published from January 1, 1986. The base value of the SENSEX was taken as 100 on April 1, 1979, and its base year as 1978-79. BSE switched from open cry trading system to electronic trading system in 1995.

HANG SENG INDEX:

The Hang Seng Index is known as HIS, It was started on November 24, 1969. It is following free float-adjusted market capitalization-weighted stock market index. The Hang Seng index is a major index of Hong Kong and it is widely used as a barometer for the economy. The index is constituted based on 40 largest companies with their weighted market capitalization and HSI is contributing almost 65 per cent of total market capitalization. The Index is compiled and maintained by Hang Seng Index's Company Limited, which is a wholly owned subsidiary of Hang Seng Bank.

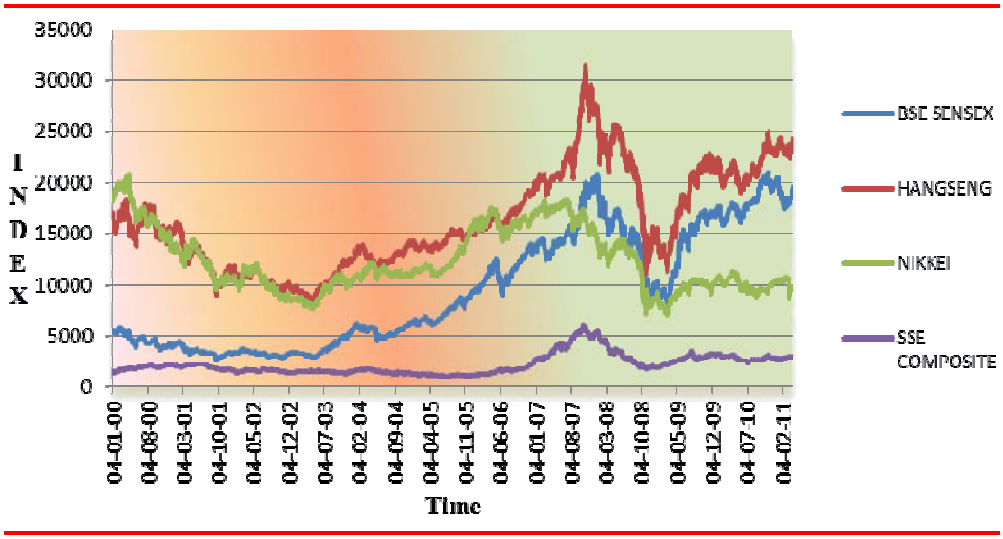
NIKKEI 225 INDEX:

The Nikkei 225 is an index of Tokyo Stock Exchange (TSE). The TSE is the second oldest stock exchange of Asia after BSE. The Nikkei 225 is commonly known as the Nikkei. The Nihon Keizai Shimbun (Nikkei) newspaper is calculating the index since 1950. The index is a price-weighted average. Currently, the Nikkei is the most widely used proxy for Japanese equity market. The Nikkei 225 instigated to be calculated on September 7, 1950.

SSE COMPOSITE:

The SSE Composite Index was launched on July 15, 1991. The **SSE Composite Index** has a bifurcation of A shares and B shares that trades at the Shanghai Stock Exchange. SSE Indices are being calculated using a Paasche weighted composite price index formula. The base value was taken 100 with the base date of December 19, 1990.

Figure-1: Trend of Asian Markets understudy



The figure-1 shows the trend of Asian markets understudy. The data comprises of daily closing values of stock markets indexes for India (BSE Sensex 30), Hong Kong (HANGSENG), Japan (NIKKEI 225) and China (SSE Composite). The data includes daily closing observation from 1st January 2000 to 31st March, 2011, during which some of markets remained volatile, especially India, Hong Kong, and Japan whereas China (SSE Composite) remains same from full period. Trend shows that the prices are moving cumulatively in systematic manner. http://www.scienpress.com/Upload/JAFB/Vol%202_2_5.pdf

Table-1: Summary of Asian Markets understudy

Particulars	BSE	HKEX	SSE	TSE
Type	Stock Exchange	Stock Exchange	Stock Exchange	Stock Exchange
Location	Mumbai, India	Hong Kong, China	Shanghai, China	Tokyo, Japan
Founded	1875	1891	1891	Tokyo Stock Exchange Group, Inc.
Key People	Madhu Kanan (CEO and MD)	--------	Geng Liang (Chairman) Zhang Yujun (President)	Taizo Nishimuro, Chairman Atsushi Saito, President & CEO Yasuo Tobiyama, MD, COO & CFO
Currency	Indian Rupee	Hong Kong Dollar	RMB	Japanese yen
No. of listings	5034	1413	900 (Feb 2011)	**2292**
Volume	US$231 billion (Nov 2010)	_____	US$0.5 trillion (Dec 2009)	US$3.7 trillion (Dec 2009)
Market Cap	US$1.63 trillion (Dec 2010)	US$2.7 trillion (Dec 2010)	US$2.7 trillion (Dec 2010)	US$3.8 trillion (Dec 2010)
Website	www.bseindia.com	hkex.com.hk	www.sse.com.cn	www.tse.or.jp
Logos				

Source: Websites of respective stock exchanges

Market efficiency refers to a condition, in which current prices reflect all the publicly available information about a security so that there is no scope for the abnormal return by an individual investor. The basic idea underlying market efficiency is that competition will drive all information into the price quickly. Due to immediate transformation of information, prices are quickly influenced. Under the Market Efficiency, current market price reflects all available information so that any financial market could be the best unbiased estimate of an investment. Fama (1970) gave Efficient Market Hypothesis into three forms of hypothesis based on information flow. The weak form EMH stipulates that current prices already reflected past price, trades and volume information that means technical analysis cannot be used to predict the market sentiments for the next period.

The weak form of market efficiency is also tested for the day of the week and calendar anomaly. The time series of returns on market understudy are tested for 'day of the week effect' and 'Month of the Year effect'. The market is said to be weak form of efficient if no day or no month outperform or underperform. In other words, there should not be a specific day or month which can predict the price momentum.

REVIEW OF LITERATURE ON DAY OF THE WEEK (TABLE-2):

The day of the week effect refers to the observation that average daily stock returns are statistically different among trading days, a portent that invalidates the efficient market theory, since investors can adjust their buying and selling accordingly to increase their returns based on days. It has been observed that average market return in the first trading day and in some countries in the second trading day is negative or at least lower than the rest of trading days [Abdullah AL-Mutairi (2010)]. Table-2 gives brief literature review.

Table-2: Review of Literature

The literature review is summarized in the following table;

Sr. No.	Author/s	Markets Understudy	Period of Study	Methodology Used	Results Found
1	Jeffrey Jaffe and Randolph Westerfield (1985)	Japan	1970 to 1983	Regression Analysis	The lowest mean returns for the Japanese stock market occur on Tuesday.
2	Eric C. Chang, J. Michael Pinegar, and R. Ravichandran (1993)	France, Italy, the Netherlands, Spain, Sweden, Switzerland, the UK, Canada and Hong Kong	1991-92	Robustness Tests	The day-of-the-week effect becomes insignificant in Belgium, Denmark, Germany, and the United States.
3	Ercan BALABAN (1994)	Turkey	1988-94	Test for Equality of Mean Return	Empirical results verified that day of the week effects were present in Istanbul Securities Exchange Composite Index (ISECI).

4	Sunil Poshakwale (1996)	Indian Stock Market	1987-1994	KS Test, Runs Test, Serial Correlation	Mean returns except for the Monday and Wednesday were positive. It can also be seen that the standard deviation is larger for the first and the last days of the week, which were almost similar to the evidence from other countries.
5	Asli Bayar and Ozgur Berk Kan (1999)	Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong-Kong, Italy, Japan, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, the UK, and the USA	1993-1998	Regression Model	Found the existence of the day of the week effects in market returns denominated in both local currencies and the US dollars for most markets and indicate that the Tuesday and Wednesday returns is high.
6	Husain, Fazal (2000)	Pakistan	1989-1993	Regression Analysis	Results did not indicate any significant differences in stock returns across days in the Pakistani equity market.
7	Adil ORAN Z. Nuray GÜNER (2003)	Istanbul Stock Exchange	1991-2002	Regression Analysis	The ISE Monday effect occurs mostly in the afternoon. In addition to this, all afternoon session returns, except Fridays are significantly negative, and all afternoon session returns seem to be lower than their respective morning session returns.
8	Hassan Aly, Seyed Mehdian, and Mark J. Perry (2004)	Egypt	1998-2001	OLS Test	The results indicate that Monday returns in the Egyptian stock market are positive and significant on average, Thus, there was an evidence to support daily seasonal patterns in the Egyptian stock market.
9	Chukwuogor-NDU, Chiaku, Feridun, Mete (2006)	Australia, China, Hong Kong, India, Indonesia, Japan, Malaysia, New Zealand, Pakistan, Philippines, Singapore, South Korea, Sri Lanka, Thailand and Taiwan	1998-2003	Kruskal-Wallis Test, Regression Analysis, Levene's test	The day of the week effect was insignificant in most of Asia Pacific Financial Markets.
10	Deniz Ozenbas (2006)	New York Stock Exchange, London Stock Exchange, Deutsche Boerse and Euronext Paris stock markets	2000	Variance-ratio statistics	Findings indicated the increased difficulty of price discovery just before and after the weekend non-trading period.
11	Halil Kiymaza, Hakan Berumentb (2006)	Canada, Germany, Japan, UK, NYSE	1988-2002	Regression Analysis, Arch, Garch	The highest volatility occurs on Mondays for Germany and Japan, on Fridays for Canada and the United States, and on Thursdays for the United Kingdom.
12	Rosa María and Alejandro Rodríguez Caro (2006)	European Markets	1997-2004	GARCH Model, T-ARCH models	Even though initially there did not seem to be a day of the week effect in yields from different, indicate that Friday

					returns was high.
13	Ramesh Chander, Kiran Mehta and Renuka Sharma (2008)	Indian stock markets: BSE and NSE indices	2002-2007	Regression Analysis	The study documented evidence on the day of the week effect both markets and provide positive return on Friday and negative returns on Monday.
14	Ushad Subadar Agathee (2008)	Mauritius	1996-2006	Regression Analysis	The results indicated no significant existence of the day of the week effect across the years and for the whole period, Friday return were high.
15	Anwar, Yunita and Mulyadi, Martin Surya (2009)	Indonesia, Singapore, and Malaysia	1962-78	Garch, EGarch	There is positive abnormal return on Friday in Indonesia and Malaysia, whereas in Singapore, there is abnormal returns on Monday and Friday
16	Batuo Enowbi, Michael; Guidi, Francesco and Mlambo, Kupukile (2009)	Egypt, Morocco, South Africa, Tunisa	2005-2008	ADF and PP test, KPSS Test, OLS Regression	Found the existence of various significant days of the week effects, including the typical negative Monday and Friday positive effects in several stock markets.
17	Abdullah AL-Mutairi (2010)	Kuwait	2002-2007	GARCH Model	The result indicates the existence of day of the week effect which in turn suggests that the market is inefficient.

RESEARCH METHODOLOGY:

MAIN OBJECTIVE:

The aim of this study will be to verify day of the week effect of Asian stock markets understudy.

OTHER OBJECTIVES:

1. To know the descriptive statistic properties for the day of the week
2. To know whether markets follow normal distribution
3. To study whether return series is stationary or not
4. To investigate the existence of the day-of-the-week effect of the markets understudy

- **Sample:** A sample which consists of the daily closing prices of the selected markets of Asian countries: India (Bombay Stock Exchange), Hong Kong (Hong Kong Stock Exchange), Japan (Tokyo Stock Exchange), China (Shanghai Stock Exchange)
- **Sample Period:** We have taken a closing price of Asian stock markets understudy from the 1st Jan. 2000 to 31st March. 2011.
- **Sample Size:** The sample included total 2403 daily observations of daily closing price of individual indices for 11 years and 3 months as shown in Table-3.

Table-3: Summary of Sample of the Asian Markets understudy

No.	Markets	Country	Index	Period From	Period To	Total No. of Observations
1	BSE	India	BSE Sensex 30	01-01-2000	31-03-2011	2786
2	HKEx	Hong Kong	Hang Seng	01-01-2000	31-03-2011	2804
3	TSE	Japan	Nikkie225	01-01-2000	31-03-2011	2759
4	SSE	China	SSE Composite	01-01-2000	31-03-2011	2881

Data Collection: Data has been collected from the Data Base: http://in.finance.yaho

Table-4: Descriptive Statistics

BSE					
	Mon	Tues	Wed	Thur	Fri
Mean	0.0008	0.0004	0.0009	0.0006	0.0000
Maximum	0.1599	0.0869	0.0577	0.0966	0.0790
Minimum	-0.1181	-0.0684	-0.0963	-0.0700	-0.1160
Std. Dev.	0.0224	0.0177	0.0176	0.0170	0.0195
Skewness	0.0859	0.3585	-0.4153	0.0710	-0.5877
Kurtosis	12.600	6.889	6.308	6.474	7.585
Jarque-Bera	1659.73	319.38	241.42	252.94	449.18
Probability	0.000	0.000	0.000	0.000	0.000
Observations	432	490	498	502	481

Hang Seng					
	Mon	Tues	Wed	Thur	Fri
Mean	0.0004	-0.0002	0.0002	-0.0003	0.0006
Maximum	0.0892	0.1341	0.1018	0.1680	0.0951
Minimum	-0.1358	-0.0905	-0.0929	-0.0734	-0.0866
Std. Dev.	0.0212	0.0177	0.0181	0.0175	0.0158
Skewness	-0.8509	1.4420	-0.2449	1.4782	0.3513
Kurtosis	10.292	16.970	7.923	21.259	10.266
Jarque-Bera	1009.45	4154.49	507.86	7156.41	1068.03
Probability	0.000	0.000	0.000	0.000	0.000
Observations	432	490	498	502	481

Nikkei					
	Mon	Tues	Wed	Thur	Fri
Mean	-0.0002	-0.0010	-0.0002	0.0003	-0.0003
Maximum	0.0677	0.1323	0.0746	0.0999	0.0503
Minimum	-0.1272	-0.1115	-0.1292	-0.1211	-0.1062
Std. Dev.	0.0202	0.0176	0.0171	0.0167	0.0163
Skewness	-0.8214	0.1971	-0.5621	-0.6876	-1.1280
Kurtosis	7.587	14.246	11.157	11.455	9.465
Jarque-Bera	427.38	2585.53	1406.88	1534.85	939.72
Probability	0.000	0.000	0.000	0.000	0.000
Observations	432	490	498	502	481

SSE					
	Mon	Tues	Wed	Thur	Fri
Mean	0.0011	0.0002	0.0013	-0.0009	-0.0001
Maximum	0.0885	0.0620	0.0790	0.0889	0.0903
Minimum	-0.0862	-0.0926	-0.0672	-0.0676	-0.0543
Std. Dev.	0.0218	0.0178	0.0184	0.0172	0.0157
Skewness	0.0123	-0.6017	0.3021	0.0160	0.5113
Kurtosis	5.816	6.739	6.123	6.019	6.537
Jarque-Bera	142.79	314.94	209.89	190.64	271.75
Probability	0.000	0.000	0.000	0.000	0.000
Observations	432	490	498	502	481

DESCRIPTIVE STATISTICS (TABLE-4):

ANALYSIS OF BSE:

From the table-4, it is apparent that the maximum average return is on Wednesday, followed by Monday and Thursday. Friday has given merely zero average daily return during the period. This indicates that there were different returns distributions among the days of the week. The BSE is the only market which has given average positive returns on all days among all the markets. The maximum volatility was found on Monday on the basis of maximum and minimum daily returns along with the value of standard deviation of 0.0224. The value of Skewness and Kurtosis also suggest that the return distribution is not normally distributed. This cannot be advocated by the Jarque-Bera null hypothesis that the distribution is normally distributed. This hypothesis cannot be accepted at 1 per cent level of significance.

ANALYSIS OF HANG SENG:

From the table-4, it is ostensible that the maximum average return is on Friday, followed by Monday and Wednesday. Thursday and Tuesday were negative returns days during the period. This indicates that there were different returns distributions among the days of the week. The maximum volatility was found on Monday which was common in all the selected markets on the basis of the value of standard deviation. The value of Skewness and Kurtosis also suggest that the return distribution is not normally distributed. This cannot also be advocated by the Jarque-Bera null hypothesis that the distribution is normally distributed. This hypothesis cannot be accepted at 1 per cent level of significance.

ANALYSIS OF NIKKEI:

From the table-4, it is obvious that the Nikkei has given the positive return on Thursday and rest of the days the average returns were negative. This indicates that there were different returns distributions among the days of the week. The maximum volatility was found on Monday on the basis of the value of standard deviation value of 0.0202. The value of Skewness and Kurtosis also suggest that the return distribution is not normally distributed. This cannot be advocated by the Jarque-Bera null hypothesis that the distribution is normally distributed. This hypothesis cannot be accepted at 1 per cent level of significance.

ANALYSIS OF SSE:

From the table-4, it is ostensible that the maximum average return is on Wednesday, followed by Monday. Thursday and Friday were negative returns days during the period. This indicates that there were different returns distributions among the days of the week. The maximum volatility was found on Monday which was

common in all the selected markets on the basis of the value of standard deviation value of 0.0218. The value of Skewness and Kurtosis also suggest that the return distribution is not normally distributed. This cannot also be advocated by the Jarque-Bera null hypothesis that the distribution is normally distributed. This hypothesis cannot be accepted at 1 per cent level of significance.

UNIT ROOT TEST (TABLE-5 & TABLE-6)

Since unit root is necessary condition for a random walk, the Augmented Dickey-Fuller test is used to test the null hypothesis of a unit root. The results of Augmented Dickey-Fuller for the unit root of all the markets understudy are presented in the table-5. ADF unit root was performed for the whole sample period Jan 2000 to March 2011 for the maximum lag period of 36.

Table-5: Results of Augmented Dickey-Fuller Unit Root Test of Asian Markets understudy (Full Sample).

	HANGSENG	HANGSENG	NIKKEI	SSE COMPOSITE
ADF	-46.6777	-48.5725	-48.5901	-48.5967
p-value	0.0001*	0.0001*	0.0001*	0.0001*

*indicate 1% level of significance

As stated in Table-5, the t-statistics critical value at 1%, 5% and 10% are -3.43288, -2.86254, and -2.56735 respectively and it clearly showed stationary and **(Ho: Series contains a unit root)** is convincingly cannot be accepted, suggesting that these market show the existence of random walk which is similar to the findings of Rakesh Gupta and Parikshit K. Basu (2007).

Table-6: Results of Augmented Dickey-Fuller Unit Root Test of Asian Markets understudy (Period wise)

Sample:05/01/2000 to 20/10/2003				
	BSE SENSEX	**HANGSENG**	**NIKKIE**	**SSE COMPOSITE**
ADF	-26.3982	-27.5017	-28.7646	-27.4932
p-value	0.0000*	0.0000*	0.0000*	0.0000*
Sample: 10/21/2003 6/29/2007				
	BSE SENSEX	**HANGSENG**	**NIKKIE**	**SSE COMPOSITE**
ADF	-27.1059	-27.8532	-28.8502	-28.6794
p-value	0.0000*	0.0000*	0.0000*	0.0000*
Sample: 7/03/2007 3/31/2011				
	BSE SENSEX	**HANGSENG**	**NIKKIE**	**SSE COMPOSITE**
ADF	-27.2349	-28.3174	-27.3743	-27.9313
p-value	0.0000*	0.0000*	0.0000*	0.0000*

*indicate 1% level of significance

The table-6 presents the unit root test analysis in different intervals i.e., Sample: 05/01/2000 to 20/10/2003, Sample: 10/21/2003-6/29/2007, Sample: 7/03/2007-3/31/2011. In table-6, the t-statistics at 1%, 5% and 10 % are -3.4383,-2.86494 and -2.568634 respectively and it clearly showed stationery in all sub period as the p-value<0.05 which cannot accept null hypothesis (**Ho: Series contains unit root).** Therefore null hypothesis cannot be accepted at 1%, 5% and 10% level of significance which shows that series is stationery. The results therefore indicate that there exists some evidence of random walk in all the selected Stock markets for each period. Unit root test alone cannot be used to conclude that markets understudy were weak form efficient as it does not detect the predictability of return. So there is a need to apply regression to know the predictive behaviour on a particular day.

DAY OF THE WEEK METHODOLOGY (TABLE-7)

To first investigate the day of the week effect, we estimate the following regression equation:

$$R_t = \beta_0 + \beta_1 D_2 + \beta_2 D_3 + \beta_3 D_4 + \beta_4 D_5 + \varepsilon_t \quad \text{----- (1)}$$

Where,

R_t is the daily return, D_2 through D_5 are dummy variables such that if β_0 is a Monday, then D_1=1 and D_1 =0 for all other days, if t is a Tuesday D_2 = 1 and D_2 = 0 for all other days, and so forth; ε_t is a random term and β_0 - β_4 are coefficients to be estimated using ordinary least squares (OLS). If the stock market exhibits a traditional Monday effect, then a) the estimated coefficient β_0 is expected to be negative and statistically significant and b) Monday returns should also be significantly less than returns during the rest of the week pointed out by Hassan Aly, Seyed Mehdian, and Mark J. Perry (2004).

(Here R_t is a returns of a particular day in a markets; where Monday has been taken as base means intercept β_0 if we want returns of Tuesday than returns of the all-day become 0 and returns of Tuesday become 1 means use of dummy variables and we get a return of Tuesday likewise others day and Monday all the value become 0 taking as a dummy variables and get a returns of Monday which is intercept value). Results are summarized in Table-7 (Ushad Subadar Agathee: 2008)

Hypothesis: Testing of a day of the week effects;

H0: Mean returns are not significantly different across the five trading days.

Table-7: Results of day-of-the-week effects Asian Markets understudy (Full Sample)

Full Sample Period								
	BSE SENSEX				HANGSENG			
	Coefficient	SE	t-Stat	p-value	Coefficients	SE	t-Stat	p-value
Intercept	0.0008	0.0009	0.8938	0.3715	0.0004	0.0009	0.4792	0.6319
Tuesday	-0.0004	0.0012	-0.3599	0.7189	-0.0006	0.0012	-0.5082	0.6114
Wednesday	0.0001	0.0012	0.0563	0.9551	-0.0002	0.0012	-0.1516	0.8795
Thursday	-0.0002	0.0012	-0.1951	0.8453	-0.0007	0.0012	-0.6306	0.5284
Friday	-0.0008	0.0012	-0.6267	0.5309	0.0002	0.0012	0.1422	0.8870
	NIKKEI				SSE COMPOSITE			
	Coefficients	SE	t-Stat	p-value	Coefficients	SE	t-Stat	p-value
Intercept	-0.0002	0.0008	-0.2118	0.8323	0.0011	0.0009	1.2776	0.2015
Tuesday	-0.0008	0.0012	-0.7233	0.4695	-0.0009	0.0012	-0.7284	0.4664
Wednesday	-0.0001	0.0012	-0.0568	0.9547	0.0001	0.0012	0.1137	0.9095
Thursday	0.0005	0.0012	0.4571	0.6477	-0.0020	0.0012	-1.6753	0.0940
Friday	-0.0001	0.0012	-0.1021	0.9187	-0.0012	0.0012	-1.0161	0.3097

This is inconsistent with the results reported in the major literature for a large number of countries, where significantly lower or negative Monday returns are reported (the traditional Monday effect). Note also that the coefficients in Table-7 are not statistically different from zero during the period from 5th January 2000 to 31st March 2011. It also indicates that the (p-value is more than 0.05) so, null hypothesis cannot be rejected for Asian markets for whole period. (H0: mean returns are not significantly different across the five trading days)

DAY OF THE WEEK EFFECT (PERIOD WISE):

In order to add value in our study and to further enhance our analysis of the day of the week and seasonality present in markets understudy, we have divided the Period of Analysis into three sub periods as follows:

1. Period 1: Sample from 05/01/2000 to 20/10/2003
2. Period 2: Sample from 21/10/2003 to 29/06/2007
3. Period 3: Sample from 03/07/2007 to 31/03/2011

Table-8: Results day-of-the-week effects of Asian Markets understudy (Period: 1)

Sample:5/1/2000 to 20/10/2003								
	BSE				HANGSENG			
	Coefficients	SE	t-stat	p-value	Coefficients	SE	t-stat	p-value
Intercept	-0.0001	0.0015	-0.0939	0.9252	-0.0005	0.0014	-0.3739	0.7086

Tuesday	-0.0005	0.0020	-0.2480	0.8042	0.0007	0.0019	0.3546	0.7230
Wednesday	0.0018	0.0020	0.9308	0.3523	0.0004	0.0019	0.2241	0.8227
Thursday	0.0005	0.0020	0.2340	0.8150	-0.0010	0.0019	-0.4995	0.6175
Friday	-0.0021	0.0020	-1.0374	0.2998	0.0004	0.0020	0.1902	0.8492
	NIKKEI				**SSE COMPOSITE**			
	Coefficients	**SE**	**t-stat**	**p-value**	**Coefficients**	**SE**	**t-stat**	**p-value**
Intercept	-0.0012	0.0014	-0.8147	0.4155	0.0002	0.0012	0.1296	0.8969
Tuesday	-0.0005	0.0020	-0.2410	0.8096	0.0009	0.0016	0.5296	0.5965
Wednesday	0.0016	0.0019	0.8156	0.4150	-0.0008	0.0016	-0.5104	0.6099
Thursday	0.0000	0.0020	0.0224	0.9821	-0.0003	0.0016	-0.1983	0.8428
Friday	0.0013	0.0020	0.6459	0.5185	-0.0007	0.0017	-0.3949	0.6931

From the table-8, elucidate returns of the markets for the different trading day in first period: 05/01/2000 to 20/10/2003, concluded that our null hypothesis cannot be rejected (H0: mean returns are not significantly different across the five trading days) (p-value > 0.05) which indicates weak-form market efficiency of all markets under the study and which indicate unpredictable behaviour of markets during the First period and remains efficient and also similar to full period analysis.

Table-9: Results day-of-the-week effects of Asian Markets understudy (Period: 2)

Period:21/10/2003 to 29/6/2007								
	BSE				**HANGSENG**			
	Coefficients	**SE**	**t-stat**	**p-value**	**Coefficients**	**SE**	**t-stat**	**p-value**
Intercept	0.0009	0.0013	0.7098	0.4780	0.0011	0.0008	1.3149	0.1889
Tuesday	0.0000	0.0018	-0.0125	0.9901	-0.0012	0.0012	-1.0411	0.2982
Wednesday	0.0000	0.0018	0.0263	0.9790	-0.0006	0.0012	-0.4720	0.6371
Thursday	0.0010	0.0018	0.5793	0.5626	-0.0003	0.0012	-0.2789	0.7804
Friday	0.0012	0.0018	0.6561	0.5120	0.0002	0.0012	0.1638	0.8699
	NIKKEI				**SSE COMPOSITE**			
	Coefficients	**SE**	**t-stat**	**p-value**	**Coefficients**	**SE**	**t-stat**	**p-value**
Intercept	0.0010	0.0010	1.0412	0.2981	0.2815	0.1662	1.6932	0.0908
Tuesday	-0.0010	0.0014	-0.7415	0.4586	-0.0886	0.2292	-0.3865	0.6992
Wednesday	-0.0017	0.0014	-1.1958	0.2321	0.0159	0.2292	0.0695	0.9446
Thursday	0.0000	0.0014	0.0030	0.9976	0.0328	0.2276	0.1442	0.8854
Friday	0.0005	0.0014	0.3559	0.7220	0.0702	0.2286	0.3073	0.7587

Table-9 presented market returns during the second period. A coefficient for BSE Sensex is positive likewise HANGSENG, NIKKEI and SSE Composite provide negative results for Tuesday and Wednesday. Here p-value is more than 0.05 so our null hypothesis cannot be rejected (H0: mean returns are not significantly different across the five trading days) which elucidates that markets in the second period did not provide a mean returns and remain same to the all trading days which means markets also remain efficient.

Table-10: Results day-of-the-week effects of Asian Markets understudy (Period: 3)

Sample: 3/7/2007 to 31/3/2011								
	BSE				**HANGSENG**			
	Coefficients	**SE**	**t-Stat**	**P-value**	**Coefficients**	**SE**	**t-Stat**	**P-value**
Intercept	0.0017	0.0019	0.8752	0.3817	0.0007	0.0020	0.3238	0.7461
Tuesday	-0.0009	0.0026	-0.3341	0.7384	-0.0013	0.0028	-0.4590	0.6464
Wednesday	-0.0017	0.0026	-0.6662	0.5055	-0.0004	0.0028	-0.1439	0.8856
Thursday	-0.0022	0.0026	-0.8643	0.3877	-0.0010	0.0028	-0.3436	0.7312
Friday	-0.0016	0.0026	-0.5943	0.5525	-0.0001	0.0028	-0.0323	0.9743
	NIKKEI				**SSE COMPOSITE**			
	Coefficients	**SE**	**t-Stat**	**P-value**	**Coefficients**	**SE**	**t-Stat**	**P-value**
Intercept	-0.0004	0.0018	-0.2348	0.8144	0.0012	0.0019	0.6415	0.5214
Tuesday	-0.0010	0.0025	-0.3935	0.6940	-0.0045	0.0026	-1.7344	0.0832
Wednesday	-0.0001	0.0025	-0.0557	0.9556	0.0003	0.0026	0.1266	0.8993
Thursday	0.0016	0.0025	0.6207	0.5350	-0.0026	0.0026	-1.0154	0.3102
Friday	-0.0021	0.0025	-0.8454	0.3981	-0.0007	0.0026	-0.2637	0.7921

Table-10 indicated, our null hypothesis cannot be rejected of equality returns at all the day and markets follow random walk so it's hard to predict the volatility of markets under the study and has no impact on any day which is also similar to the findings of full period analysis and both period.

The findings of Eric C. Chang, J. Michael Pinegar, and R. Ravichandran (1993), Husain, Fazal (2000), Deniz Ozenbas (2006), Rosa María and Alejandro Rodríguez Caro (2006) and Ushad Subadar Agathee (2008) were also similar of our findings which suggest that no evidence in favour of the day of the week effect and also provide evidence that investor cannot predict market behaviour and may not have opportunities to improve their returns by timing their investments during whole period for Asian markets understudy of Asian region. This suggests that the markets under the study are efficient means investor cannot predict volatility of the markets during the study which is contradicted to the findings of Jeffrey Jaffe and Randolph Westerfield (1985), Ercan Balaban (1994), Sunil Poshakwale (1996), Asli Bayar and Ozgur Berk Kan (1999), Adil ORAN Z. Nuray GÜNER (2003), Hassan Aly, Seyed Mehdian, and Mark J. Perry (2004), Halil Kiymaza, Hakan Berumentb (2006), Ramesh Chander, Kiran Mehta and Renuka Sharma (2008), Anwar, Yunita and Mulyadi, Martin Surya (2009), Batuo Enowbi, Michael; Guidi, Francesco and Mlambo, Kupukile (2009) and Abdullah AL-Mutairi (2010)

CONCLUSION:

Our research is conducted by observing the descriptive statistics and applying the regression. All the time series did not have the problem of unit root. In BSE, the maximum average return is on Wednesday with highest standard deviation on Monday. The BSE is the only market which has given average positive returns on all days among Asian Markets. The return distributions in all market were not normally distributed. In Hang Seng, maximum average return is on Friday with highest standard deviation on Monday. In Nikkei, the highest return is on Thursday and rest of the days the average returns were negative. The maximum volatility was found on Monday. In SSE, the maximum average return is on Wednesday. The maximum volatility was found on Monday. The Monday was a day of high volatility in Asian markets understudy. This may be because of the trading gaps of non-working days prior to Monday. There is no evidence in favour of the day of the week effect and also provide evidence that investor cannot predict market behaviour and may not have opportunities to improve their returns by timing their investments during whole period and all the three sub-periods for any of markets understudy of Asian region. This suggests that the markets understudy is efficient, which indicates investor or any other person cannot predict volatility of the all markets during the period. Hence it is concluded that the investor may not get the stream of arbitrage benefits due to markets efficiency.

REFERENCES:

[1] Abdullah AL-Mutairi (2010), "An Investigation of the Day-of-the-Week Effect in the Kuwait Stock Exchange", Research Journal of International Studies - Issue 16 (September, 2010)

[2] Adil ORAN Z. Nuray GÜNER (2003), "Day-of-The-Week and Session Effects: Evidence from an Emerging Market", Global Business and Technology Association

[3] Anwar, Yunita and Mulyadi, Martin Surya (2009), "The Day of The Week Effects in Indonesia, Singapore, and Malaysia Stock Markets", MPRA Paper No. 16873, posted 20. August 2009 / 04:34, Online at http://mpra.ub.uni-muenchen.de/16873/

[4] Ashutosh Verma. (2005), "The study of the weak form informational efficiency in Bombay Stock Market", Finance India, Vol. 19; 4, pp.1421.

[5] Asli Bayara and Özgür Berk Kanb (1999), Day of the Week Effects: Recent Evidence from Nineteen Stock Markets, Central Bank Review 2 (2002) 77-90

[6] Batuo Enowbi, Michael; Guidi, Francesco and Mlambo, Kupukile (2009), "Testing the weak-form market efficiency and the day of the week effects of some African countries", MPRA Paper No. 19116, posted 09. December 2009 / 22:14, Online at http://mpra.ub.uni-muenchen.de/19116/

[7] Chukwuogor-NDU, Chiaku, Feridun, Mete (2006), "An Econometric Investigation of The Day-of-The-Week Effect And Returns Volatility in Fifteen Asia Pacific Financial Markets (1998-2003)", Applied Econometrics and International Development, AEID. Vol. 6-1 (2006)

[8] Deniz Ozenbas (2006), "Day of the Week Effects In Intra-Day Volatility Patterns of Equity Markets: A Study of US and European Stock Markets", International Business & Economics Research Journal – June 2006 Volume 5, Number 6

[9] Ercan Balaban (1994), "Day of the Week Effects: New Evidence from an Emerging Stock Market", the Central Bank of the Republic of Turkey, Research Department, Discussion Paper No: 9410

[10] Eric C. Chang, J. Michael Pinegar, and R. Ravichandran (1993), "International Evidence on the Robustness of the Day-of-the-Week Effect", Journal of Financial and Quantitative Analysis Vol. 28, No. 4

[11] Fama, E. (1970), "Efficient capital markets: a review of theory and empirical work", Journal of Finance, 25, 383-417.

[12] Francesco Guidi, Rakesh Gupta and Suneel Maheshwari (2010), "Weak-form market efficiency and calendar anomalies for Eastern Europe equity markets", MPRA Paper No. 21984.
[13] Halil Kiymaza, Hakan Berumentb (2006), "The day of the week effect on stock market volatility and volume: International evidence", Review of Financial Economics 12 (2003) 363–380
[14] Hassan Aly, Seyed Mehdian, and Mark J. Perry (2004), "An Analysis of the Day-of-the-week-Effects in the Egyptian Stock Market", International Journal of Business, 9(3), 2004 ISSN: 1083−4346
[15] Husain, Fazal (2000), "The Day of the Week Effect in the Pakistani Equity Market: An Investigation", MPRA Paper No. 5268, posted 07. November 2007 / 04:35, Online at http://mpra.ub.uni-muenchen.de/5268/
[16] Jeffrey Jaffe and Randolph Westerfield (1985), "Patterns in Japanese Common Stock Returns: Day of the Week and Turn of the Year Effects", Journal of Financial and Quantitative Analysis vol. 20, no. 2
[17] Mahendra Raj and Damini Kumari (2011), "Day-of-the-week and other market anomalies in the Indian stock market", International Journal of Emerging Markets, Vol. 1 No. 3, 2006, pp. 235-246
[18] Nikunj Patel, Bhavesh Patel and Darshan Ranpura, "Testing Weak Form Market Efficiency of Indian Stock Markets", SS International Journal of Business and Management Research September 2011, Issue 3, Volume – 1
[19] Nikunj Patel, Nitesh Radadia and Juhi Dhawan (2012), "An Empirical Study on Weak-Form of Market Efficiency of Selected Asian Stock Markets", Journal of Applied Finance and Banking, Vol.2, No.2, 2012, 99-148, April 2012
[20] Nousheen Zafar, Syeda Faiza Urooj and Syed Umar Farooq (2010), "Karachi Stock Exchange: Testing Month of the year Effect", European Journal of Economics, Finance and Administrative Sciences, Issue 24 (2010)
[21] Peter Reinhard Hansen, Asger Lunde, and James M. Nason (2005), "Testing the Significance of Calendar Effects", Federal Reserve Bank of Atlanta - Working Paper Series, Working Paper 2005-2
[22] Rakesh Gupta and Parikshit K. Basu (2007), "Weak Form Efficiency in Indian Stock Markets", International Business & Economics Research Journal, Vol. 6, N0. 3, pp. 57-64.
[23] Ramesh Chander, Kiran Mehta and Renuka Sharma,(2008), "A Reexamination of the Day- of-the-Week Effect on the Indian Stock Markets", APPLIED FINANCE, Vol. 14 No. 4, pp. 5-20.
[24] Rosa María and Alejandro Rodríguez Caro (2006), "Day of the Week Effect on European Stock Markets", International Research Journal of Finance and Economics, Issue-2, pp.55-70
[25] Sunil Poshakwale (1996), "Evidence on Weak Form Efficiency and Day of the Week Effect in the Indian Stock Market", Finance India, Vol. X No. 3, September 1996
[26] Ushad Subadar Agathee (2008), "Day of the Week Effects: Evidence from the Stock Exchange of Mauritius (SEM)", International Research Journal of Finance and Economics, Issue 17
