Journal of Management
Vol. V. No. 1. October 2009, pp. 01-21

Day of the Week Effect: New Evidence from Developing Stock Market
A Special Reference to Colombo Stock Exchange
Period from 1985 to 2007

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Abstract

This research aimed to study the day of the week effect seasonalties on the emerging stock market and the efficient market hypothesis. This research attempted to examine the day of the week effect on stock returns in the selected stock market in Colombo Stock Exchange (CSE). To achieve the objectives four hypotheses were developed for testing. The sample included emerging stock market from CSE. The sample period covers from 1985 to 2007.Adjusted closed stock market indices are collected through online data stream. Analysis was done for the entire sample period and for the four sub samples of equal length for the test of day of the week effect.

Parametric and non parametric statistics are used for testing the hypotheses. The one way ANOVA procedure was used and Kruskal Wallis test was employed to substantiate the results of the existence of the day of the week effect. The results of the analysis revealed that the null hypothesis of equality in mean return is rejected and shows there is a day of the week effect in stock market in CSE in Sri Lanka. The reasons for volatility in mean returns is felt that the impact of different settlement procedures.

In summary, the results of the analysis for the entire sample period reveals that a negative mean return on Monday and Tuesday. But a positive significant effect is observed on Thursday and Friday for the entire sample period on the other hand a positive significant mean return is observed on Monday for the first sub sample period whereas a position significant effect is reported on Wednesday, Thursday and Friday for the fourth sub sample period. The reason for the irregularities with stock may be due to Asian crisis and the global stock market crash, and collapse of the blue ships stocks in US recently.

It has important implementations for the investors, management of companies and the stock market regulating agencies. The investors could make use of these findings to make decisions with regard to changes buy or sell, they have to make their portfolio to make profits or avoid losses. Hence the day of the week effect is anomalies in that they represent opportunities for investors to maximize their returns by choosing to trade on certain days. Further findings facilitate the investors with awareness of the advantages of investment and interest in the day of the week effect. This will provides the investors with necessary information about the certainty of the return for their investment. This kind of research can motivate the development of share market activities through an effect of findings way and means to earn better return to the investors of the world stock markets and the development of stock exchange and to the development of the national economy.

Key words: Day of the Week Effect, January Effect, Anomalies.

Introduction

The vehicle of human life has been drawn by the wheels of exchange of goods and service in a barter system from the ancient times. But with the Industrial Revolution, the system of application of science and technology in the various activities of productions and services, have induced to have stock and market system in different countries. As the marketing system is in the process of rapid changing under the modern globalization. so the investors have to be very careful with vigilant watch on the price index of their products and services to have expected profits as return. As the machinery of livelihood of man is fuel by the cultural behaviours. So every actions on the part of the investors have to be connected with the changing pattern of trade and marketing habits which is in dynamic force. In this way, a predictable seasonal behaviour in stock returns has come to dominate the interest of the investors. So they have to identify and select appropriate profitable strategies and to have full satisfactions with the abnormal return. In this way, the seasonal behaviour of the stock returns have come to effect on the stock and share markets as an important predictable behaviour in stock return for the growth and advance of the marketing activities of the investors who are ready to invest huge capital and have to be aware of the uncertainty of the market seasonal pattern for avoiding or reducing the incidents of risk taking venture.

This critical behaviour of the season has come to place the investors on the platform of vigilance. As the investors are interested and mindful of their success in the investment fields. so they always have to keep watch on the suitable season for better return for their investment The existence of predictable seasonal behavior in stock returns may lead to profitable trading strategies, and in turn, abnormal returns. Seasonality is an important factor of predictable behaviors in stock returns.

Recently a number of researchers have revealed the prevalence of certain empirical regularities in common stock that it is certain cross sectional differences among stock return have been found to take place with the regularity. Some regularities should occur according to certain assets pricing model for an example CAPM that different stocks should have different return because of the different betas found in different stock. What makes regularities that are needs to be discussed of special interest is that they do not appear to be predicted by any of the assets pricing models because of there are some time also refer to as anomalies because of these the investors are not able to take much interest in investment decisions. It is this special aspect that induces the researchers to analyze the causes and identity the weak areas in assets pricing model specially in CAPM model.

When is a good time to buy or sell shares? It has been noted in the United States that stock prices tend to rise on certain days of the calendar. In the turn – of – the – year effect, stock returns are much higher than usual on the last trading day of December and the first trading day of January. In the day – of – the – week effect, stock returns are higher on Fridays and lower on Mondays. The literature regarding this research area is not available because any interested party has

carried out no such research. However, in the western countries researches have been carried out and corresponding literature are available but they are not directly relevant to Sri Lankan context. Stock market anomalies have been investigated extensively in developed countries such as UK and USA by Baker and Limmack (1998) Gultekin and Gultekin (1983) and Keim (1983). Of late, there has been an increased interest in investigating the anomalous behavior of the emerging stock markets by Chenung and Coutts (1999). However, little attention has been paid to investigate these phenomena in Sri Lankan context, although the stock market has been in existence since 1890 January effect refers to a situation where the returns of January are significantly higher than those of the other months. Monthly seasonal pattern refers to the possibility that the returns of particular months are significantly greater or lower than those of the other months. When January effect or monthly seasonality exists in a stock market, investors are able to plan their investments strategies so that they can make gains from the share market investments consistently. Further, the existence of a January effect or a monthly seasonal patterns violates a well – known concept in financial economics originally attributed to Fama (1965) known as the Efficient Market Hypothesis (EMH). This theory says that all the information in respect of a security is in bounded in the security's price and therefore, no investors is able to beat the market consistently.

Nevertheless, early studies of some of the world's major stocks, bond and foreign exchanges have also discovered important seasonal variations in the parameters of return distribution, especially the mean returns. Early studies suggested that a tendency towards negative weekend returns is the norm rather than being US specific. For instance, Theobald and Price (1984) and Condoyanni et. al. (1987) found the evidence of weekend effect in the UK market. An independent study by Jaffe and Westerfield (1985) also has found similar results for other major markets like Japan, Australia and Canada.

A number of researches were done in the past had found a tendency towards day – of – the – week effects in stock returns in the US market. In particular, the average returns on Friday close exhibited high returns while those of Monday close are negative. French (1980) found that the effect was a weekend effect rather than a more general "closed market effect". Gibbons and Hess (1981), Lakonishok and Levi (1982) and Keim and Stambaugh (1984), Harris (1986) and Smirlock and Starts (1986) have also found extensive evidence of the "weekend" effect in the US.

However, no any complete explanation of these day – of – the – week effects has been presented so far. Therefore, further research efforts on investigating the anomalies in various markets surely help us to understand the cause of the anomalies. For example, if the settlement procedure in the US stock causes the observed anomaly, other US asset market or non – US stock markets may show different anomalies. So, it is natural to investigate the anomalies in other markets.

Although foreign currency markets are as important as stock markets for portfolio investment, the anomalies have received relatively little attention in studies of

exchange rate behaviour. One of the few stylized factors is that returns on several foreign currencies to an American investor are generally high on Monday and Wednesday and low on Tuesday and Friday.This was first found by McFarland et al.(1982) and have been confirmed by Jaffe and Westerfield (1985) So (1987), and Cornett et al. (1995).

However, recent literature review has complicated the international day – of – the – week effect. According to Connolly (1989,1991) and Chang et al. (1993), the sample size and / or error term adjustments render US day – of – the – week effects to be statistically insignificant. Dubois and Louvet (1996) confirmed these findings. Kim et al. (1998) also found no evidence of day – of – the – week effects in the Korean and Thailand stock markets.

Our findings will focus on the period of 1985 to that of November 2007 to track the newest development on the day – of – week effects of matured markets and of emerging ones. In particular, the researcher wants to examine the 1997 Asian crisis and the recent collapse of the US blue chip stocks and its significance to the day – of – the – week effects.

Empirical Evidence

More recently Yamori and Kurihara (2004) had a research to investigate to what extent transaction mechanism matters, they examined the daily returns of 29 foreign exchange rates in the New York market. This research found that the day – of – the week effect existed in the 1980s for some, not all, currencies. The fact that the day – of – the – week effect existed for only some currencies suggested that the US transaction mechanism alone cannot explain the anomaly. Furthermore, this they found that the day – of – the – week effect disappears for almost all currencies in the 1990s. This latter result was consistent with previous studies on anomalies in the stock markets.

The research done by Hui (2004) was devoted to extending the determination of day – of – the – week effect existing in a sample of Asia – Pacific markets such as Hong Kong, Korea, Singapore and Taiwan. At the same time, they also like to test for the presence of weekend effects in developed markets of the US and Japan. In view past studies regarding the disappearing day – of – the – week effect for US firms, they focused their attention on the recent years to better track the presence of weekend effects during and after the Asian financial crisis in 1997 and the recent collapse of the blue chip stocks in the United States. The results revealed that there exists no evidence of the day – of – the – week effect in all countries except Singapore. For Singapore, it was low returns on Monday and Tuesday and high returns on Wednesday to Friday.

Jaffe and Westerfield (1985) found the existence of weekend effect in other countries like Japan, Canada and Australia, together with US and UK. In contrast to previous studies on the US, the lowest mean returns for both the Japanese and Australian stock markets occur on Tuesday. On the other hand, the Canadian market displayed similar results to the US markets, displaying significantly negative returns on Monday. Kim (1988) also concluded similar results for the UK and Canadian market.

On the contrary, more recent literature review had complicated the international day – of – the – week effect. According to Connolly (1989,1991), the sample size and / or error term adjustments rendered US day – of – the – week effects to be statistically insignificant. Chang et al. (1993) confirmed this result. Dubois and Louvet (1996) also re-examined the day – of – the – week effect for eleven indexes from nine countries during the 1969 – 1992 period. The standard methodologies as well as the moving average methodology were used and returns were found to be lower in the beginning of the week, but not necessarily on Monday. The anomaly disappeared for the most recent periods in US market. However, the effect was strong for European countries, Hong Kong and Taiwan. Fortune (1998) found that in the last 18 years the volatility over weekends had been stable, at about 10 – 20% greater for the 3 days from Friday's close to Monday's close than for a single intra – week trading day. However, while there was a large and statistically significant negative return over weekends prior to 1987, the post – 1987 results indicated no weekend drift. In short, the negative weekend drift appeared to have disappeared although weekends continued to have low volatility.

One of the most notable international financial developments of the 1980s was the evolvement of the four "Asian Tigers" – South Korea, Hong Kong, Taiwan and Singapore. Their astonishing economic growth prompted Chan et al. (1992) to examine their linkages to developed markets like US. Wong et al. (1992) extended the day – of the week effect to the stock markets of Hong Kong, Taiwan, Thailand, Singapore and Malaysia during the period of January 1975 – May 1988. It was found that the day – of – the – week effect is present in all the market except Taiwan and that the US stock market has little influence on the Asian markets.

Wong, Hui and Chan(1992)did an extension of the research on the day – of – the – week effect to the stock markets of Singapore, Malaysia, Hong Kong, Thailand and Taiwan. These small sized markets are still much neglected. They found that there was a day – of – the – week effect in all these markets except Taiwan. These four markets have negative mean returns on Monday and Tuesday and high positive returns of Friday. Further analysis with four sub periods of data revealed that the weekly seasonal patterns appear to be period specific. The US stock market has little contribution to the day – of – the – week effect in these four markets. Thin trading does not seem to have a significant impact on the day – of – the – week effect in the Singapore market.

Tang and Kwok (1997) had a research to examine the day – of – the – week effect in international portfolio diversification and compares the results between January and non – January months. Using daily data of six stock indices, empirical results supported that a day – of – the – week effect exists, not only in the mean return and variance, but also in correlations between stock markets. On Monday, the average correlation was largest with a negative mean return and the largest volatility. Rogalski's effect exists on mean return and on volatility, respectively, in two and four markets. However, the effect disappears in diversified portfolios suggesting that the effect was market – specific and diversifiable. The seasonal pattern on correlations between stock

markets differs across January and non – January months with the average correlation largest on Thursday and Monday, respectively. Their results provided new empirical evidence on the day – of – the – week effect on international stock returns.

Chen.et.al(2001) examined the day – of – the – week effect in the stock markets of China. They found negative returns on Tuesday after January 1, 1995. This Tuesday anomaly disappears after taking the non – normality distribution and spillover from other countries into account. The finding suggested that this day – of – the – week regularly in China may be due to the spillover from the Americas. The evidence of the day – of – the – week anomaly in China was clearly dependent on the estimation method and sample period. When transaction costs were taken into account, the probability that arbitrage profits were available from the day – of – the – week trading strategies seems very small. This conclusion was obviously consistent with an efficient market approach.

Madureira and Leal (2001) in their study the twist – of – the – Monday effect in the Brazilian stock market and provided evidence that it was due to index construction problems, such as the non synchronous trading of stocks. The effect was present of indices but absent for most individual stocks and in the periods of the 1986 – 1998 period. When present, it was due to negative weekend returns while Monday intraday returns were significantly positive. When absent, Monday returns remain positively correlated with the previous week return although Monday returns were no longer significantly negative.

Liano .et.al (1999) in their study examined the presence of a day – of – the – week effect over different presidential administrations. The results indicated that the day – of – the – week effect prevails during the Democratic and Republican administrations. However, the pattern of the day – of – the – week effect differs between the two presidential administrations. Specifically, the negative returns on Monday were more pronounced during the Republican than during Democratic administrations. Therefore, explanations for the day – of – the – week effect should take into account the changing pattern of the day – of – the – week effect across presidential administrations.

Balaban (1995) studied to investigate day of the week effects in an emerging stock market of a developing country, namely Turkey. Empirical results verify that although day of the week effects were present in Istanbul Securities Exchange Composite Index (ISECI) return data for the period January 1988 to August 1994, these effects change in direction and magnitude through time.

Hiraki.et.al (1998) investigated in their research that the impact of index futures on daily returns seasonality in Japan. The introduction of index futures was hypothesized to increase the flow of information into spot prices, which in turn causes a shift in daily return seasonality. The introduction of index futures coincides with a significant impact on the return structure in Japan, both in terms of the daily seasonals and the lag effects of past returns on current return. Of particular interest, the Japanese Tuesday effect disappears after the introduction of index futures, and in

the post futures period, Monday returns are found to be anomalous.

Alexakis and Xanthakis (1995) did a research and Evidence is presented concentrating on the day of the week effect on the Greek stock market, which is currently in a transitory stage. The analysis carried out takes into account that the variance is dependent over time, while an EGARCH – M model investigates the volatility which is considered non – constant over time. During the period examined, January 1985 to February 1994 this market was divided into two sub periods, one in which it operated under backward statutory conditions and the recent one, that is since 1988, during which significant changes have been introduced affecting all market players. A positive return was found for Mondays when the total period was examined, as well as in the first sub period. Tuesdays, on the other hand, showed negative returns. The changes, however, since 1988 have established a new pattern of returns which come closer to that of most other national stock markets. Factors relating to the degree of order established in this market in combination with human behaviour patterns were used to explain these findings. On the side of moments, both preliminary evidence and further investigation of the dependencies depict a changing pattern as well.

Guneratne Bandara (2001) had a study and examined two well – known phenomena in financial economics known as the January effect and monthly seasonality using All Share Price Index returns of the Colombo Stock Exchange. Results of both parametric and non – parametric tests confirmed the non – existence of a January effect or a monthly seasonality on the Colombo Stock Exchange. These results were consistent with the Efficient Market Hypothesis and have important implications for investors in planning their investment strategies. This study was done with the objective of to test whether average share index returns differ significantly among the months of the year, and to test whether the returns of January differ significantly from those of each other month of the year. Data for this study consist of All Share Price Indices (ASPI) of the CSE for the period January 1985 to December 1998.

Berument and Kiymaz (2001) tested in his study, the presence of the day of the week effect on stock market volatility by using the S & P 500 market index during the period of January 1973 and October 1977. The findings showed that the day of the week effect is present in both volatility and return equations. While the highest and lowest returns were observed on Wednesday and Monday, the highest and the lowest volatility were observed on Friday and Wednesday, respectively. Further investigation of sub – periods reinforces their findings that the volatility pattern across the days of the week was statistically different.

The study done by Kiymaz and Berument (2003) again investigated the day of the week effect on the volatility of major stock market indexes for the period of 1988 through 2002. Using a conditional variance framework, they found that the day of the week effect was present in both return and volatility equations. The highest volatility occured on Mondays for Germany and Japan, on Fridays for Canada and the United States, and on Thursdays for the United Kingdom. For most of the markets, the

days with the highest volatility also coincide with that market's lowest trading volume.

Lian and Chen (2004) this study examines the daily anomalies in the five ASEAN equity markets of Malaysia, Singapore, Thailand, Indonesia and the Philippines before, during and after the Asian financial crisis. The regression results reveal different patterns among these markets for each of the three periods. The Monday and Friday effects are most predominant during the pre-crisis period. Only the Tuesday effect in Thailand and the Phillippines is observed during the crisis period. While the pattern of daily anomalies in Thailand during the post – crisis period reverts to that of the pre – crisis period, the other four markets exhibit different patterns of daily anomalies compared to the pre – crisis period. When the time varying return volatility is taken into account through the use of GARCH-M model, the Monday effect remains significant while some of the other daily anomalies have become insignificant during the pre – crisis period. The Tuesday effect in Thailand and the Philippines disappears altogether during the crisis period. Only the Monday and Friday effects in Thailand persist in the post – crisis period.

Methodology

This research focuses on seasonal anomalies of stocks in emerging equity market, period from 1985 onwards, day of week effect. To examine these facts the following hypotheses are developed.

Hypothesis

The following hypotheses are developed to test the day of the week effect on stock returns,

Hypothesis H_0: There is an equal weekday return exist at the stock markets. There is no any significant effect on any of the days in a week in the stock markets.

Hypothesis H_1: There is an effect on return on a particular day. Every Monday has significant effect on return in the stock markets.

Daily observation of the CSE Index is employed to investigate the day of the week effects. Separate periods are considered for this study.

Daily Returns is calculated by using following equation.

$$R_t = \log(I_t / I_{t-1}) * 100 \longrightarrow \quad (1)$$

R_t = Daily Return on day t.

I_t = Index on day of t.

I_{t-1} = Index on day before of $t-1$.

OLS regression model were used to examine the returns effect.

Day of the week effect is estimate by using following model.

$$R_t = \alpha_0 + \alpha_1 M + \alpha_2 T + \alpha_3 W + \alpha_4 Th + \varepsilon i \longrightarrow \quad (2)$$

Where M – Th are dummy variable for Monday to Thursday.

α_0 = Mean effect on Friday

εi - Error term.

The daily effect will be higher on Monday. This effect is calculated by using following equation.

$$R_t = \alpha_0 + \alpha_1 M + \varepsilon i \longrightarrow \quad (3)$$

Where M = dummy variable for Monday.

α_0 = Mean effect of other four days.

't' test is employed to test the individual coefficient of the model.

$$t = \bar{\alpha} / Se(\bar{\alpha})$$

$$\rightarrow \quad t = \frac{\text{Estimator}}{\text{Standard error of estimator}}$$

F test is employed test the returns difference among the days and month.

$$F = \frac{ESS / k-1}{RSS / n-k} = \frac{\text{Sum of Square Regression}}{\text{Sum of Square Error}}$$

Kruskal – Wallis nonparametric test were employed to test the returns difference among the day and month.

$$K = \frac{12}{n(n+1)} \Sigma R^2 / n - 3(n+1)$$

Bowman – Shelton Statistics were used to test whether the data follows normal distribution or not.

The Statistics is define as

$$BS = n\left[\frac{(Skewness)^2}{6} + \frac{(Kurtosis-3)^2}{24}\right]$$

BS will follow a χ^2 distribution with 2 degree of freedom.

Sample Design

The researcher has analyzed the data from the CSE in Sri Lanka; All Share Price Index (ASPI) in Colombo Stock Exchange of Sri Lanka. This research covers twenty three years sample period beginning from January 1985 to November 2007. This sampling period is subdivided into three that is from 1985 to 1990, from 1991 to 1995, from 1996 to 2000 and finally from 2001 to 2007. Adjusted Closed values of the index were downloaded from websites of the stock exchange. The data used in this study is the market index which represents the market adjusted closing prices with observations. These data were extracted from the online web site data stream. To test the hypotheses the auto regression in the Minitab software methodology is used.

Data Presentation and Analysis

In this research both Parametric and non – Parametric test statistics are used as these two tests tend to provide very similar conclusions. To test the proposed hypothesis statistical packages one way ANOVA have been used. Also to find other relevant statistics Kruskal – Wallis test and descriptive statistics are used. The results contain summary statistics for mean and Std. Dev. of daily returns over the entire sample period from 1985 to 2007. This study reports standard t – statistics and F – statistics. These methods have been used for the whole sample and the sub samples.

The empirical analysis is conducted using the general all share price index of ASPI in Sri Lanka. The sample period is from 1985 – 2007 and the Data are daily. The total sample size is 5471.

The Table 1 presents the mean and standard deviation of stock returns in Sri Lanka by day of the week. According to the evidence from the entire sample period the mean return is negative on Monday and Tuesday. Highest mean return is 0.186 reported on Friday and the lowest return is -0.001 reported on Monday which reveals a very large variance among the days of the week. Therefore, the null hypothesis is rejected. To substantiate these results the F – statistic also shows 1% level significance.

Table 1 Summary Statistics for the day of the week affect in the ASPI (CSE) of Sri Lanka

Period	Mean	Std.Dev.	*t*-Stat	*F*-Stat	*K-W* Stat	Observation
1985-2007						5471
Mon	-0.001	1.127	*-0.02*	5.53***	27.27***	1084
Tue	-0.026	1.131	*-0.75*	(0.000)	(0.000)	1107
Wed	0.072	1.231	*1.94*			1105
Thu	0.071	1.058	*2.23**			1101
Fri	0.186	1.206	*5.05****			1074
1985-1990						
Mon	0.148	0.894	*2.77****	0.87	1.47	279
Tue	0.099	1.003	*1.66*	(0.478)	(0.832)	284
Wed	0.149	1.321	*1.91*			285
Thu	0.002	1.082	*0.03*			282
Fri	0.093	1.046	*1.49*			283
1991-1995						
Mon	0.1072	0.9925	*1.66*	1.16	4.69***	235
Tue	0.0149	0.9966	*0.23*	(0.326)	(0.320)	243
Wed	-0.0497	0.8811	*-0.88*			241
Thu	0.0652	0.7942	*1.28*			244
Fri	0.0915	0.8978	*1.55*			232
1996-2000						1204
Mon	-0.1014	1.0502	*-1.50*	1.34	14.08***	243
Tue	-0.0887	0.8984	*-1.54*	(0.252)	(0.007)	243
Wed	-0.0398	1.0569	*-0.59*			245
Thu	-0.0021	0.8338	*-0.04*			240
Fri	0.0738	0.8514	*1.32*			233
2001-2007						1656
Mon	-0.131	1.401	*-1.69*	8.19***	42.31***	327
Tue	-0.114	1.434	*-1.45*	(0.000)	(0.000)	335
Wed	0.174	1.460	*2.17**			333
Thu	0.187	1.314	*2.60****			335
Fri	0.414	1.639	*4.56****			326

***, **and * denote statistical significance at the 1%, 5% and 10% level respectively.

To substantiate the evidence of day of the week effects shown in Table 1 the Kruskal Wallis test is carried out to test null hypothesis of equality of mean returns across the days of the weeks. As shown in Table 1 the values of Kruskal Wallis are significant at the 1% level for ASPI markets. These results support the existence of the day of the week effect on stock returns in Sri Lanka.

As the day of the week effect is a result of the trading days whose difference in mean returns is statistically significant, the t – statistics test is therefore used to identify those trading system that contribute to the rejection of the null

hypothesis of equality in mean returns. The result also shows a significant effect at 10% and 1% level on Thursday and Friday respectively.

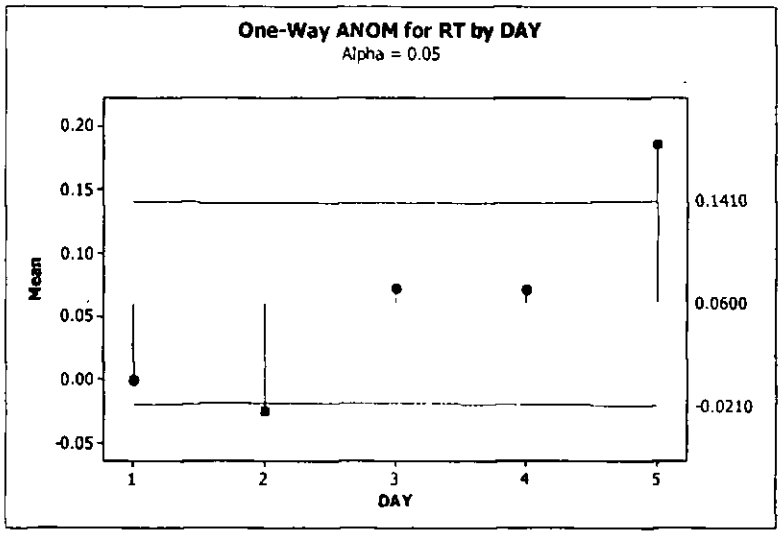

Figure 1 Means of Analysis of the day of the week effect for the CSE 1985 – 2007

Figure 1 presents also substantiate the same results. The negative mean returns are observed on Mondays and Tuesdays whereas on Wednesdays and Thursdays a positive slight improvement is observed in the mean return. At the same time a large positive mean return is observed on Friday which has 1% level significant.

Further the lowest part of the Table 1 present statistical evidence for the sub sample which have been divided into four with five years interval. For the first sub sample 1985 – 1990 it can be seen that t – statistics results shows 1% level significant on mean return on Mondays. If we take the second sub sample 1991 – 1995 and sub sample three 1996 – 2000, though there is a variance is observed in the mean returns during the week days the statistical significant effect cannot be seen. The last sub sample 2001 – 2007 results shows different evidence from other sub samples. According to the evidence of the t – statistics 10% level significant effect was observed on Wednesdays and 1% level significant effect was observed on Thursday and Friday.

Conclusions and Discussion of Findings

This study tested the day of the week effect in the CSE stock market in Sri Lanka. This study covers a sample period from 1985 – 2007. The results of the analysis for the entire sample period reveals that a negative mean return on Monday and Tuesday. But a positive significant effect is observed on Thursday and Friday for the entire sample period on the other hand a positive significant mean return is observed on Monday for the first sub sample period whereas a position significant effect is reported on Wednesday, Thursday and Friday for the fourth sub sample period.

The investors could make use of these findings to make decisions with

regard to changes buy or sell, they have to make their portfolio to make profits or avoid losses. The reason for day of the week effect and monthly effect is unable to explain clearly. Several alternative explanations with testable implications are to be included thereby these tests are differed for further research, size of the firm effect also differed for future research.

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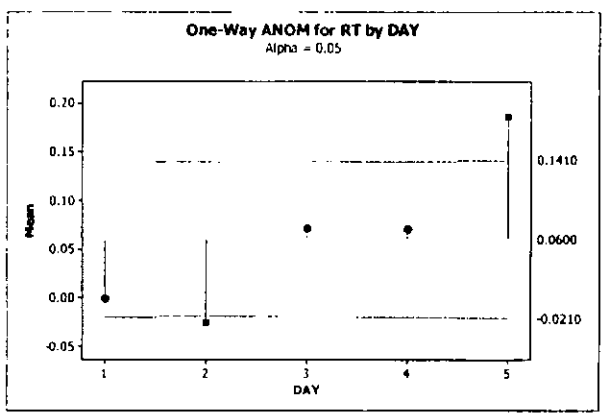
Appendix

Day of the Week Effect from 01-01-1985 – 30-11-2007 CSE (Sri Lanka)

One-way ANOVA: RT versus DAY

```
Source    DF       SS     MS     F      P
DAY        4    29.40   7.35  5.53  0.000
Error   5466  7257.91   1.33
Total   5470  7287.31
S = 1.152 . R-Sq = 0.40%   R-Sq(adj) = 0.33%
                            Individual 95% CIs For Mean Based on
                            Pooled StDev
Level     N    Mean  StDev  ---------+---------+---------+---------+
1      1084  -0.001  1.127    (------*------)
2      1107  -0.026  1.131  (------*------)
3      1105   0.072  1.231           (------*------)
4      1101   0.071  1.058           (------*------)
5      1074   0.186  1.206                    (------*------)
                            ---------+---------+---------+---------+
                                   0.00      0.10      0.20      0.30
Pooled StDev = 1.152
```



One-Way ANOM for RT by DAY

Kruskal-Wallis Test: RT versus DAY

```
Kruskal-Wallis Test on RT
DAY         N        Median  Ave Rank      Z
1        1084  -1.54019E-02    2625.9  -2.56
2        1107   0.000000000    2627.5  -2.56
3        1105   0.022027240    2725.2  -0.25
4        1101   0.031389327    2776.2   0.94
5        1074   0.079212361    2928.9   4.46
Overall  5471                  2736.0

H = 27.27  DF = 4  P = 0.000
H = 27.27  DF = 4  P = 0.000  (adjusted for ties)
```

One-Sample T: RT_1, RT_2, RT_3, RT_4, RT_5

```
Test of mu = 0 vs not = 0

Variable     N       Mean     StDev   SE Mean          95% CI             T
RT_1      1084  -0.000815  1.127318  0.034240  (-0.067999, 0.066369)  -0.02
RT_2      1107  -0.025511  1.131450  0.034006  (-0.092235, 0.041214)  -0.75
```

RT_3	1105	0.071805	1.231372	0.037043	(-0.000878, 0.144488)	1.94
RT_4	1101	0.071274	1.058170	0.031891	(0.008701, 0.133847)	2.23
RT_5	1074	0.185811	1.205782	0.036793	(0.113617, 0.258006)	5.05

Variable	P
RT_1	0.981
RT_2	0.453
RT_3	0.053
RT_4	0.026
RT_5	0.000

Day of the Week Effect from 01-01-1985 – 31-12-1990 CSE (Sri Lanka)

One-way ANOVA: RT versus DAY

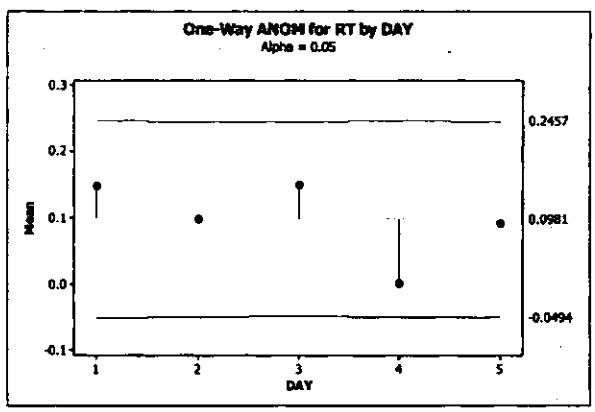
Source	DF	SS	MS	F	P
DAY	4	4.07	1.02	0.87	0.478
Error	1408	1639.52	1.16		
Total	1412	1643.60			

S = 1.079 R-Sq = 0.25% R-Sq(adj) = 0.00%

Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	StDev	--+---------+---------+---------+-------
1	279	0.148	0.894	(-----------*-----------)
2	284	0.099	1.003	(-----------*-----------)
3	285	0.149	1.321	(-----------*-----------)
4	282	0.002	1.082	(-----------*-----------)
5	283	0.093	1.046	(-----------*-----------)
				--+---------+---------+---------+-------
				-0.10 0.00 0.10 0.20

Pooled StDev = 1.079



One-Way ANOM for RT by DAY

Kruskal-Wallis Test: RT versus DAY

Kruskal-Wallis Test on RT

DAY	N	Median	Ave Rank	Z
1	279	0.012098	717.0	0.46
2	284	0.019899	719.7	0.59
3	285	0.041223	715.6	0.40
4	282	0.011315	686.9	-0.93
5	283	0.007661	695.8	-0.52
Overall	1413		707.0	

```
H = 1.47  DF = 4  P = 0.832
H = 1.47  DF = 4  P = 0.832  (adjusted for ties)
```

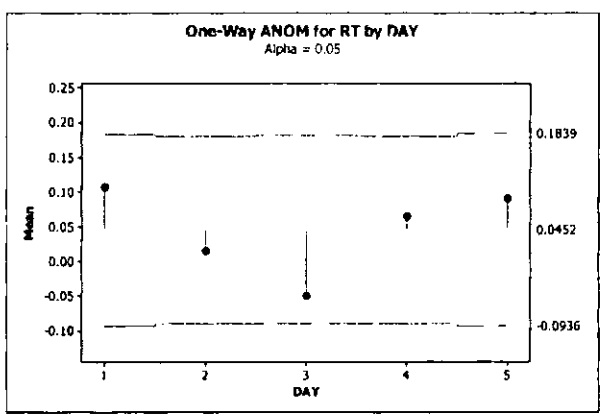
One-Sample T: RT_1, RT_2, RT_3, RT_4, RT_5

```
Test of mu = 0 vs not = 0

Var    N      Mean     StDev   SE Mean          95% CI             T      P
RT_1   279  0.148043  0.893554  0.053496  ( 0.042735, 0.253351)  2.77  0.006
RT_2   284  0.098657  1.003109  0.059524  (-0.018508, 0.215822)  1.66  0.099
RT_3   285  0.149421  1.320662  0.078229  (-0.004562, 0.303404)  1.91  0.057
RT_4   282  0.001744  1.081772  0.064419  (-0.125061, 0.128548)  0.03  0.978
RT_5   283  0.092714  1.046138  0.062186  (-0.029694, 0.215123)  1.49  0.137
```

Day of the Week Effect from 01-01-1991 – 31-12-1995 CSE (Sri Lanka)

One-way ANOVA: RT versus DAY

```
Source     DF        SS      MS     F      P
DAY         4     3.892   0.973  1.16  0.326
Error    1190   996.671   0.838
Total    1194  1000.563
S = 0.9152   R-Sq = 0.39%   R-Sq(adj) = 0.05%
                             Individual 95% CIs For Mean Based on
                             Pooled StDev
Level    N     Mean   StDev  -------+---------+---------+---------+--
1      235   0.1072  0.9925                    (-----------*----------)
2      243   0.0149  0.9966          (----------*-----------)
3      241  -0.0497  0.8811  (-----------*-----------)
4      244   0.0652  0.7942               (-----------*----------)
5      232   0.0915  0.8978                 (-----------*-----------)
                             -------+---------+---------+---------+--
                                 -0.10      0.00      0.10      0.20
Pooled StDev = 0.9152
```



One-Way ANOM for RT by DAY

Kruskal-Wallis Test: RT versus DAY

```
Kruskal-Wallis Test on RT
DAY         N     Median  Ave Rank      Z
1         235  -0.006503     612.4   0.71
2         243  -0.024421     592.2  -0.29
3         241  -0.038049     559.4  -1.94
4         244  -0.009536     605.6   0.39
```

```
5          232   0.037152      621.5   1.16
Overall   1195                 598.0
H = 4.69  DF = 4  P = 0.320
```

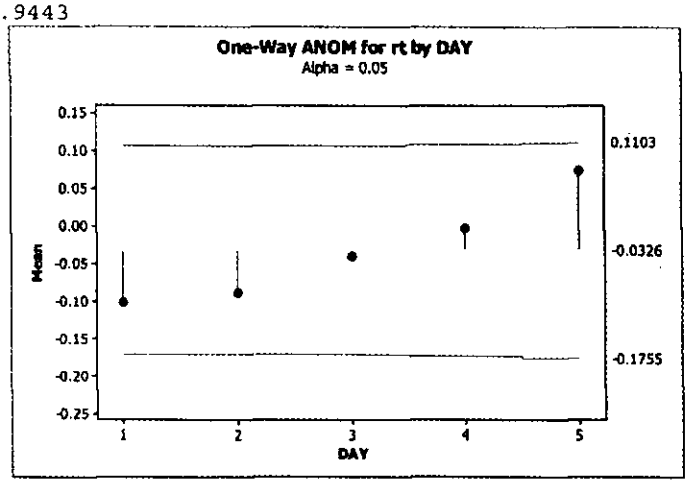
One-Sample T: RT_1, RT_2, RT_3, RT_4, RT_5

```
Test of mu = 0 vs not = 0

Variable    N       Mean     StDev   SE Mean           95% CI              T
RT_1      235   0.107197  0.992486  0.064743  (-0.020356, 0.234750)    1.66
RT_2      243   0.014892  0.996621  0.063933  (-0.111045, 0.140829)    0.23
RT_3      241  -0.049713  0.881138  0.056759  (-0.161522, 0.062097)   -0.88
RT_4      244   0.065175  0.794159  0.050841  (-0.034970, 0.165320)    1.28
RT_5      232   0.091491  0.897840  0.058946  (-0.024649, 0.207632)    1.55

Variable      P
RT_1      0.099
RT_2      0.816
RT_3      0.382
RT_4      0.201
RT_5      0.122
```

Day of the Week Effect from 01-01-1996 – 31-12-2000 CSE (Sri Lanka)

One-way ANOVA: rt versus DAY

```
Source     DF        SS      MS     F      P
DAY         4     4.786   1.197  1.34  0.252
Error    1199  1069.164   0.892
Total    1203  1073.950
S = 0.9443   R-Sq = 0.45%   R-Sq(adj) = 0.11%
                             Individual 95% CIs For Mean Based on
                             Pooled StDev
Level     N     Mean   StDev  --------+---------+---------+---------+-
1       243  -0.1014  1.0502  (---------*--------)
2       243  -0.0887  0.8984   (---------*---------)
3       245  -0.0398  1.0569        (---------*---------)
4       240  -0.0021  0.8338           (---------*---------)
5       233   0.0738  0.8514                  (---------*---------)
                             --------+---------+---------+---------+-
                                  -0.12      0.00      0.12      0.24
Pooled StDev = 0.9443
```



Kruskal-Wallis Test: rt versus DAY

```
Kruskal-Wallis Test on rt
DAY         N    Median  Ave Rank      Z
1         243  -0.01258     583.1  -0.98
2         243  -0.11845     562.6  -2.00
3         245  -0.05659     588.8  -0.69
4         240  -0.03554     607.8   0.26
```

```
5          233    0.08540      673.4    3.46
Overall   1204                 602.5
H = 14.08  DF = 4  P = 0.007
H = 14.08  DF = 4  P = 0.007  (adjusted for ties)
```

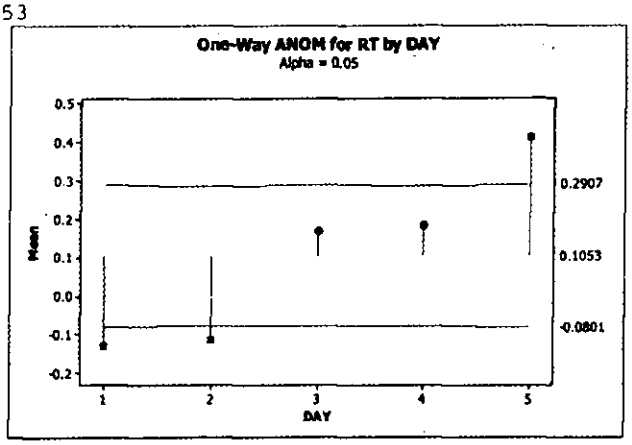
One-Sample T: rt_1, rt_2, rt_3, rt_4, rt_5

```
Test of mu = 0 vs not = 0
Variable    N       Mean     StDev   SE Mean          95% CI              T
rt_1      243  -0.101354  1.050203  0.067371  (-0.234061, 0.031354)  -1.50
rt_2      243  -0.088714  0.898418  0.057634  (-0.202242, 0.024813)  -1.54
rt_3      245  -0.039761  1.056910  0.067523  (-0.172765, 0.093242)  -0.59
rt_4      240  -0.002096  0.833831  0.053824  (-0.108125, 0.103933)  -0.04
rt_5      233   0.073773  0.851447  0.055780  (-0.036128, 0.183673)   1.32

Variable      P
rt_1      0.134
rt_2      0.125
rt_3      0.557
rt_4      0.969
rt_5      0.187
```

Day of the Week Effect from 01-01-2001 – 30-11-2007 CSE (Sri Lanka)

One-way ANOVA: RT versus DAY

```
Source     DF       SS     MS     F      P
DAY         4    69.14  17.28  8.19  0.000
Error    1651  3483.61   2.11
Total    1655  3552.75
S = 1.453   R-Sq = 1.95%   R-Sq(adj) = 1.71%
                           Individual 95% CIs For Mean Based on
                           Pooled StDev
Level     N     Mean  StDev   --+---------+---------+---------+-------
1       327  -0.131  1.401   (------*-----)
2       335  -0.114  1.434    (-----*------)
3       333   0.174  1.460                (-----*-----)
4       335   0.187  1.314                (-----*------)
5       326   0.414  1.639                         (------*-----)
                           --+---------+---------+---------+-------
                          -0.25      0.00      0.25      0.50
Pooled StDev = 1.453
```



Kruskal-Wallis Test: RT versus DAY

```
Kruskal-Wallis Test on RT
DAY         N    Median  Ave Rank      Z
1         327  -0.09421     722.3  -4.48
2         335   0.02908     757.7  -3.03
3         333   0.11376     861.5   1.41
4         335   0.17362     872.1   1.87
5         326   0.22487     929.3   4.25
Overall  1656               828.5
```

```
H = 42.31  DF = 4  P = 0.000
H = 42.31  DF = 4  P = 0.000  (adjusted for ties)
```

One-Sample T: RT_1, RT_2, RT_3, RT_4, RT_5

Test of mu = 0 vs not = 0

Variable	N	Mean	StDev	SE Mean	95% CI	T
RT_1	327	-0.130734	1.401199	0.077486	(-0.283170, 0.021703)	-1.69
RT_2	335	-0.113972	1.434217	0.078360	(-0.268113, 0.040169)	-1.45
RT_3	333	0.173627	1.459910	0.080003	(0.016251, 0.331003)	2.17
RT_4	335	0.186810	1.313560	0.071767	(0.045637, 0.327984)	2.60
RT_5	326	0.413829	1.638600	0.090754	(0.235290, 0.592367)	4.56

Variable	P
RT_1	0.093
RT_2	0.147
RT_3	0.031
RT_4	0.010
RT_5	0.000