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by

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Abstract

This study investigates the 'day of the week' effect and the 'twist of the Monday' effect for Kuala Lumpur Composite Index for the period May 2000 to June 2006. Our empirical results find support for the Monday effect in that Mondays are the only days with negative returns and represent the lowest stock returns in a week. The returns on Wednesday are the highest in a week, followed by returns on Friday. Monday returns were partitioned into positive and negative returns, and we found that the Monday effect is clearly visible in a 'bad news' environment, but it failed to appear in a 'good news' environment. This study also found evidence on twist of the Monday effect, where returns on Mondays are influenced by the previous week's returns and the previous Friday's returns. The evidence of negative Monday returns in this period is consistent with the relevant empirical literature.

Key Words: : Calendar anomalies; day of the week effect; twist of the day effect

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INTRODUCTION

Calendar anomalies in securities markets have attracted considerable interest amongst both investors and economists alike. According to the definition advanced by Islam and Watanapalachaikul (2005), anomalies refer to regularities that appear in the trading of stocks which can influence stock market returns. Studies of calendar anomalies first began to appear in the 1930s. The study of calendar anomalies requires time-dated records of stock market indices allowing seasonality to be tracked for long periods (Jacobs and Levy, 1988). The availability of decades of this type of data has thus allowed empirical researchers to study calendar anomalies using various statistical tests.

Calendar anomalies rest on the basic assumption that the past behavior of a stock's price is rich in information pertaining to its future behavior. It is argued that since the pattern of the past price behavior will tend to recur in future, it is useful to understand these patterns in order to predict the future behavior of prices (Fama, 1965). In other words, the study of calendar anomalies suggests that investors could use these results on anomalies to predict stock market movements on given days.

Calendar anomalies seem to contradict the weak form of Efficient Market Hypothesis (EMH). Market efficiency is a term used to explain the relationship between information and share prices in the securities market literature. In its weak form, the EMH holds that stock returns are serially un-correlated and have a constant mean. Moreover, a market is considered 'weak-form' efficient if current prices fully reflect all information implied by all past price movements, such as the history of past prices, trading volumes and other factors. The weak form of the

EMH asserts that the future price movements of stock issues are approximately random; they are thus independent of the past history of price movements (see, for instance, Othman Yong, 1994; Poshakwale, 1996; and Fawson *et al.*, 1996). This implies that a series of past price changes cannot used to predict future prices.

Despite these theoretical predictions, empirical researchers established that stock returns do indeed exhibit a pattern during market trading days. This finding suggests that historical stock prices can be used to predict the future movement of the stock prices. Historical stock prices thus have important implications for financial markets, especially the analysis of seasonal behavior which includes the 'day of the week' and 'month of the year' effects.

It is important to note that a few existing empirical studies had considered the direction of the stock returns. For example, Madureira and Leal (2001) investigated the influence of positive or negative previous week returns to Monday returns in the Brazilian stock market. Similarly, Arsad and Coutts (1996) and Steely (2001) found that the general trend of the market is an important variable in determining the existence of day of the week effect.

The present study examines the 'day of the week' effect, the influence of the market environment on stock returns, and the 'twist of the Monday' effect for the Malaysian stock market. Previous work on the Malaysian stock market has not thoroughly investigated market returns by partitioning by the direction of the market. Understanding of the behavior of stock market is important for economic policy because changes in the stock market have important implications for macroeconomic stability. It is also important for financial managers, financial advisers as well as the investors who invest in Malaysian stock market.

The paper itself is divided into four main parts. Section 2 provides a synoptic discussion of the empirical literature on calendar anomalies in financial markets. Section 3outlines the methodology employed in the study. Section 4 considers the results of our estimation procedures. The paper ends with some brief concluding comments in section 5.

EMPIRICAL ANALYSIS OF CALENDAR ANOMALIES

The day of the week effect refers to the variation of the return to stocks by the day of the week. In particular, the Monday mean return is negative and abnormally low while the Friday mean return is positive and generally the highest in a week (Keim and Stambaugh, 1984; Jacobs and Levy, 1988). This pattern is commonly known as the 'weekend effect' or 'Blue Monday effect and it refers to the significantly lower returns over the period between the Friday close and the Monday close of the market. The presence of a day of the week effect would mean that stock returns are not equal across a week and would thus constitute evidence against the EMH.

The existence of a day of the week effect in stock returns in numerous countries has been documented by a large number of studies: in the New York Stock Exchange (Gibbons and Hess, 1981; Lakonishok and Levi, 1982; Keim and Stambaugh, 1984); the United Kingdom and Canada (Jaffe and Westerfield, 1985); the Milan Stock Exchange (Barone, 1990) and in some other European markets (Chiaku, 2006; Apolinario *et al*., 2006).

In the Asian region, Ho (1990), Seow and Wong (1998), Kok and Wong (2004), Gao and Kling (2005), Hui (2005) and Islam and Watanapalachaikul

(2005) have all reported the existence of day of the week effects. In the context of the Asian contagion, Kok and Wong (2004) found that Friday returns in three ASEAN countries were significantly higher than the rest of the day returns in the pre-crisis period. They also found that Thailand maintained the highest positive Friday returns after the financial crisis.

Evidence in favor of the day of the week effect has been found in the Malaysian stock market as well. For instance, Ho (1990), Clare *et al.* (1998), Foo and Kok (2000), Kok and Wong (2004) and Lean *et al.* (2007) have shown that Malaysian stock market is influenced by seasonal anomalies.

In addition, by Jacobs and Levy (1988), Keim and Stambaugh (1984) and Ho (1990) have suggested that the last price of the week, Friday five day weeks and Saturday six day weeks have a tendency to record the highest positive return. Another interesting finding was made by Abraham and Ikenberry (1994), who showed that investors are more active in selling stock on Mondays in United States, particularly following bad news released on the previous Friday. Moreover, selling activity by individuals is generally follows the previous Friday's return. Thus, if Friday's return is negative, then the following Monday's return will also be negative.

In contrast to this empirical literature, studies established no significant negative Monday returns in Turkish stock markets (Balaban, 1995), the Irish stock exchange (Lucey, 2000) and stock market in South Korea and Philippines (Brooks and Persand, 2001). These studies also failed to find support for the existence of significant negative Monday return.

The direction of market is an important variable in determining the existence of a day of the week effect. Arsad and Coutts (1996), Steely (2001) and Madureira and Leal (2001) took into account the environment of the market in investigating the day of the week effect by partitioning the returns into positive and negative returns. Arsad and Coutts (1996) and Steely (2001) found a very strong evidence for the existence of the weekend effect in a bad news environment, while in the case of good news environment, weekend effect no longer existed.

Madureira and Leal (2001) investigated the presence of twist of the Monday effect in the Brazilian stock market. The term twist of the Monday effect was first used by Jaffe *et al.* (1989) to describe negative returns on Mondays following a decline in the market during the previous week. This effect disappeared when the market rose in the previous week. These findings showed that Monday's returns are influenced by previous week returns. Mondays following weeks of declining returns have negative returns and Monday returns following weeks of positive returns are not negative. This study also verified the consistency of the twist of the Monday effect and showed that the tendency to follow the returns over the previous week is limited to Monday.

METHODOLOGICAL CONSIDERATIONS

This study employed the daily closing values of the Malaysian KLCI from 1 May 2000 through to 30 June 2006. The use of daily data makes it possible to examine the relationship between the changes of stock prices from one trading day to the next as well as over weekends. Five observations per week were used in order to avoid possible bias from the loss of information due to public holidays. For non-trading days, the return is calculated using the closing price indices of the last trading day. This approach is consistent with that employed by Islam and Watanapalachaikul (2005). Adjusted daily stock price were corrected for capital adjustments (such as stock splits, stock dividends and rights) and used in testing for a seasonal daily effect.

Daily percentage change or return is calculated as first differences in natural logarithm returns and then multiplied by 100 to approximate percentage changes:

$$R_t = \ln\left(I_t / I_{t-1} \right) \times 100 \quad (3.1)$$

where I_t and R_t refer to the KLCI price and the return to the Kuala Lumpur Composite Index (KLCI) on day t, respectively. This method is also employed by Ho (1990) and Chiaku (2006).

Day of the week effect

This standard methodology is initially used to test for daily seasonality in stock market adjusted returns by estimating the following regression formula:

$$R_t = \alpha_1 + \alpha_2 D_{2t} + \alpha_3 D_{3t} + \alpha_4 D_{4t} + \alpha_5 D_{5t} + \varepsilon_t \quad (3.2)$$

where R_t is the return on the KLCI, D_{2t} is a dummy variable which takes the value 1 if day t is a Tuesday, and 0 otherwise; and so on. This model is used to characterize the mean return. The individual value for each of the dummy variables could reveal the presence of difference during a day of the week with respect to Monday. In equation 3.2, the constant α_1 measures the average daily rate of return on Monday. A positive and significant constant implies that the average return on Monday is significantly greater than zero. The OLS coefficients α_2 through α_5 are the pair-wise comparison between the average return on Monday and the average return on Tuesday through Friday. A positive and significant α_2 indicates that the returns on Tuesday are significantly higher than the returns on Monday. The coefficients for the remaining three dummy variables are interpreted similarly. ε_t is an independently and identically distributed error term with a zero mean and constant variance (Redman *et al.*, 1997; Apolinario *et al.*, 2006).

Furthermore, *t*-tests were carried out to test on an individual coefficient, α_i where *i* = 2, 3, 4, 5. The null hypothesis and the alternative hypothesis of the two-tailed *t*-test are defined as $H_0 : \alpha_i = 0$ and $H_1 : \alpha_i \neq 0$. The *t*-statistic is defined as:

$$t_c = \frac{(\hat{\alpha}_i - \alpha_0)}{s_{\hat{\alpha}_i}} \tag{3.3}$$

where $\hat{\alpha}_i$ is the estimate, $s_{\hat{\alpha}_i}$ is its standard error and α_0 is set equal to zero. Under the null hypothesis, it has a *t*-distribution with *n* – *k* degree of freedom, *n* is the number of observations and *k* is the number of parameters. If the null hypothesis is rejected, it implies that the coefficient estimated is significantly different from zero.

The Wald test is conducted to test a linear combination of coefficients of the OLS model. The null hypothesis of Wald test is that all the coefficients in the regression model are the same, $H_0 : \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5$; against the alternative hypothesis that at least one of the coefficients are not equal. The F-statistic is computed as:

$$F_c = \frac{(ESS_R - ESS_U)/(k-m)}{ESS_U/(n-k)} \tag{3.4}$$

where ESS_R and ESS_U is the error sums of squares of restricted (R) and unrestricted (U) models respectively, and n is the number of observations. The unrestricted model contains k coefficients estimated and the restricted model contains m coefficients estimated. The null hypothesis is rejected if F_c has p-value less than 10% (Ramanathan, 2002).

In this study, the unrestricted model with four independent variables is $R_t = \alpha_1 + \alpha_2 D_{2t} + \alpha_3 D_{3t} + \alpha_4 D_{4t} + \alpha_5 D_{5t} + \varepsilon_t$. Using this restriction, we solved for one of the coefficients in terms of the others and substituted that into the unrestricted model to obtain the restricted model. To test $\alpha_2 = \alpha_3 = \alpha_4 = \alpha_5$, we substituted α_2 for α_3, α_4, α_5 and obtained $R_t = \alpha_1 + \alpha_2 (D_{2t} + D_{3t} + D_{4t} + D_{5t}) + \varepsilon_t$. The unrestricted model in this study thus contains four coefficients estimated, (k = 4) and restricted model contains one coefficient estimated (m =1).

Classical assumptions are necessary for the OLS to be the best linear estimation method for regression model. However, violations of OLS assumptions were observed in many stock return series in early anomalies research. Kunkel *et al.* (2003) argued that parametric tests, such as the OLS regression model and analysis of variance (ANOVA), are robust with respect to mild violations of the assumptions, especially in large samples. Parametric tests are also more sensitive to small differences in the magnitudes of returns that are being measured. This study does not meet the requirements of the classical linear regression model assumptions. Accordingly, our estimations analyzed the day of the week effect using non-parametric tests. Non-parametric tests have been demonstrated to be almost as powerful as parametric tests in detecting differences between samples. When OLS assumptions are not met, nonparametric tests can be even more powerful (Kunkel *et al.*, 2003)

Previous empirical research has suggested that stock price returns are non-normal and display leptokurtic properties, (Fama, 1965; Hui, 2005). We thus employed the non-parametric Kruskal-Wallis (*KW*) statistic test to examine possible differences between two or more groups. The *KW* test is based on the ranks of the sample observations. This statistical test makes no distributional assumptions about stock price returns and it follows the equation below:

$$KW = \frac{12}{n(n+1)}\sum_{i=1}^{k}\frac{R_i^2}{n_i} - 3(n+1) \qquad (3.5)$$

where k is the number of trading days' return (k = 5), n is the total number of sample observations, n_i is the sample sizes in i trading day, and R_i is the rank sum of the i trading day. For large sample sizes, the test statistics *KW* will follow the chi-square χ^2 distribution with (k − 1) degrees of freedom. In this study, there are four degrees of freedom. The null hypothesis is rejected at 10% significance level. The hypotheses are as follows:

H_0: No difference exists in the returns across the days of the week.

H_1: A difference exists in the returns across the days of the week.

If the null hypothesis of *KW* statistic test is rejected, this implies that there is a day of the week effect. To find out which two trading days' mean returns are different, a Wilcoxon rank sum test was performed to examine the pairs of groups which are significantly different (Hui, 2005; Chiaku, 2006).

Wilcoxon rank sum test is valid for the comparison of the central locations of two independent random samples. Wilcoxon rank sum statistic, *T*, approaches the normal distribution as the number of sample observations increases. The null hypothesis of this test is that the central locations of the two sample distribution are the same. We assume that, apart from any possible differences in the central location, the null hypothesis is rejected and the two sample distributions are identical (Newbold *et al.*, 2003).

The two samples are pooled together and the observations are ranked in ascending order, with ties assigned the average of the next available ranks. Assuming that the null hypothesis to be true, the Wilcoxon rank sum has the mean:

$$E(T) = \mu_T = \frac{n_1(n_1 + n_2 + 1)}{2} \quad (3.6)$$

and variance:

$$\text{Var}(T) = \sigma^2{}_T = \frac{n_1 n_2 (n_1 + n_2 + 1)}{2} \quad (3.7)$$

where n_1 is the number of observations from the first sample and n_2 is the number of observations from the second. *T* denotes the sum of ranks of the observations from the first sample. The distribution is then approximated by the normal distribution as follows:

$$Z = \frac{T - \mu_T}{\sigma_T} \quad (3.8)$$

Using this test, the null hypothesis can be rejected without the assumption of normality. In this study, the null hypothesis is rejected against the two-sided alternative at the 10% significance level.

Day of the week effect with market conditions

The market can be identified as a good news environment if the market has increased on a particular day and this may be interpreted as the consequence of a positive information flow. The returns data are partitioned into two sub-samples; one of the samples represents negative returns and another sample represents positive returns. The two sub-samples are subsequently divided between the days of the week. This will determine whether returns are more sensitive to the day of the week in a declining rather than a rising market.

The day of the week effect is tested by Kruskal-Wallis and Wilcoxon rank sum statistic test for each sub-sample. The rejection of null hypothesis of *KW* test indicates that there is a day of the week effect in that sub-sample. Wilcoxon rank sum test is used to indicate the difference between mean returns on Mondays and Fridays and those on the other days of the week (Arsad and Coutts, 1996; Steely, 2001).

Twist of the Monday effect

The sample of Monday returns is divided in two and then two sub-samples are identified, one corresponding to positive previous week returns and the other to negative previous week returns. Previous week returns are calculated as percentage returns from the closing of Monday to the closing price of Friday in that week. If there was no trading on the previous Monday or Friday, then the corresponding Monday return was removed from the sample. This approach is consistent with that employed by Madureira and Leal (2001). A Wilcoxon rank sum test is used to verify the significance of the difference between the returns of the two sub-samples. The rejection of null hypothesis of the Wilcoxon rank sum test indicates that the two sub-samples are significantly different and there is a twist of the Monday effect.

Madureira and Leal (2001) pointed out that the tendency to follow the returns over the previous week is limited to Monday. In order to verify if the twist of the Monday effect is unique, the same group of tests is run on the other days of the week. The calculation of previous week return is redefined for Tuesday; the previous week return was measured from the market closing on the previous Tuesday to the market closing of the Monday of the present week.

The influence of previous Friday return on the following Monday return is also of interest. The sample of Monday returns is divided into two sub-samples, one of the sub-samples has positive previous Friday return, and the other one has negative previous Friday return. Wilcoxon rank sum test is used to find the significantly difference between the returns of the two sub-samples. The rejection of null hypothesis of Wilcoxon rank sum test indicates that the two sub-samples are significantly different and also shows that the previous Friday return has an influence on the following Monday return.

RESULTS

Summary statistics for daily index returns over the entire study period are reported in Table 1. These statistical tests provide a simple analysis of the distribution of the logarithmic returns. For the full period, the mean return is negative for Monday and Thursday. Wednesday has the largest positive mean return. The maximum return is also achieved on Wednesday. Thursday shows positive skewness and the other days exhibit negative skewness. The distribution is peaked (i.e. leptokurtic) relative to the normal and this is showed by the value of the kurtosis which exceeds three for all five days in a week. All the Jarque-Bera test results are significant at the 1% significance level. The null hypothesis of normal distribution is rejected and this indicates that the distribution of the returns for each day is not normal. Therefore the absence of normality supports the use of non-parametric tests in this study.

Table 1. Logarithmic returns on KLCI by day of week

	Monday	Tuesday	Wednesday	Thursday	Friday
Mean	-0.089202	0.010396	0.067736	-0.027129	0.044614
Maximum	3.089073	2.549167	4.502734	3.254817	3.024385
Minimum	-5.670310	-2.875740	-6.342200	-3.84089	-5.014360
Std. Dev.	0.981313	0.719433	0.936473	0.780674	0.853267
Skewness	-1.073210	-0.178240	-0.257140	0.470743	-1.120500
Kurtosis	8.842239	4.821407	11.80589	6.967112	9.559684
Jarque-Bera	519.7463	46.21502	1043.927	223.0437	644.6913
Probability	0.000001	0.000001	0.000001	0.000001	0.000001

Note: All returns are in percentage.

Day of the week effect

The results of OLS for days are presented in Table 2. The results show that the day of the week effect exists in Malaysia stock market. The daily seasonal anomaly is prevalent with a negative Monday effect and positive Wednesday and

Friday effects. This result is similar to the finding of Kok and Wong (2004) on Malaysia stock market for the pre-Asian crisis period, 1992 to 1997.

The constant shows the average daily return of Mondays. The average daily return of Monday is -0.09% and is significant at 10% level. The coefficients for other days are all positive and the coefficients for Wednesday and Friday are significant at 5% level. These two positive and significant coefficients imply that the returns on Wednesday and Friday are significantly higher than the returns on Monday. Wednesday return records the highest return in the examined period. The result indicates that the returns of KLCI tend to be lower on Monday but become higher on Wednesday and Friday.

The *F*-statistic for the Wald test is insignificant, null hypothesis cannot be rejected. This means that the coefficients α_2 through α_5 are not significantly different to each other. In other words, the profits that investors earn on trading during Tuesday through Friday are not much different.

Table 2. OLS results for day of the week effect for KLCI

	Coefficient	*t*-statistics
Constant	-0.089202	(-1.861745) **
Tuesday	0.099597	(1.469875)
Wednesday	0.156938	(2.316118) *
Thursday	0.061255	(0.904008)
Friday	0.133816	(1.974878) *
Wald test (*F*-statistic)	1.679093	

Note: * and ** denote significant at 5% and 10% level.

Table 3 shows the result of the Kruskal-Wallis test. The value of the chi-square is significant at 10% level for Malaysian market. This test result leads to the conclusion that there is evidence of day of the week effects. In addition, this result is consistent with the OLS result discussed above. Both the tests highlight the difference of mean returns of Monday and Friday.

Table 3. Results of non-parametric test

		Chi-square Statistics		Null Hypothesis	
Kruskal-Wallis		7.743**		Reject at 10 percent level	
Wilcoxon Rank Sum					
		Tuesday	Wednesday	Thursday	Friday
	Monday	-0.937	-1.578	-0.205	-1.919**
	Tuesday		-0.677	-1.270	-1.115
	Wednesday			-1.821**	-0.348
	Thursday				-2.351*

Note: * and ** denote significant at 5% and 10% level.

The Wilcoxon rank sum test is then carried out to identify those trading days that contribute to the rejection of the null hypothesis of equality in mean returns. Table 3 shows that the difference in mean returns is significant when Thursday is compared with Wednesday and Friday. The mean returns of Monday and Friday are also significantly different at 10% level. The tests indicated that Monday has low returns compare to Wednesday and Friday returns. The Thursday return is also significantly lower than Wednesday and Friday returns. Thus Wednesday and Friday have high daily returns in a week.

Day of the week effect with market conditions

Table 4 summarizes the daily mean return after the whole sample has been partitioned into two sub-samples; positive and negative return days. There is a clear evidence of a Monday and Friday effect among the set of negative returns. The Kruskal-Wallis test indicated that the mean returns among the week days are significantly different from each other at 1% significance level. The Wilcoxon rank sum test indicated that this difference is caused by the partition between mean returns on Monday and Friday. There is no evidence to show that positive returns are statistically different across days of the week.

Table 4. KLCI returns by day of the week and market conditions

	Monday	Tuesday	Wednesday	Thursday	Friday
Positive Mean Return	0.604770	0.534741	0.687123	0.613711	0.580893
Kruskal-Wallis	3.811				
Wilcoxon Rank Sum					
	Monday	-0.842	-1.018	-0.202	-0.142
	Tuesday		-1.889***	-1.125	-0.908
	Wednesday			-0.769	-1.109
	Thursday				-0.282
Negative Mean Return	-0.812507	-0.563483	-0.635140	-0.578453	-0.598735
Kruskal-Wallis	13.692*				
Wilcoxon Rank Sum					
	Monday	-2.663*	-1.892***	-2.475**	-3.408*
	Tuesday		-0.831	-0.397	-0.814
	Wednesday			-0.470	-1.611
	Thursday				-1.302

Notes: All returns are in percentage. *, ** and *** denote significant at 1%, 5% and 10% level.

The result shows that more bad news is present on Monday and the mean return is significantly different with other weekdays. Among the good news sample, Monday's mean return is not the lowest of the daily returns; Tuesday displays the lowest mean return and it is significantly different with Wednesday mean return at 10% level. This result offers support to the conclusions of Arsad and Coutts (1996), who found strong evidence for the existence of the day of the week effect in a bad news environment.

Twist of the Monday effect

Table 5 summarizes the finding of the twist of the Monday effect of the KLCI. The findings suggest that Monday returns are influenced by the previous week's returns. Monday returns (following weeks of negative returns) have a median return of -0.21%, while Monday returns (following weeks of positive returns) have positive median return. The Wilcoxon rank sum test indicated that the two sub-samples of Monday returns are significantly different at 10% level.

In Table 5, the median returns for Wednesday are negative following weeks of negative returns. However, there is no significant difference between the median returns of the two sub-samples for Wednesday's returns. Tuesday's and Friday's median returns are always positive and seem unrelated with the previous week returns. The median returns for the two sup-samples of Thursday are not significantly negative. This suggests that returns on the other days of the week do not follow the returns of the previous week. These results are consistent with the findings of Madureira and Leal (2001).

Table 5. Median day of the week returns following positive or negative previous week returns of the KLCI

	Monday	Tuesday	Wednesday	Thursday	Friday
Previous Week Positive	0.022801	0.208352	0.095938	-0.18515	0.135254
Previous Week Negative	-0.208145	0.084326	-0.234706	-0.16928	0.124065
Wilcoxon Rank Sum	-1.819*	-0.067	-1.208	-0.765	-0.187

Notes: All returns are in percentage. * denotes significant at 10% level.

The uniqueness of the twist of the Monday effect is verified by the following results. Table 6 summarizes the results of the median for other days of the week following previous week returns. In this case, the previous week return was measured from the market closing on the previous Tuesday to the market closing of the Monday of the present week. The results indicated that none of the weekdays presented a significant difference between the returns for the sub-samples. An effect similar to the twist of the Monday effect was not found for any of the other weekdays. The results verified that twist of the Monday effect was present only for the closing of Friday to the closing of Monday returns.

Table 6. Median day of the week returns following the redefined positive or negative previous week returns of the KLCI

	Tuesday	Wednesday	Thursday	Friday
Previous Week Positive	0.097953	0.036420	-0.118590	0.094529
Previous Week Negative	0.069074	-0.143000	-0.181230	0.142485
Wilcoxon Rank Sum	-1.220	-0.587	-0.517	-0.650

Note: All returns are in percentage.

Table 7 summarizes the results of the median for Monday returns following previous Friday returns. The results show that the Monday returns are influenced by previous Friday returns. For the sub-sample where previous Friday returns are negative, Monday returns have a median return of -0.26%, while Monday returns following positive Friday returns have positive median return of 0.13%. The Wilcoxon rank sum test indicated that the two sub-samples of Monday returns are significantly different at 1% level. This finding is consistent with the results showed in Table 5; this suggested that Monday returns are influenced by previous week returns, especially previous Friday returns.

Table 7. Median Monday returns following positive or negative previous Friday returns of the KLCI

	Previous Friday Positive	Previous Friday negative
Monday Return	0.125205	-0.255670
Wilcoxon Rank Sum	-4.632*	

Notes: All returns are in percentage. * denotes significant at 1% level.

CONCLUDING REMARKS

This study has provided a comprehensive analysis of market anomalies for Malaysia over the period under review. In particular, we examined the possible existence of the day of the week effect and twist of the Monday effect. In Malaysian stock market, there is evidence of a day of the week effect. The empirical analysis using the OLS model and non-parametric tests found support for the Monday effect that Mondays are the days with the lowest stock returns. Monday was the only day with a negative return and Wednesday is the weekday with the highest returns.

By partitioning the returns data on the basis of market direction, to reflect either a good news or bad news market environment, negative returns on Monday and Friday are found to be significantly different. However, in the case of the good news environment, there is no pattern displayed across days of the week. The infusion of information, especially macroeconomic news, may explain these finding. These results lead to a conclusion that the weekend effect is not persistent.

The Monday effect is verified in this study. Moreover, the Monday return is found to bear a relation with the previous week's returns and the previous Friday return. When grouped according to the previous week returns, Monday returns are significantly different between positive and negative previous week returns. The same results are found for the sub-samples grouped by previous Friday return. A trading strategy can thus be devised to invest on the Mondays following a week of rising returns that may obtain extra returns.

According to the EMH, investors should not be able to gain abnormal profit since all information is reflected in stock prices. As we have seen previous empirical studies have provided evidence that stock return anomalies exist in stock market trading. The results of this paper thus support earlier studies and provide further evidence of the existence of day of the week effect in Malaysian stock market for KLCI. With proper timing, investors can earn higher returns in KLCI by recognizing the direction and the environment of the market. The day of the week and the twist of the Monday effects will be helpful in developing trading strategies as well.

However, the results of this study may possibly depend on sample size and the period under review. Accordingly, definitive conclusions on return anomalies cannot definitely be drawn from our findings. More comprehensive studies with additional information are thus needed. Further interesting research could investigate the influence of the market direction and the arrival of different types of information on return anomalies. Another fruitful area of research would be to test whether there is any interaction between different types of market anomalies.

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