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Effects of Holidays on the Malaysian Stock Exchange

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Abstract

This research seeks to investigate whether holidays affect the stock exchange of the multi-cultural country of Malaysia. By performing ordinary least squares analysis on data from the Bursa Malaysia main index from year 2001 to year 2010, it was found that returns during Christmas and Chinese New Year period were significantly higher. More specifically, there was a two-month market rally prior to the Chinese New Year. In addition, the excess return from the first trading day after Christmas to two trading days before New Year's Day are positively significant. The effects of other holidays were not significant. Possible reasons of a lack of significant effects during important Islamic holidays such as Aidilfitri could be due to the Muslim's lower participation in the stock market.

Keywords: holiday effect, stock returns, multi-cultural country

1. Introduction

Some researches regard the Malaysian equity market as weakly efficient (Barnes, 1986; Laurence, 1986; Cheong et al., 2008; Har et al., 2008). According to the weakly efficient market hypothesis, a market's efficiency is regarded as weak if the market prices only reflect all historical information. However, over the years, evidences that contradict the weakly efficient market hypothesis were found. Notable examples of anomalous evidence of the weakly efficient market hypothesis are the Seasonal or Calendar effects such as the Day-of-the-Week effect, the Turn-of-the-Month effect, the January effect and Holidays effect. Brooks and Persand (2001) loosely defined the Calendar effect as "the tendency of financial asset returns to display systematic patterns at certain times of the day, week, month, year, or around market closure".

Given the aforementioned problems, we seek to examine the effects of Federal holidays that can cause price changes on the Bursa Malaysia. The reason that the research is being done on the festival effects is that Malaysia has a unique holiday system that may not exist in many economies in the world. The Federal holidays are Aidiladha, Aidilfitri, Christmas, Chinese New Year, Deepavali, King's Birthday, Labour Day, Islamic New Year, National Day, New Year's Day, Prophet Muhammad's Birthday and Wesak Day. We formulate and test hypotheses to determine whether returns during the festive periods are the same as the returns during non-festive periods.

2. Literature Review

Barnes (1986) found evidences of the weak-form efficiency in the Malaysian market. A similar study by Laurence (1986) which uses the sixteen most traded stocks in the KLSE also arriving at the same conclusion. A study by Cheong et al. (2008) on sectoral indices from 1996 to 2006 also concluded that the Bursa Malaysia is in weak-form efficiency. Using the Augmented Dicky-Fuller (ADF) test, Har et al. (2008) suggested that the KLCI is weak-form efficient. However, based on the result of the Exponential General Autoregressive Conditional Heteroskedasticity (EGARCH) the researchers are in the opinion that the movement in the KLSE may support the behavioural finance theory. The period under study was from January 2004 to June 2007, spanning three-and-a-half years.

In a study done by Agrawal and Tandon (1994) significant positive pre-Christmas returns were discovered in ten countries, while significant positive inter-holiday returns were found in most countries. Meanwhile, significant positive returns were found in eleven countries for the pre-holiday period (the two trading days before Christmas and New Year's Day. On top of that, no Friday-the-thirteenth superstitious effect was found in any country.

In year 1990, Wong et al. found that the returns were positively significant in all six indices of the KLSE in the twelfth month of the Chinese calendar. In addition, in five of the indices, returns in the eleventh month were the second highest, pointing to a possible presence of a two-month-long Chinese New Year rally. However, the researchers also found a significant negative effect for Finance, Properties and Plantations indices during the Islamic calendar's tenth month (Aidilfitri falls on the first day of the tenth month). The finding is surprising, given that an Islamic year has fewer days than a Gregorian year. Therefore, Aidilfitri dates will be brought forward in every Gregorian year. As a result, it can be safely concluded that the negatively significant Aidilfitri effect was not due to any monthly seasonal effect. The researchers thought that the January effect in Malaysia is due to the Chinese New Year effect. As capital gains are not taxable in Malaysia, the tax-loss-selling hypothesis does not apply in the Malaysian context. Besides that, in the same research, similar effect was also found in the stock markets of Singapore and Hong Kong, countries with a large Chinese population. Predictably, in the United States and the United Kingdom, they found no Chinese New Year effect. Subsequent research findings were consistent with the work done by Wong et al. Ho (1990) found the existence of February effect, which he believed that it was caused by the Chinese New Year.

Studies by Tong (1992) and Cadsby and Ratner (1992) found the existence of Chinese New Year effect in Taiwan and Hong Kong respectively, and the same effect was found in three more countries, namely Singapore, Japan and South Korea by Yen and Shyy (1993).

In 1996, a test on the presence of month-of-the-Islamic-year effect in the Malaysian and Indian stock exchanges was done by Chan, Khanthavit and Thomas, the result being that the null hypothesis that all Islamic months showing equal returns was unable to be rejected. Then, the researchers investigated the presence of holiday effects in each of the four stock exchanges. In the Malaysian stock exchange, significant positive Chinese New Year, Islamic New Year, and Wesak Day effect as well as significant negative Deepavali effect were found. The null hypothesis of no holiday effect in Malaysia was rejected. The null hypothesis was rejected for both the Singaporean and Thai market as well, with significant Chinese New Year effect and Deepavali effect found in Singapore and significant Chakri (celebration of the founding of the ruling dynasty) effect found in Thailand. However, in India, the null hypothesis that holidays do not affect the stock exchange was not able to be rejected.

In 2001, Ahmad and Hussain conducted a study to search for evidences of Chinese New Year effect in the KLSE. The period under investigation is from year 1986 to year 1996. The first part of the research is distinguished from most of the other seasonal effects studies. This is because, as compared to the usual method of using the stock market indices, Ahmad and Hussain allocated seventeen stocks each to the winners portfolio and losers portfolio, based on the cumulative excess returns (from January 1986 to December 1988) of the 166 sample stocks selected. Since the Chinese New Year usually falls in February, the presence of February effect was investigated by the researchers. In both portfolios, significant positive February effect was found, with the effect more noticeable in the losers portfolio. Also, the researchers found that the February effect is more noticeable for smaller firms. They believe that if the February effect is linked to the possible Chinese New Year effect, it is possible that the smaller magnitude of the February effect in bigger firms was due to higher percentage of foreign ownership, as non-Asian foreign investors should favour investing in bigger and more established firms than smaller firms. To specifically test for the presence of the Chinese New Year effect, daily returns from the KLSE for both the trading weeks before and after the Chinese New Year were used. The returns for the week after the Chinese New Year were positive and significant, but the returns in the preceding week were positive but insignificant. Therefore, the researcher thought that there was no strong evidence of pre-Chinese New Year rally as suggested by Wong et al. (1990). Nevertheless, the study done by Wong et al was based on monthly returns instead of returns of days immediately preceding and following the Chinese New Year, as the period of study was different as well. Ahmad and Hussain believed the reason of the Chinese New Year effect is the Chinese practice of payment of cash gifts (red packet) and payment of bonuses by companies, which may involve liquidation of investments to finance the payment, or investment of bonuses and gifts received in the stock market. Also, the researchers believed that the observed February effect was due to the Chinese New Year effect. The researchers believed that it is similar with the January effect, in that higher returns are recorded in the first month of the western calendar in western markets. In comparison, higher returns are recorded in the first month of the Chinese lunar calendar for the Chinese New Year effect. Hence, the researchers concluded that "cultural and behavioural dimensions need to be considered when conducting financial investigations of market behaviour"

The biggest festivals in Malaysia are the Aidilfitri and the Chinese New Year, as they are the only holidays where two Federal holidays are declared for each of them. Evidences for positive Chinese New Year effect was found by many researchers. However, Wong et al (1990) found negative Aidilfitri effect in Malaysia, while Chan, Khanthavit and Thomas (1996) found no significant Aidilfitri effect.

In 2010, McGowan and Jakob set out to investigate the existence of Aidilfitri effect. According to them, there was no significant Aidilfitri effect in Malaysia from year 2000 to year 2003. The research was conducted using data from the Syariah Index instead of the Kuala Lumpur Composite Index, as the researchers made an assumption that Malaysian Muslims have the tendency to invest in approve Islamic stocks. Using ordinary least squares analysis, the periods of 30 days before the fasting month began, the 30 days of the fasting month, and the 30 days after the fasting month ended were analysed.

The researchers were of the opinion that the lack of evidence of significant Aidilfirti effect is due to smaller participation by the Muslim Malays in the stock market, the practice of giving cash bonuses is not as generous as compared to Chinese New Year, and also the perception that participation in stock market is similar to gambling activities, which is forbidden in Islam.

3. Research Methodology

To investigate the existence of holiday effects, closing prices for weekdays (Monday to Friday) from the Bursa Malaysia main index were used. The data was obtained from Datastream. The period examined was from 2001 to 2010, spanning ten years.

Using the Bursa Malaysia main index, continuous returns were calculated by using the following formula:

$$r_t = \ln(\frac{I_t}{I_{t-1}})$$

Where r_t = return from the index at time *t*.

I_t = index price on day *t*.

After that, OLS analysis was conducted to test for seasonality. Multiple Regression using dummy variables was carried out, and *t*-test were done to test for significance. The Multiple Regression was done using EViews 7, an econometric software package. The following formula was used:

$$r_t = \sum_{i=0}^{h} \alpha_i D_{i,t} + \mathcal{E}_t$$

Where α_i = mean return attributable to *i*th characteristics.

$D_{i,t}$ = dummy variable taking the value of 1 if the *t* th.

observation has the characteristic *i*, otherwise value of 0 will be taken.

$\mathcal{E}_t$ = an error term assumed to be independent and identically distributed.

In cases where $\sum_{i=0}^{h} D_{i,t}$ = 1 for all *t*, no separate intercept term was run. In cases where the *i*=0 set of dummy variables was not collinear with an intercept term, a separate intercept term was employed. For such cases, an *F*-test will be conducted with the null hypothesis that the coefficient of all independent variables is equal to zero.

3.1 Holiday Effect

The study is divided into several sections. In the first section, all the Federal holidays were tested. Similar to the study done by Chan, Khanthavit and Thomas (1996), for each Federal holiday, a dummy variable window of one week is created. The dummy variable was set to zero on the day the stock exchange was closed, and one for the three days before and after the holiday. For example, if a holiday fell on Wednesday, the dummy variable will be set to one for the preceding Monday and Tuesday, as well as the following Thursday and Friday.

In the event the holiday fell on Sunday, the dummy variable will be set to one for the the following Tuesday and Wednesday, and also the preceding Thursday and Friday. This is due to the fact that a Sunday holiday in Malaysia is followed by a Monday closure of the stock exchange. As there are two day-offs for Aidilfitri and Chinese New Year, there was no observations for the two days the stock exchange was closed, as compared to one for other holidays, in the one-week dummy variable window.

Federal holidays which were tested are Aidiladha, Aidilfitri, Christmas, Chinese New Year, Deepavali, King's Birthday, Labour Day, Islamic New Year, National Day, New Year's Day, Prophet Muhammad's Birthday and Wesak Day.

The null hypothesis to be tested is:

H_0: $\alpha_1 = \alpha_2 = \cdots = \alpha_{12}$

Twelve dummy variables, D_1 to D_{12} were used to represents each holiday period. The null hypothesis implies that the mean returns during the holiday periods were the same as the mean returns at other times of the year. If the null hypothesis is rejected, it means that holidays do have an effect on the Malaysian stock market.

3.2 Comparison of Non-Cultural and Cultural Holidays Effecty Effect

Non-cultural and cultural holidays were compared to see which type of holiday has a greater effect on the Malaysian stock exchange. Therefore, the holidays are grouped into state and cultural holidays. The grouping was done as followed:

Non-cultural holidays: King's Birthday, Labour Day, National Day and New Year's Day

Cultural holidays: Aidiladha, Aidilfitri, Christmas, Chinese New Year, Deepavali, Islamic New Year, Prophet Muhammad's Birthday, Wesak Day.

The above grouping is consistent with the grouping done by Chan, Khanthavit and Thomas (1996) in their research. In their research, the term "state holidays" was used for non-cultural holidays. However, to avoid confusion with the holidays that are only celebrated at the state level in Malaysia, the term "non-cultural holidays" is used.

The null hypothesis to be tested is:

H_0: $\alpha_1 = \alpha_2$

Non-cultural holidays were represented by D_1 and cultural holidays were represented by D_2. The null hypothesis implies that the mean returns during both the state holidays and the cultural holidays were the same as the mean returns at other times of the year. If the null hypothesis is rejected, it means that the state holidays or the cultural holidays, or both do have an effect on the Malaysian stock market.

3.3 End-of-Year Holidays Effects

Similar to the research done by Lakonishok and Smidt (1988) and Agrawal and Tandon (1994), the second half of December was divided into three periods as followed:

Pre-Christmas period:

Starting from 16^{th} of December to two trading days prior to Chirstmas.

Inter-holiday period:

Starting from the trading day immediately after Christmas to two trading days prior to New Year's Day

Pre-holiday period:

The trading days immediately before Christmas and New Year's Day, totalling two days annually.

The null hypothesis to be tested is:

H_0: $\alpha_1 = \alpha_2 = \alpha_3$

The pre-Christmas period was represented by D_1, the inter-holiday period was represented by D_2, and the pre-holiday period was represented by D_3. The null hypothesis implies that the mean returns during the periods of pre-Christmas, inter-holiday and pre-holiday were the same as the mean returns at other times of the year. If the null hypothesis is rejected, it means that the end-of-year holidays do have an effect on the Malaysian stock market.

3.4 Monthly Effects in the Chinese Calendar

We test the existence of a two-month stock market rally as suggested by Wong et al. (1990).

The null hypothesis to be tested is:

H_0: $\alpha_1 = \alpha_2 = \cdots = \alpha_{12}$

Each of the twelve months in the Chinese calendar was represented by D_1 to D_{12}. The null hypothesis implies that the mean returns for each of the months in the Chinese calendar were the same as the mean returns at other times of the year. If the null hypothesis is rejected, it means that there were excess returns in certain months of the Chinese calendar year.

3.5 Daily Returns Preceding and Following the Chinese New Year

Graphs depicting the mean and cumulative daily excess returns for the sixty trading days preceding the Chinese

New Year and the thirty trading days following it were plotted to identify the trend of the stock market during the period (Chart 4.1 and Chart 4.2).

Besides that, the ninety-day period will be divided into three thirty-day sub-periods so that descriptive statistics of each individual thirty-day sub-period, as well as the whole of the ninety-day period, can be compared. In addition, daily excess return for the ninety-day period was tested for their significance.

The null hypothesis to be tested is:

H_0: $\alpha_{-60} = \alpha_{-59} = \cdots = \alpha_{30}$

Dummy variables from D_{-60} to D_{30} will be used to represent the 60 trading days preceding the Chinese New Year and also the 30 trading days following it. The statement that the mean daily returns during the ninety-day period equal the mean daily returns at other times will be the null hypothesis. If the null hypothesis is rejected, it means that there were excess returns during the ninety-day period.

In the analysis, trading days preceding the Chinese New Year are given a negative sign, while trading days following it are given a positive sign. For example, the tenth day preceding the Chinese New Year is denoted Day -10.

3.6 Monthly Effects in the Islamic Calendar

The Islamic calendar is unique in that there is an annual drift of around 11 days in each Gregorian year (Wong et al, 1990). Therefore, the Islamic monthly effects, if there is any, is not very likely to be a result of monthly effects of other calendars, for example the Gregorian's January effect. We examine Aidilfitri for the period 16 December 2001, 6 December 2002, 25 November 2003, 14 November 2004, 3 November 2005, 24 October 2006, 13 October 2007, 1 October 2008, 20 September 2009, and 10 September 2010.

The null hypothesis to be tested is:

H_0: $\alpha_1 = \alpha_2 = \cdots = \alpha_{12}$

Each of the twelve months in the Islamic calendar was represented by D_1 to D_{12}. The null hypothesis implies that the mean returns for each of the months in the Islamic calendar were the same as the mean returns at other times of the year. If the null hypothesis is rejected, it means that there were excess returns in certain months of the Islamic calendar year.

3.7 Daily Returns Preceding and Following the Aidilfitri

Similar test as per section 3.5 above was carried out for Aidilfitri, as Aidilfitri is another holiday which is celebrated for two days except the Chinese New Year. Therefore, in this section, daily excess return for sixty trading days preceding Aidilfitri and the thirty trading days following it were tested for their significance.

The null hypothesis to be tested is:

H_0: $\alpha_{-60} = \alpha_{-59} = \cdots = \alpha_{30}$

Dummy variables from D_{-60} to D_{30} will be used to represent the 60 trading days preceding Aidilfitri and also the 30 trading days following it. The null hypothesis implies that the mean daily returns were the same as the mean daily returns at other times of the year. If the null hypothesis is rejected, it means that there were excess returns in trading days preceding or following Aidilfitri.

Similar to the above Section 3.5, positive and negative signs are used to denote trading days following and preceding Aidilfitri respectively. Graphs depicting the mean and cumulative daily excess returns were plotted as well (Chart 4.3 and Chart 4.4). A comparison of the cumulative daily excess return between the ninety-day period for Aidilfitri and Chinese New Year is shown in Chart 4.5, in order to identify the difference in market movement during both holiday periods.

In addition, descriptive statistics for the three thirty-day sub-periods and the full ninety-day period will be presented to enable identification of any characteristic that may distinguish the sub-periods.

4. Result of Analysis

4.1 Holiday Effects

Table 1. Regression results regarding the existence of holiday effects in Malaysia

Variable	Coefficient (%)	Standard Error (%)	*t*-Statistic	*p*-Value
Aidiladha	-0.130	0.133	-0.978	0.328
Aidilfitri	0.158	0.149	1.057	0.291
Christmas	0.280 **	0.134	2.089	0.037
Chinese New Year	0.382 ***	0.149	2.569	0.010
Divali	0.193	0.136	1.415	0.157
King's Birthday	0.043	0.123	0.353	0.724
Labour Day	0.081	0.136	0.594	0.553
Islamic New Year	0.052	0.131	0.396	0.692
National Day	0.072	0.136	0.533	0.594
New Year's Day	0.016	0.130	0.120	0.904
Prophet Muhammad's Birthday	-0.160	0.137	-1.170	0.242
Wesak Day	-0.106	0.142	-0.747	0.455
F-statistic 1.704 *				
p-Value 0.067				

*** Denotes statistical significance at the 1% confidence level.

** Denotes statistical significance at the 5% confidence level.

* Denotes statistical significance at the 10% confidence level.

From the table, mean returns in the one-week window during the Chinese New Year were 0.382% higher than the mean returns at other times of the year. Besides that, the mean returns during the Christmas period were 0.28% higher than at other times of the year. The mean excess returns for both Christmas and Chinese New Year were the highest among all holidays, and were significant at 5% and 1% confidence level respectively.

Besides that, the mean returns during Deepavali and Aidilfitri, the main celebrations for Hindus and Muslims in Malaysia respectively, were 0.193% and 0.158% higher than other times of the year respectively. However, the effect was not significant. Negative but insignificant effects were detected for Aidiladha, Prophet Muhammad's Birthday and Wesak Day.

The F-statistic which tested the null hypothesis that the coefficients for all holidays is equal to zero is 1.704, and the null hypothesis is rejected at the 10% confidence level. Thus, it can be concluded that holiday effects existed in the Malaysian stock market.

The presence of Chinese New Year effect is consistent with various previous researches findings (Wong et al., 1990; Chan, Khanthavit, & Thomas, 1996; Ahmad & Hussain, 2001). The absence of Aidilfitri effect is similar to the findings by Chan, Khanthavit and Thomas (1996) and McGovan and Jakob (2010), although Wong et al. (1990) discovered significant negative Aidilfitri effect.

In addition, Chan, Khanthavit and Thomas discovered significant positive Islamic New Year and Wesak Day effect, as well as a significant negative Divali effect. In contrast, in this study, mean excess returns during Islamic New Year and Divali was positive, while mean excess returns during Wesak Day was negative. Nevertheless, none of the returns for the three holidays were significant.

One possible reason of the Christmas and Chinese New Year effects is that as Christmas falls on the end of December, and Chinese New Year in January or February, they coincide with the period when annual bonuses are paid. During that period, employees who received bonuses may use them to invest in the stock exchange, thus driving up prices during that period.

4.2 Comparison of Non-cultural and Cultural Holidays Effect

Table 2. Results of the regression to compare the magnitude of the effects of non-cultural and cultural holidays in Malaysia

Variable		Coefficient (%)	Standard Error (%)	*t*-Statistic	*p*-Value
Non-cultural holidays		0.038	0.067	0.566	0.571
Cultural holidays		0.081	0.053	1.529	0.126
F-statistic	1.323				
p-Value	0.266				

From the table, the coefficient for non-cultural holidays was 0.038% while the coefficient for cultural holidays was 0.081%. However, both returns were insignificant.

The F-statistic of 1.323 which is insignificant indicates that the null hypothesis that there were no excess returns during cultural and non-cultural holidays cannot be rejected.

A possible explanation for the results is that, according to Table 4.1 in the previous section, only Christmas and Chinese New Year have a significant positive effect on the stock exchange, while none of the non-cultural holidays have any significant effect. Thus, it is not surprising that all the coefficients were insignificant.

The findings are dissimilar to the findings of Chan, Khanthavit and Thomas (1996). The researchers found that the excess returns of cultural holidays in Malaysia were significant at the 5% confidence level. Similar results were discovered by them in the Indian and Singaporean stock exchanges.

4.3 End-of-Year Holidays Effect

Table 3. Regression results of the test for the existence of end-of-year holiday effects

Variable		Coefficient (%)		Standard Error (%)	*t*-Statistic	*p*-Value
Pre-Christmas		0.007		0.117	0.057	0.955
Inter-holiday		0.365	**	0.153	2.383	0.017
Pre-holiday		0.079		0.193	0.407	0.684
F-statistic	1.942					
p-Value	0.121					

** Denotes statistical significance at the 5% confidence level.

From the table, excess return during the inter-holiday period was the highest at 0.365%, and significant at the 5% confidence level. Positive excess return occurred during both the pre-Christmas period and the pre-holiday period. However, none of the coefficients were significant.

The F-statistic of 1.942 leads to the marginal non-rejection of the null hypothesis that there was no excess return during the three periods being examined, even though significant positive effect was found during the inter-holiday period.

Nevertheless, in Table 1, it was discovered that there was a positively significant Christmas effect. It appears from Table 3 that the bulk of the excess return during the Christmas period occurred on days following Christmas. The reason is because the inter-holiday dummy variable comprises the trading days immediately after Christmas until two trading days before Christmas.

In comparison, in the study done by Agrawal and Tandon (1994), significant pre-Christmas effect was found in seven out of eighteen countries being studied, while positively significant inter-holiday effect was found in most of the countries. Pre-holiday effect was large and positively significant in eleven countries as well.

A possible explanation for the difference in the findings is that among the countries in which the effects were discovered by Agrawal and Tandon are Australia, Belgium, Canada, Denmark, the Netherlands, Sweden and

Switzerland, where there is a large population of Christians. In contrast, Christians only made up of 9.1% of the total population in Malaysia (Census, 2000).

4.4 Monthly Effects in the Chinese Calendar

Table 4. Regression results of the test for the existence of monthly effects in the Chinese calendar

Variable	Coefficient (%)	Standard Error (%)	t-Statistic	p-Value
1st month	- 0.006	0.059	- 0.110	0.913
2nd month	- 0.014	0.056	- 0.251	0.802
3rd month	0.009	0.060	0.143	0.886
4th month	0.017	0.056	0.296	0.768
5th month	0.080	0.057	1.406	0.160
6th month	0.012	0.060	0.196	0.844
7th month	0.043	0.056	0.776	0.438
8th month	- 0.020	0.060	- 0.337	0.736
9th month	0.007	0.059	0.115	0.909
10th month	0.032	0.060	0.542	0.589
11th month	0.107 *	0.060	1.792	0.073
12th month	0.106 *	0.060	1.774	0.076

* Denotes statistical significance at the 10% confidence level.

As per the table above, highest monthly mean returns were recorded in the eleventh and the twelfth months, which was 0.107% and 0.106% respectively. The mean returns were significant at the 10% confidence level.

This indicates the presence of a stock market rally two months before the Chinese New Year. The findings are consistent with the study done by Wong et al. (1990). However, in their study, the mean returns in the twelfth month were the highest.

An explanation of the Chinese New Year effect was given by Chan, Khanthavit and Thomas (1996). In their opinion, the Chinese New Year effect was due to the liquidation of portfolio by companies to pay cash bonuses or red packets to employees, thus depressing the share prices prior to the holiday. Ahmad and Hussain (2001) also suggested that after the Chinese New Year, investment of the bonuses received by the employees led to increases in share prices. Based on the explanations given by the researchers, negative returns should be recorded in the end of the year, while positive returns should be recorded after the Chinese New Year.

However, the findings do not seem to support their explanations. Firstly, mean returns were the highest in the eleventh and twelfth months. Secondly, mean returns in the first and second month were negative, although not significant.

Thus, it is possible that companies do not liquidate their portfolio for the purposes of paying bonuses. Instead, bonuses were paid out from existing cash in hand. It is also possible that the bonuses received by the employees were invested in the stock exchange before the Chinese New Year rather than after the Chinese New Year, thus causing the share prices to increase before the Chinese New Year. After the Chinese New Year, profit-taking activities could have driven down the share prices.

4.5 Daily Returns Preceding and Following the Chinese New Year

Figure 1 Daily excess return for sixty trading days preceding the Chinese New Year, and thirty trading days following it.

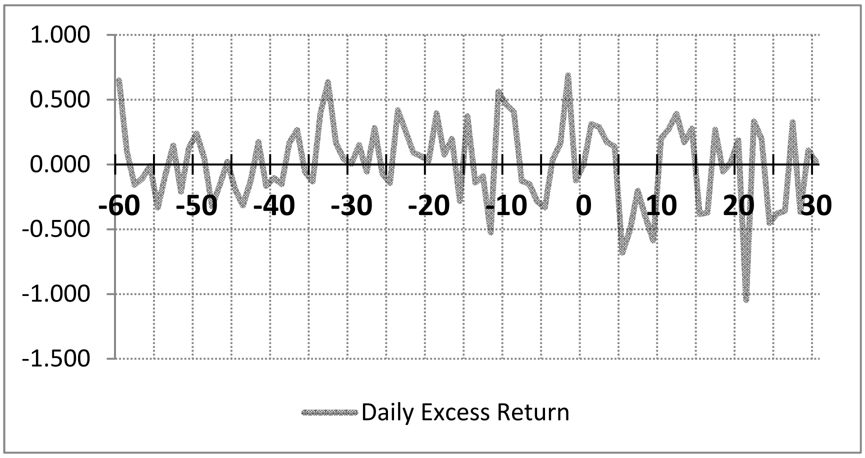

Figure 1. Daily excess return for 60 trading days preceding the Chinese New Year, and 30 trading days following it

From the above chart, the four highest daily excess return was recorded on Days -60, -33, -11 and -2. Meanwhile, lowest daily excess return was recorded on Day +21.

Figure 2 shows the plot of cumulative daily excess return for the ninety days under studied.

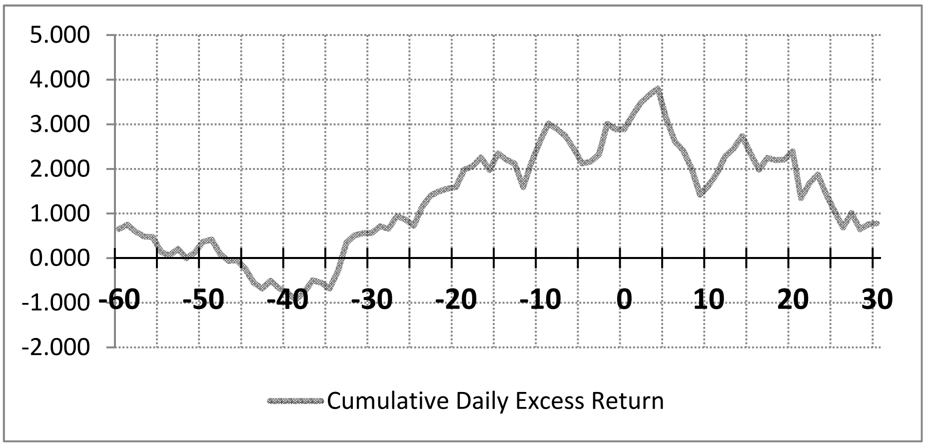

Figure 2. Cumulative daily excess return for the ninety days under studied

From the above chart, the cumulative daily excess return fell to the lowest point on Day -39, before rising and eventually peaking on Day +2. After that, the cumulative daily excess return gradually reduced. This is consistent with the results in Table 4 which indicates a two-month pre-Chinese New Year market rally, followed by negative returns in the first month (although it is insignificant). It should be noted that the graphs cover the period of 60 trading days preceding the Chinese New Year, which includes the eleventh and twelfth months, as well as part of the tenth month in the Chinese calendar.

Table 5. Descriptive statistics for the whole period from Day -60 to Day +30, as well as three sub-periods from Day -60 to Day -31, Day -30 to Day -1 and Day +1 to Day +30

	Day -60 to Day +30	**Day -60 to Day -31**	**Day -30 to Day -1**	**Day +1 to Day +30**
Mean	0.009	0.019	0.078	-0.070
Median	0.026	-0.034	0.050	0.066
Maximum	0.688	0.650	0.688	0.390
Minimum	-1.046	-0.333	-0.525	-1.046
Standard deviation	0.311	0.249	0.286	0.375
Mean/standard deviation	0.029	0.076	0.272	-0.187
Skewness	-0.370	0.918	0.157	-0.702
Kurtosis	3.519	3.559	2.505	2.563
Jarque-Bera	3.069	4.601*	0.428	2.704
Probability	0.216	0.100	0.807	0.259
Observations	90	30	30	30

* Denotes statistical significance at the 10% confidence level.

From the table above, it appears that the mean excess return was the highest in the second sub-period, and it is higher than the overall period. Besides that, the lowest daily excess return was in the third sub-period (Day +21), while the highest occurred in the second sub-period (Day -2). Furthermore, the standard deviation for the second sub-period was lower than the overall period as well, indicating that the variability of returns during the second sub-period was lesser compared to the overall period, although the standard deviation of the first sub-period is the least. The ratio of mean excess return against standard deviation was the highest in the second sub-period. This implies that investment made in the second sub-period will give a higher return for every extra unit of risk taken. Meanwhile, the ratio for the first sub-period was higher than the overall period. The ratio is a modification of the Sharpe ratio. The risk-free component was omitted from this ratio as it is a constant variable in comparing the excess returns for the sub-periods.

Besides that, in the first period, the mean excess return was positive while the median was not. The asymmetric distribution of the returns was confirmed by the value of skewness. The positive skewness of returns indicates that there could be a few days when daily excess return was high during the first sub-period. Looking at Figure 1, there were outliers on Day -60 and Day -33. The same phenomenon where the median is lower than the mean was found in the second sub-period as well; however the skewness value was comparatively smaller than the first sub-period.

The opposite was found in the third sub-period, where the mean was negative while the median was positive. Again, from Figure 1, it appears that an outlier on Day +21 could be the reason for this. The negative skewness of returns indicates that there could be a few days when daily excess return was low during the third sub-period.

The kurtosis for the overall period and the three sub-periods were positive, indicating that the distributions were leptokurtic. In a leptokurtic distribution, the peak of the mean is higher than a normal distribution, and there are thicker tails on both sides. Nevertheless, the Jarque-Bera test statistic is only significant for the first sub-period, indicating the non-normality of the distribution in that period.

Table 6. Result of regression to identify the days when their excess return is significant.

Variable	Coefficient (%)	Standard Error (%)	*t*-Statistic	*p*-Value
Day -60	0.650 **	0.287	2.267	0.024
Day -33	0.635 **	0.287	2.216	0.027
Day -12	-0.525 *	0.272	-1.931	0.054
Day -11	0.562 **	0.272	2.067	0.039
Day -10	0.462 *	0.272	1.698	0.090
Day -2	0.688 **	0.272	2.528	0.012
Day +5	-0.680 **	0.272	-2.501	0.013
Day +6	-0.504 *	0.272	-1.852	0.064
Day +9	-0.587 **	0.272	-2.158	0.031
Day +21	-1.046 ***	0.272	-3.847	0.001
Day +24	-0.451 *	0.272	-1.657	0.098
Day +30	0.650 **	0.287	2.267	0.024
F-statistic	1.261 *			
p-Value	0.051			

*** Denotes statistical significance at the 1% confidence level.

** Denotes statistical significance at the 5% confidence level.

* Denotes statistical significance at the 10% confidence level.

From the above table, it is clear that most of the days with significant positive daily excess return were days preceding the Chinese New Year, while most of the days with significant negative daily excess returns were days following the Chinese New Year. Besides that, the highest points (Days -60, -33, -11 and -2) and the lowest point (Day +21) in Figure 1 were statistically significant. In addition, there were two days in which the daily excess return was significant in the first sub-period, while there were four days in the second sub-period and six days in the third sub-period.

In addition, the F-statistic of 1.261 is significant at the 10% confidence level, thus the null hypothesis that the daily excess return during the ninety-day period is equivalent to zero should be rejected. The complete regression result is in Appendix C.

4.6 Monthly Effects in the Islamic Calendar

Table 7. Regression results for the test of the existence of monthly effects in the Islamic calendar

Variable	Coefficient (%)	Standard Error (%)	*t*-Statistic	*p*-Value
1st month	-0.011	0.057	-0.190	0.850
2nd month	-0.118 **	0.060	-1.977	0.048
3rd month	0.059	0.059	1.001	0.317
4th month	0.145 **	0.059	2.448	0.014
5th month	0.036	0.059	0.601	0.548
6th month	-0.039	0.060	-0.652	0.514
7th month	-0.014	0.060	-0.246	0.805
8th month	0.063	0.059	1.070	0.285
9th month	0.046	0.059	0.781	0.435
10th month	0.011	0.057	0.195	0.845
11th month	0.132 **	0.057	2.317	0.021
12th month	0.051	0.056	0.091	0.367

** Denotes statistical significance at the 5% confidence level.

According to the table above, highest monthly mean returns were found in the fourth month, which were 0.145% and significant at the 5% confidence level. The second highest mean returns were in the eleventh month, which were 0.132% and significant at the 5% confidence level. The lowest monthly mean returns were in the second month, at -0.118% and significant at the 5% confidence level.

The findings prove that there was no pre-Aidilfitri stock market rally in the eighth and ninth months. It is consistent with the results of McGovan and Jakob (2010).

In recent years, Malay Muslims, who are the majority in Malaysia, has adopted the Chinese culture of giving cash bonuses in the form of 'green packet' during Aidilfitri. However, the non-presence of Aidilfitri effect and pre-Aidilfitri rally could be due to lower participation by the Muslims in the stock market as compared to the Chinese (Majid, 1996; McGovan & Jakob, 2010, p. 14). Furthermore, McGovan and Jakob suggested that some Muslims may view the participation in stock market activities is akin to gambling, which is prohibited in Islam. Thus, the cash bonuses earned were not invested in the stock exchange.

On the other hand, there was no significant return in the months of Aidiladha (tenth day in the twelfth month), Islamic New Year (first day of the first month) and Prophet Muhammad's Birthday (twelfth day in the third month). Besides that, it is unlikely that the significant returns in the month before Aidiladha, the months after Islamic New Year and Prophet Muhammad's Birthday were related to the three holidays itself, due to the same reason presented in the above paragraph, as well as the reason that no significant excess returns were recorded during the week-long window for the three holidays (see Table 1).

4.7 Daily Returns Preceding and Following Aidilfitri

Figure 3 shows the plot of daily excess return for sixty trading days preceding Aidilfitri, and thirty trading days following it.

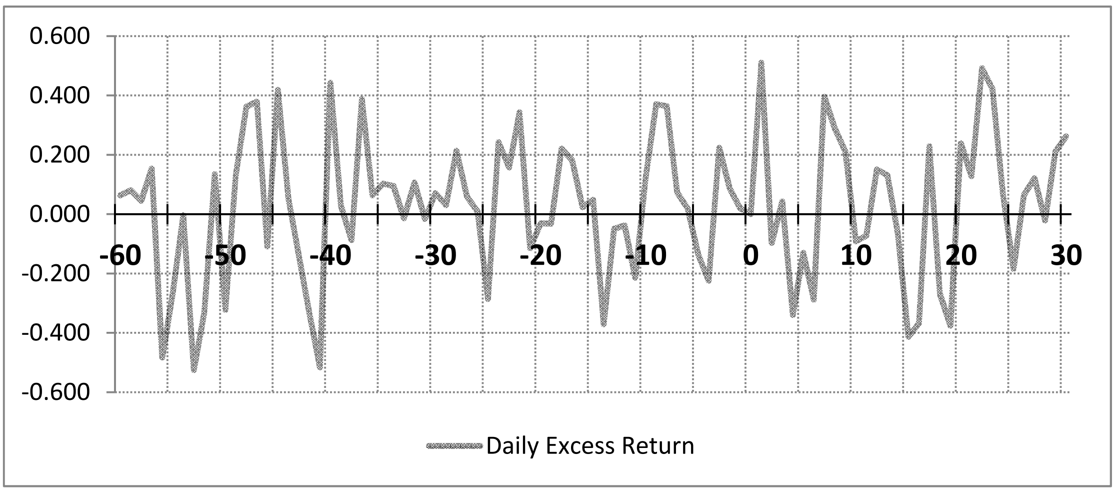

Figure 3. Daily excess return for 60 trading days preceding Aidilfitri, and 30 trading days following it

From the chart above, the two highest daily excess return was recorded on Days +1 and +22. Meanwhile, lowest daily excess return was recorded on Days -56, -53 and -41. Chart 4.4 shows the plot of cumulative daily excess return for the ninety days under studied.

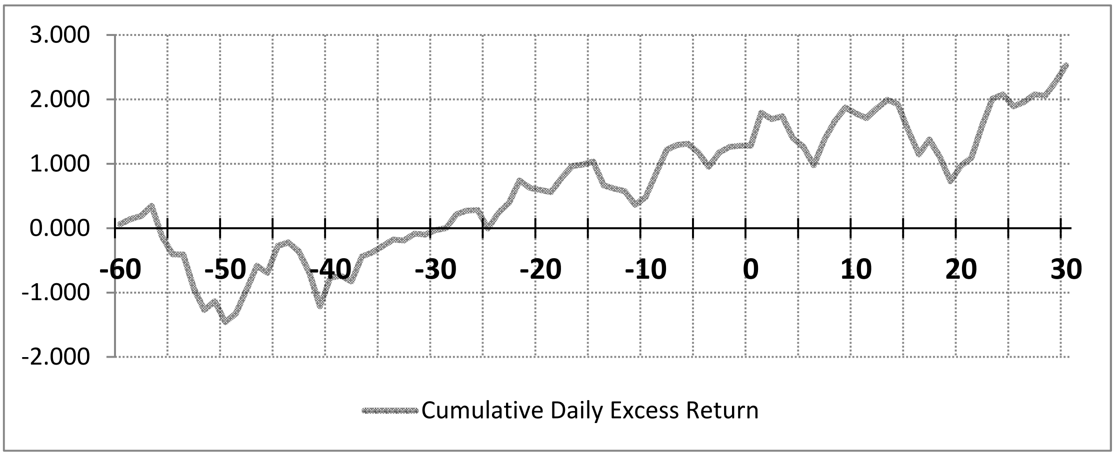

Figure 4. Cumulative daily excess return for 60 trading days preceding Aidilfitri, and 30 trading days following it

From the above chart, it appears that there was a general upward trend starting from Day -40 until Day +30. Nevertheless, according to the regression result in Table 6, mean returns for the seventh month until the tenth month were not significant. The difference in the trend of the cumulative daily excess returns for the Aidilfitri period and the Chinese New Year period is shown in Figure 5 below.

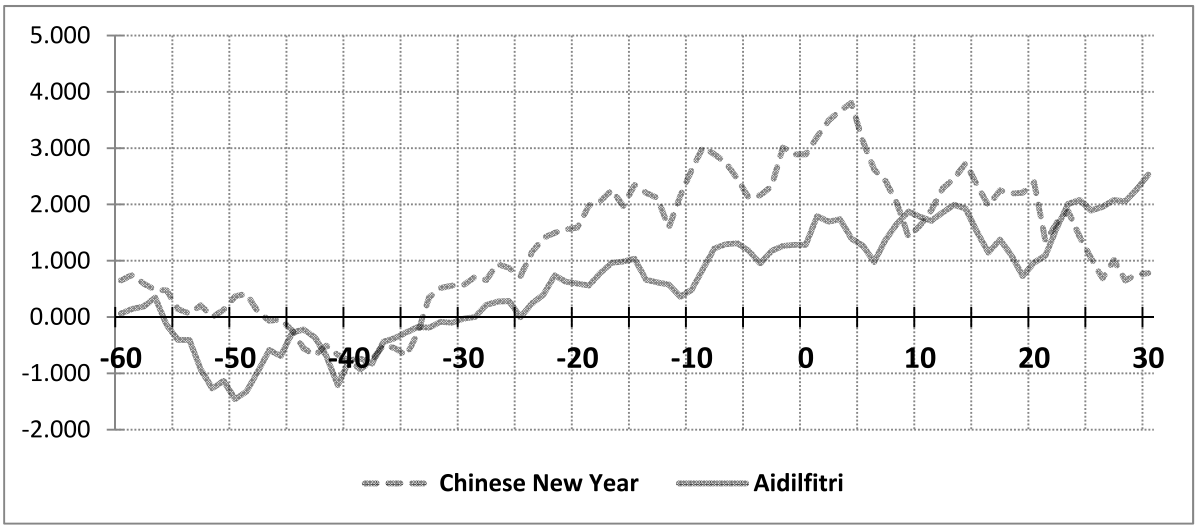

Figure 5. A comparison of cumulative daily excess return between Chinese New Year and Aidilfitri

From the above chart, it appears that the magnitude of the pre-Chinese New Year rally is stronger than the general upward trend during the Aidilfitri period. Besides that, it seems that the cumulative returns only started to rose beginning from Day -40.

Table 8. Descriptive statistics for the ninety-day period and three thirty-day sub-period during the Chinese New Year

	Day -60 to Day +30	Day -60 to Day -31	Day -30 to Day -1	Day +1 to Day +30
Mean	0.028	-0.003	0.046	0.042
Median	0.051	0.049	0.039	0.066
Maximum	0.510	0.443	0.371	0.510
Minimum	-0.525	-0.525	-0.371	-0.413
Standard Deviation	0.241	0.270	0.184	0.264
Mean/Standard Deviation	0.116	-0.011	0.250	0.159
Skewness	-0.253	-0.306	-0.221	-0.067
Kurtosis	2.634	2.483	2.760	2.108
Jarque-Bera	1.461	0.801	0.317	1.018
Probability	0.482	0.670	0.853	0.601
Observations	90	30	30	30

From the table above, it appears that mean daily excess return was the highest in the second sub-period, followed closely by the third sub-period. The mean for both periods was higher than the overall mean. Besides that, the ratio of mean returns against standard deviation was the highest in the second sub-period, followed by the third sub-period. Again, the ratios for both sub-periods were better than the overall period. The highest daily excess return was recorded in the third sub-period (Day +1), while the lowest was recorded in the first sub-period (Day -53). It appears that the first sub-period of Aidilfitri was similar to the third sub-period of the Chinese New Year in section 4.5 above, as both sub-periods were the worst performers.

On the other hand, negative skewness was found in all the sub-periods, indicating that there were days when the excess return was very low in every sub-period. Similar to the Chinese New Year, the kurtosis for the overall period and the three sub-periods were positive, indicating that the distributions were leptokurtic. Nonetheless, the Jarque-Bera test statistic is not significant in every sub-period, thus the null hypothesis of normality of the daily excess returns cannot be rejected.

Table 9. Result of regression to identify the days when their excess return is significant

Variable		Coefficient (%)	Standard Error (%)	*t*-Statistic	*p*-Value
Day -56		-0.483*	0.274	-1.760	0.079
Day -53		-0.525*	0.274	-1.916	0.056
Day -41		-0.517*	0.274	-1.883	0.060
Day +1		0.510*	0.274	1.861	0.063
Day +22		0.492*	0.274	1.794	0.073
F-statistic	0.773				
p-Value	0.943				

* Denotes statistical significance at the 10% confidence level.

From the table above, the highest points (Days +1 and +22) and lowest points (Days -56, -53 and -41) in Figure 3 were statistically significant. Out of the five days with significant daily excess returns, two were in the first sub-period, one in the second sub-period and two in the third sub-period.

However, the F-statistic of 0.773 is highly insignificant; hence the null hypothesis that the coefficient for each of the ninety days is equivalent to zero cannot be rejected. Therefore, the finsing is compatible with the finding in the previous sections that there was no significant Aidilfitri effect. The complete regression result is in Appendix E.

4.8 Possible Trading Strategy Based on the Holiday Effects

From the above findings, there are evidences of significant positive Christmas and Chinese New Year effect. More specifically, a two-month-long market rally preceding the Chinese New Year was discovered, while significant positive returns can be earned during the trading day immediately following Christmas until two trading days prior to the New Year's Day.

The above analyses were done without considering transaction costs. Assuming that there is no transaction cost, an investor should invest in the stock market two months before the Chinese New Year, and sell its shares just after the Chinese New Year. The reason is, according to Figure 2, the cumulative daily excess return is the lowest at Day -38 and peaked at Day +2.

Thus, if an investor invested in the stock market on Day -38 and divest on Day +2, the investor will be able to earn a return 4.42% higher than the normal market return. However, not all daily excess returns during the ninety-day period were significant. Nonetheless, if the investor were to invest in the eleventh and twelfth month of the Chinese calendar, the investor would have earned 0.107% and 0.106% of returns in each of the two months respectively, as shown in Table 4.

Meanwhile, by investing from the trading day following Christmas until two trading days before the New Year's Day, an investor could have earned a return of 0.365% higher than the normal market returns.

However, if transaction costs are taken into consideration, the returns earned following the above trading strategies could be reduced, and it is possible that the investor may even incur losses by doing so.

Nevertheless, the result of the analysis can provide help in deciding the appropriate time to carry out planned purchases or selling of shares. Based on the findings, any planned purchases of shares around the Chinese New Year should be carried forward to two months before the Chinese New Year, or at least thirty trading days before the Chinese New Year (based on the result in Table 5). In addition, any planned selling of shares should be postponed to after the Chinese New Year. To take advantage of the positive returns on trading days immediately after the Christmas celebration, planned selling of shares in the year end should be carried out at the end of the second trading day before New Year's Day.

Meanwhile, if there is any planned purchase of shares at the year end, the investor should follow the trading strategy based on the Chinese New Year. The reason is, as the Chinese New Year usually falls in February, the two-month market rally should start in December.

5. Conclusion

The following is the summary of the findings from this research:

There were significant positive excess returns during the one-week Christmas and Chinese New Year window.

There was no significant evidence of holiday effects during the one-week window of Aidiladha, Aidilfitri, Divali, King's Birthday, Labour Day, Islamic New Year, National Day, New Year's Day, Prophet Muhammad's Birthday and Wesak Day.

The effects of cultural holidays were greater than the effects of non-cultural holidays. However, the effects of both cultural and non-cultural holidays were insignificant.

Significant positive excess return was found during the period from the subsequent trading day after Christmas to two trading days before New Year's Day.

The returns during the eleventh and twelfth month of the Chinese calendar were the highest and significant at the 10% confidence level, indicating a two-month-long stock market rally before the Chinese New Year.

The ratio of mean excess return against standard deviation was the highest during the period from thirty trading days before Chinese New Year to the trading day immediately preceding it.

Similarly, the period from thirty trading days before Aidilfitri to the trading day immediately preceding it has the highest ratio as well.

Significant negative daily excess return was found on the fifth, sixth, ninth, twenty-first and twenty-fourth day after the Chinese New Year.

The returns in the second, fourth and eleventh month in the Islamic calendar were significant. However, returns in the eighth and ninth month (the two months before Aidilfitri) were insignificant.

Notwithstanding the lack of statistical evidence, the cumulative daily excess return was on a general upward trend starting from forty trading days before Aidilfitri. Nonetheless, its magnitude is weaker than the Chinese

New Year rally.

Out of ninety days, there were only five days when the daily excess return was significant for Aidilfitri. In contrast, there were twelve days when the return was significant for Chinese New Year.

Although Malay Muslims are the majority in Malaysia, the lack of significant effect during Islamic holidays could be due to lower participation in the stock market than the Chinese. It is also likely that some Muslims see investing in the stock market as similar to participation in gambling activities. On the other hand, the excess return during cultural holidays was higher than non-cultural holidays, although the effect was insignificant.

To take advantage of the Christmas and Chinese New Year effects, any planned purchase of shares should be done two months before the Chinese New Year. Besides that, any planned selling of shares should be done on the market reopening after the Chinese New Year. If the shares are intended to be sold before the year end, the selling should be done at the end of the second trading days before New Year's Day.

The presence of holiday effects in the Malaysian stock exchange may be regarded as another evidence of contradiction of the efficient market hypothesis. However, according to Brooks and Persand (2001), presence of such seasonal effects may not necessarily means contradiction of the efficient market hypothesis, since trading strategy solely based on the effects may not generate net gain after transaction cost is considered.

5.1 Potential Future Researches

This study was done with the assumption that there was no transaction cost. Therefore, transaction cost can be incorporated in future researches on the holiday effects so that the profitability of the trading strategy which is purely depending on the holiday effects can be further evaluated.

Besides that, a potential area of future research is the existence of holiday effects on the returns of individual companies. As the above analyses were done on the Bursa Malaysia main index, it should be noted that the correlation between the returns of individual companies and the main index may not equal to one. In other words, the magnitude of the holiday effects could be different for individual companies, or there may be some other holiday effects in the returns of individual companies. For example, Wong et al. (1990) found that there was a significant negative Aidilfitri effect in plantation companies.

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Appendix

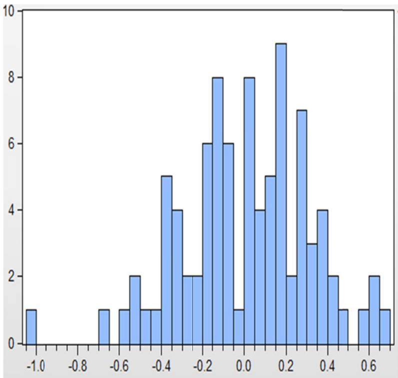
Appendix A: Dates of Federal holidays from year 2001 to year 2010

	2001	2002	2003	2004	2005
Aidiladha	6 March	23 February	12 February	1 February	21 January
Aidilfitri	16 December	6 December	25 November	14 November	3 November
Chinese New Year	24 January	12 February	1 February	22 January	9 February
Christmas	25 December	25 December	25 December	25 December	25 December
Divali	14 November	4 November	24 October	11 November	1 November
Islamic New Year	26 March	15 March	5 March	22 February	10 February
Kings's birthday	2 June	1 June	7 June	5 June	4 June
Labour day	1 May	1 May	1 May	1 May	1 May
National Day	31 August	31 August	31 August	31 August	31 August
New Year's Day	1 January	1 January	1 January	1 January	1 January
Prophet Muhammad's Birthday	4 June	25 May	14 May	2 May	21 April
Wesak Day	7 May	26 May	15 May	3 May	22 May

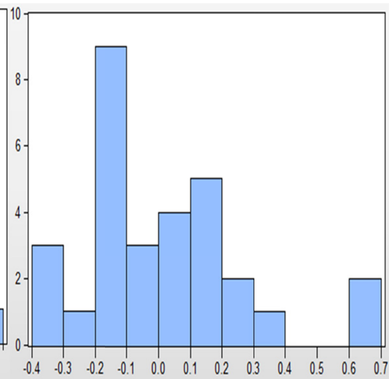
	2006	2007	2008	2009	2010
Aidiladha	10 January	1 January, 20 December	8 December	27 November	17 November
Aidilfitri	24 October	13 October	1 October	20 September	10 September
Chinese New Year	29 January	18 February	7 February	26 January	14 February
Christmas	25 December	25 December	25 December	25 December	25 December
Divali	21 October	8 November	27 October	17 October	5 November
Islamic New Year	31 January	20 January	10 January,	18 December	7 December

			29 December		
Kings's birthday	3 June	2 June	7 June	6 June	5 June
Labour day	1 May	1 May	1 May	1 May	1 May
National Day	31 August	31 August	31 August	31 August	31 August
New Year's Day	1 January	1 January	1 January	1 January	1 January
Prophet Muhammad's Birthday	11 April	31 March	20 March	9 March	26 February
Wesak Day	12 May	1 May	19 May	9 May	28 May

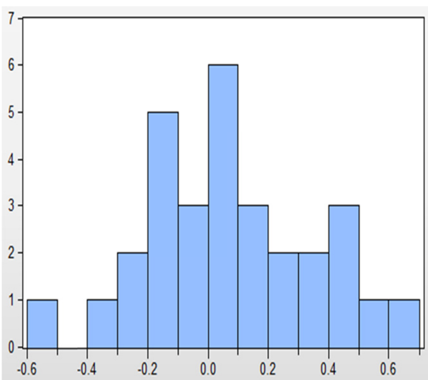
Appendix B: Histograms for the ninety-day period of Chinese New Year and the three thirty-day sub-periods



Histogram for Day -60 to Day +30

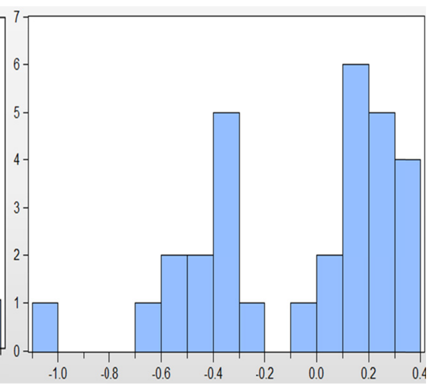


Histogram for Day -60 to Day -31 (First sub-period)



Histogram for Day -30 to Day -1

(Second sub-period)



Histogram for Day +1 to Day +30

(Third sub-period)

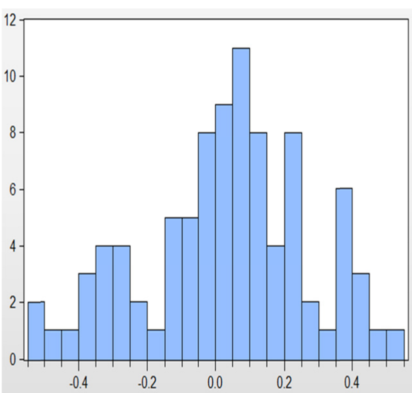
Appendix C: Complete result of Table 4.6 (Chinese New Year period)

Variable	Coefficient	Standard Error	*t*-Statistic	*p*-Value	Cumulative Daily Excess Return
Constant	0.029	0.020	1.401	0.161	-
Day -60	0.650	0.287	2.267	0.024	0.650
Day -59	0.098	0.287	0.340	0.734	0.747
Day -58	-0.157	0.287	-0.547	0.585	0.591
Day -57	-0.108	0.287	-0.376	0.707	0.483

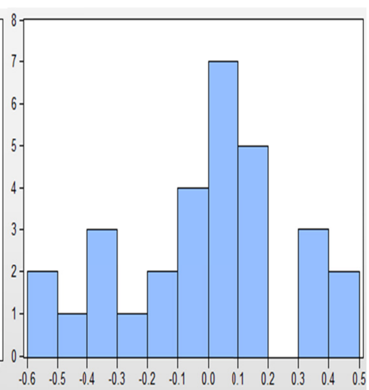
Day -56	-0.012	0.287	-0.041	0.967	0.471
Day -55	-0.333	0.287	-1.160	0.246	0.138
Day -54	-0.075	0.287	-0.263	0.793	0.063
Day -53	0.146	0.287	0.508	0.611	0.209
Day -52	-0.210	0.287	-0.732	0.464	-0.001
Day -51	0.128	0.287	0.447	0.655	0.127
Day -50	0.239	0.287	0.832	0.405	0.366
Day -49	0.050	0.287	0.174	0.862	0.416
Day -48	-0.323	0.287	-1.128	0.260	0.092
Day -47	-0.158	0.287	-0.551	0.582	-0.065
Day -46	0.019	0.287	0.067	0.946	-0.046
Day -45	-0.195	0.287	-0.679	0.497	-0.241
Day -44	-0.316	0.287	-1.102	0.271	-0.556
Day -43	-0.123	0.287	-0.430	0.667	-0.680
Day -42	0.173	0.287	0.603	0.547	-0.507
Day -41	-0.165	0.287	-0.576	0.565	-0.672
Day -40	-0.105	0.287	-0.366	0.715	-0.777
Day -39	-0.152	0.287	-0.529	0.597	-0.928
Day -38	0.166	0.287	0.580	0.562	-0.762
Day -37	0.266	0.287	0.929	0.353	-0.496
Day -36	-0.056	0.287	-0.194	0.846	-0.552
Day -35	-0.131	0.287	-0.458	0.647	-0.683
Day -34	0.395	0.287	1.378	0.168	-0.288
Day -33	0.635	0.287	2.216	0.027	0.347
Day -32	0.167	0.287	0.581	0.561	0.514
Day -31	0.044	0.287	0.153	0.879	0.557
Day -30	0.006	0.287	0.022	0.983	0.564
Day -29	0.149	0.287	0.522	0.602	0.713
Day -28	-0.055	0.287	-0.192	0.848	0.658
Day -27	0.282	0.287	0.983	0.326	0.940
Day -26	-0.071	0.287	-0.247	0.805	0.869
Day -25	-0.144	0.287	-0.501	0.617	0.725
Day -24	0.420	0.287	1.465	0.143	1.145
Day -23	0.259	0.287	0.903	0.367	1.404
Day -22	0.091	0.287	0.318	0.751	1.495
Day -21	0.064	0.287	0.223	0.824	1.559
Day -20	0.029	0.287	0.101	0.920	1.588
Day -19	0.395	0.287	1.378	0.168	1.983
Day -18	0.076	0.287	0.266	0.790	2.059
Day -17	0.197	0.287	0.689	0.491	2.256
Day -16	-0.282	0.272	-1.038	0.299	1.974
Day -15	0.371	0.272	1.366	0.172	2.346
Day -14	-0.140	0.272	-0.514	0.607	2.206
Day -13	-0.090	0.272	-0.332	0.740	2.115
Day -12	-0.525	0.272	-1.931	0.054	1.590
Day -11	0.562	0.272	2.067	0.039	2.153
Day -10	0.462	0.272	1.698	0.090	2.615
Day -9	0.404	0.272	1.487	0.137	3.019
Day -8	-0.128	0.272	-0.470	0.638	2.891
Day -7	-0.151	0.272	-0.555	0.579	2.740
Day -6	-0.285	0.272	-1.048	0.295	2.455
Day -5	-0.331	0.272	-1.217	0.224	2.124
Day -4	0.037	0.272	0.136	0.892	2.161
Day -3	0.163	0.272	0.599	0.549	2.324
Day -2	0.688	0.272	2.528	0.012	3.011
Day -1	-0.122	0.272	-0.449	0.654	2.889

Day 1	0.312	0.272	1.147	0.252	3.201
Day 2	0.290	0.272	1.067	0.286	3.492
Day 3	0.172	0.272	0.633	0.527	3.664
Day 4	0.139	0.272	0.511	0.609	3.803
Day 5	-0.680	0.272	-2.501	0.013	3.123
Day 6	-0.504	0.272	-1.852	0.064	2.619
Day 7	-0.203	0.272	-0.746	0.456	2.416
Day 8	-0.408	0.272	-1.498	0.134	2.008
Day 9	-0.587	0.272	-2.158	0.031	1.421
Day 10	0.201	0.272	0.740	0.459	1.623
Day 11	0.274	0.272	1.007	0.314	1.896
Day 12	0.390	0.272	1.433	0.152	2.286
Day 13	0.172	0.272	0.631	0.528	2.458
Day 14	0.276	0.272	1.014	0.311	2.734
Day 15	-0.383	0.272	-1.410	0.159	2.350
Day 16	-0.370	0.272	-1.361	0.174	1.980
Day 17	0.268	0.272	0.984	0.325	2.247
Day 18	-0.054	0.272	-0.197	0.844	2.194
Day 19	0.013	0.272	0.049	0.961	2.207
Day 20	0.186	0.272	0.683	0.495	2.393
Day 21	-1.046	0.272	-3.847	0.000	1.347
Day 22	0.331	0.272	1.219	0.223	1.678
Day 23	0.197	0.272	0.724	0.469	1.875
Day 24	-0.451	0.272	-1.657	0.098	1.425
Day 25	-0.378	0.272	-1.391	0.164	1.046
Day 26	-0.359	0.272	-1.319	0.187	0.687
Day 27	0.326	0.272	1.198	0.231	1.013
Day 28	-0.366	0.272	-1.346	0.178	0.647
Day 29	0.109	0.272	0.400	0.689	0.756
Day 30	0.024	0.272	0.087	0.930	0.780
F-statistic			1.261		
p-Value			0.051		

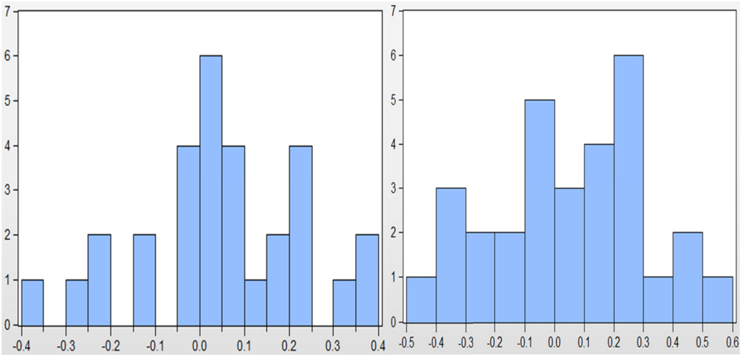
Appendix D: Histograms for the ninety-day period of Aidilfitri and the three thirty-day sub-periods



Histogram for Day -60 to Day +30



Histogram for Day -60 to Day -31 (First sub-period)



Histogram for Day -30 to Day -1 (Second sub-period) Histogram for Day +1 to Day +30 (Third sub-period)

Appendix E: Complete result of Table 4.9 (Aidilfitri period)

Variable	Coefficient	Standard Error	*t*-Statistic	*p*-Value	Cumulative Daily Excess Return
Constant	0.021	0.021	1.010	0.313	-
Day -60	0.064	0.274	0.232	0.817	0.064
Day -59	0.081	0.274	0.294	0.769	0.144
Day -58	0.045	0.274	0.164	0.870	0.189
Day -57	0.154	0.274	0.560	0.575	0.343
Day -56	-0.483	0.274	-1.760	0.079	-0.140
Day -55	-0.267	0.274	-0.973	0.331	-0.407
Day -54	-0.003	0.274	-0.013	0.990	-0.410
Day -53	-0.525	0.274	-1.916	0.056	-0.936
Day -52	-0.333	0.274	-1.214	0.225	-1.269
Day -51	0.134	0.274	0.490	0.624	-1.134
Day -50	-0.322	0.274	-1.176	0.240	-1.457
Day -49	0.131	0.274	0.478	0.633	-1.326
Day -48	0.362	0.274	1.320	0.187	-0.963
Day -47	0.379	0.274	1.383	0.167	-0.584
Day -46	-0.109	0.274	-0.397	0.692	-0.693
Day -45	0.419	0.274	1.526	0.127	-0.274
Day -44	0.053	0.274	0.193	0.847	-0.221
Day -43	-0.139	0.274	-0.508	0.612	-0.361
Day -42	-0.334	0.274	-1.217	0.224	-0.695
Day -41	-0.517	0.274	-1.883	0.060	-1.211
Day -40	0.443	0.274	1.615	0.106	-0.768
Day -39	0.029	0.274	0.105	0.916	-0.739
Day -38	-0.087	0.274	-0.318	0.750	-0.827
Day -37	0.388	0.274	1.413	0.158	-0.439
Day -36	0.064	0.274	0.232	0.817	-0.375
Day -35	0.103	0.274	0.374	0.708	-0.273
Day -34	0.095	0.274	0.347	0.728	-0.177
Day -33	-0.014	0.274	-0.051	0.959	-0.191
Day -32	0.107	0.274	0.388	0.698	-0.085
Day -31	-0.016	0.274	-0.057	0.954	-0.101
Day -30	0.071	0.274	0.259	0.796	-0.030
Day -29	0.030	0.274	0.111	0.912	0.001
Day -28	0.214	0.274	0.778	0.436	0.214
Day -27	0.058	0.274	0.213	0.832	0.273
Day -26	0.009	0.274	0.034	0.973	0.282
Day -25	-0.286	0.274	-1.042	0.297	-0.004
Day -24	0.243	0.274	0.885	0.376	0.239

Day -23	0.157	0.274	0.574	0.566	0.396
Day -22	0.343	0.274	1.250	0.211	0.739
Day -21	-0.115	0.274	-0.418	0.676	0.624
Day -20	-0.031	0.274	-0.114	0.909	0.593
Day -19	-0.032	0.274	-0.118	0.906	0.561
Day -18	0.221	0.274	0.807	0.420	0.782
Day -17	0.182	0.274	0.662	0.508	0.964
Day -16	0.023	0.274	0.084	0.933	0.987
Day -15	0.048	0.274	0.176	0.861	1.035
Day -14	-0.371	0.274	-1.354	0.176	0.664
Day -13	-0.049	0.274	-0.180	0.857	0.614
Day -12	-0.038	0.274	-0.139	0.890	0.576
Day -11	-0.214	0.274	-0.780	0.435	0.362
Day -10	0.122	0.274	0.445	0.657	0.484
Day -9	0.371	0.274	1.351	0.177	0.855
Day -8	0.364	0.274	1.328	0.184	1.219
Day -7	0.074	0.274	0.269	0.788	1.293
Day -6	0.019	0.274	0.071	0.944	1.312
Day -5	-0.136	0.274	-0.497	0.619	1.176
Day -4	-0.224	0.274	-0.818	0.413	0.951
Day -3	0.224	0.274	0.816	0.414	1.175
Day -2	0.086	0.274	0.314	0.753	1.261
Day -1	0.020	0.274	0.071	0.943	1.281
Day 1	0.510	0.274	1.861	0.063	1.791
Day 2	-0.097	0.274	-0.354	0.723	1.694
Day 3	0.043	0.274	0.156	0.876	1.737
Day 4	-0.340	0.274	-1.240	0.215	1.397
Day 5	-0.131	0.274	-0.476	0.634	1.266
Day 6	-0.288	0.274	-1.050	0.294	0.978
Day 7	0.395	0.274	1.441	0.150	1.374
Day 8	0.289	0.274	1.053	0.292	1.663
Day 9	0.211	0.274	0.770	0.441	1.874
Day 10	-0.092	0.274	-0.334	0.738	1.782
Day 11	-0.073	0.274	-0.265	0.791	1.709
Day 12	0.151	0.274	0.551	0.582	1.861
Day 13	0.131	0.274	0.478	0.633	1.992
Day 14	-0.065	0.274	-0.237	0.812	1.927
Day 15	-0.413	0.274	-1.507	0.132	1.513
Day 16	-0.368	0.274	-1.342	0.180	1.145
Day 17	0.228	0.274	0.833	0.405	1.373
Day 18	-0.269	0.274	-0.982	0.326	1.104
Day 19	-0.376	0.274	-1.371	0.171	0.728
Day 20	0.239	0.274	0.870	0.384	0.967
Day 21	0.128	0.274	0.466	0.641	1.095
Day 22	0.492	0.274	1.794	0.073	1.587
Day 23	0.423	0.274	1.542	0.123	2.010
Day 24	0.067	0.274	0.244	0.808	2.077
Day 25	-0.184	0.274	-0.672	0.501	1.892
Day 26	0.065	0.274	0.235	0.814	1.957
Day 27	0.121	0.274	0.441	0.659	2.078
Day 28	-0.021	0.274	-0.078	0.938	2.057
Day 29	0.211	0.274	0.768	0.443	2.267
Day 30	0.262	0.274	0.956	0.339	2.529
F-statistic			0.773		
p-Value			0.943		