STOCK MARKET LINKAGE ON FIXED OFFICIAL PUBLIC HOLIDAYS IN MALAYSIA (NEW YEAR, LABOR DAY AND NATIONAL DAY)

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Abstract
The seasonal behavior of stock market daily returns has been widely documented. One of the more well-known calendar anomalies comprises a holiday effect, most characteristically a pre-holiday effect. How does holidays relate with the stock return? What impact does holidays bring towards the stock market? This study explores into the effect of Malaysia’s fixed official public holidays (New Years Day, Labor Day and National Day) on the stock market in Malaysia from year 2002 until 2006. This paper involves a sample of 50 companies listed on the Main Board in Bursa Malaysia. The movement of the share price is being monitored to know whether the market is efficient or inefficient during the holidays. The period of the research will be 15 days before and after the holiday’s celebration. The findings of this paper may serve as a useful guideline for the investors to identify whether there is an existence of abnormal return in the market during the fixed official public holiday.

Keywords: Market efficiency; Fixed official public holidays; Stock return; Abnormal return; Guideline.

JEL Classification codes: G14.

1. Introduction
A consistent theme in the market efficiency literature concerns the presence of calendar anomalies or seasonality in stock market returns. Within this burgeoning text, one of the more well-known calendar anomalies comprises a holiday effect, most characteristically a pre-holiday effect, where abnormally high returns accrue to stocks the day before a holiday. The holiday effect causes higher-than-normal returns to be observed around holidays, mainly in the pre-holiday period. Lakonishok and Smidt (1988) observe pre holiday effects in several organized stock markets. Meanwhile, Ariel (1990) shows that over one-third of the positive returns each year are made in the eight trading days prior to a market-closed holiday. This clearly suggests that the frequency of pre-holiday positive return days are significantly higher than the frequency of positive return days for all the other trading days over the period. Cadsby and Ratner (1992) show evidence of significant pre-holiday effects for a number of stock markets, with the European markets being the exception. Two possible explanations for the holiday effect are presented by Fabozzi, Ma and Briley (1994). The first is that the effect may be part of the other seasonalities that have already been documented.

This is pertinent in situations where holidays occur primarily on specific days of the week or in specific periods such as the beginning or end of the month. This means that a vital part of ascertaining whether there is truly a holiday anomaly is to eliminate the possibility that the holiday is capturing other calendar effects. The second explanation is that the higher pre-holiday returns are a result of a positive holiday sentiment. This occurs when people look forward to the holiday period, are optimistic and focused on non-work activities, and hence are reluctant to trade or close out positions on stock that they hold.13 Interestingly, existing U.S. evidence shows that it is only on public holidays, when the exchange is closed, that significant pre-holiday abnormal returns occur.

The study in this project is to determine whether there is an abnormal return occurs during the fixed official public holiday. In order to determine the abnormal return, this research reveals all the fixed holiday in Malaysia which are New Years Day, Labor Day and National Day from year 2002 until year 2006. The movement of the share price is being monitored through this period of time.

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The result reported in this project paper is based on the average return (AR) and the cumulative average return (CAR).

**Research Objective**

This research attempts to identify the stock market behavior during the fixed date of public holiday. The main objective of this study is to identify whether the fixed official public holidays bring out any effect to stock market in Malaysia. This research is also made to examine the existence of changes or impact on stock market return by analyzing the abnormal return that appears to be present few days before and after the fixed official public holiday in Malaysia.

**Significance of the Study**

This study is importance to efficient market hypothesis (EMH). The literature in Malaysia for a several reasons:

1) Enlighten all stock in bursa Malaysia that have form in efficient market hypothesis, it also to determine whether the prices respond fully and quickly to the publicly available information surrounding the festive season.

2) To highlight the stocks that have been chosen have tendency to generate positive (negative) abnormal returns during the holidays season period.

**Scope of Study**

This study focuses on companies from various sectors in Bursa Saham. The study intends to test and identify whether the fixed official public holidays have any effect towards the market stock return. This research is done to identify the:

1. Abnormal return day before the fixed official public holidays for each year.
2. Abnormal return day the fixed official public holidays for each year
3. Abnormal return for overall result towards the fixed official public holidays.

This paper is not solely on the impact of the share price when fixed public holidays arrive, but also suggesting steps and methods that are applicable and can be taken by the companies and also investors when the fixed public holiday arrives.

**2. Literature Review**

G. Marrett and A. C. Worthington (2007) indicate that the Australian market overall provides evidence of a pre-holiday effect in common with small cap stocks. However, the market level effect appears to be solely the result of a strong pre-holiday effect in the retail industry. Generally, the market is weak-form efficient holding that past data on stock prices are no use in predicting future prices. The study conducted by Jason D. Mitchell1 and Li Lian Ong (2006) find out some evidence of a February turn-of-the-year effect, partly owing to the timing of the Chinese Lunar New Year (CNY); and the holiday effect around the CNY period is stronger and more persistent compared with the other public holidays. The result is consistent with Wong et al, 1999; Cadsby and Ratner 1992; Tong and Wildon 1992; Yen and Shyy 1993; Chan et al, 1996) whereby it shows a high returns with the presence of a Chinese New Year effect.

David R. Gallagher and Matt Pinnuck discover that investment manager performance is greater than normal in December, possibly due to both window dressing and the Christmas holiday effect. These findings have important implications for investors attempting to exploit anomalies in fund returns by timing their entry and exit points from active equity funds. Furthermore, Peter Reinhard Hansen et al (2005) argue that, it is necessary to control for all possible calendar effects to avoid spurious results. It shows that the test achieves good power properties because it exploits the correlation structure of (excess) returns specific to the calendar effect being studied.

However, Ryan et al (2005) examine whether the pre-holiday effect has declined for the U.S., U.K. and Hong Kong markets. For all three markets, the effect is shown declining, but only significantly in the U.S with the mean return on pre-holiday days becoming negative, and the subsequent elimination of this effect during 1997-2003. Additionally, the study undertaken by Vicente Meneu et al (2003) show high abnormal returns on the trading day prior to holidays that are not related to any calendar anomaly of the Spanish Stock Exchange. It could be due to the reluctance of small investors to buy on pre-holidays, which produces an increase in the average size of bid orders on pre-holidays.
3. Data Methodology

**Sampling**

The data that has been collected is the share price from these 50 companies from various sectors throughout the five years (2002 to 2006) of the research. The daily closing share prices of the companies and the KLCI daily price index are collected for the period of (i) 15 days before and 15 days after the event day. The days before the holidays are labeled as day ‘-1’, to the day ‘-15’. The days that come after the holidays are labeled as day ‘+1’ to the day ‘+15’. The sample size covered three selected industry sectors of which are consumer products, trading and services and hotels. The specific number of companies to be included in this study is shown below in Table 1.

**Table 1: Number of Company within Industry**

<table>
<thead>
<tr>
<th>Industry</th>
<th>No. of Company Selected</th>
<th>No. of Company in the Industry</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer product</td>
<td>17</td>
<td>87</td>
<td>19%</td>
</tr>
<tr>
<td>Hotels</td>
<td>3</td>
<td>5</td>
<td>60%</td>
</tr>
<tr>
<td>Trading/Services</td>
<td>30</td>
<td>141</td>
<td>21%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>50</strong></td>
<td><strong>233</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**Main Methodology**

This study measures the impact of bonus issue announcement on the second moment of return distribution using the abnormal return event-study approach. In order to get the abnormal returns, the market model is used. Based on the actual market return on day t, the estimated return for security j on day t is given by the following equation:

$$AR_{jt} = R_{jt} - [a_j + \beta_j (Rm_t)]$$

(3.2.1)

Where, $AR_{jt}$ = AR on stock j for each day  
$R_{jt}$ = return on stock j for each day  
$a_j$ = intercept term for stock j over the estimation period  
$\beta_j$ = slop term for stock j measured over the estimation period  
$Rm_t$ = return on the market for each day

The study will need to compute the daily standardize average abnormal return (SAR) for a specify day, t, for each firm.

$$SAR_{jt} = \frac{AR_{jt}}{\sqrt{\frac{s^2}{AR_{jt}}}}$$

(3.2.2)

Where, $SAR_{jt}$ = SAR for time j at time t  
$AR_{jt} = AR$ for firm j at time t

$\sqrt{\frac{s^2}{AR_{jt}}}$ = square root of the variance or standard deviation of the AR firm j at time t of the AR for firm j at time t

To standardize it, the calculation should include the risk as formula (3.1.1). Risk is determined by standard deviation of firm return. The square root of the standard deviation will become the variance.
\[ S^2_{AR_j} = \left( \frac{\sum_{t=-15}^{-115} (AR_j(\text{est.period}) - \overline{AR}_j(\text{est.period}))^2}{D_j - 2} \right) \left( 1 + \frac{1}{D_j} \sum_{t=-15}^{-115} (\overline{R}_m(\text{event.window}) - \overline{R}_m(\text{est.period}))^2 \right) \]

Where,
- \( S^2_{AR_j} \) = Variance of the AR for firm \( j \) at time \( t \)
- \( AR_j(\text{est.period}) \) = AR for firm \( j \) over the estimation period
- \( \overline{AR}_j(\text{est.period}) \) = mean AR for firm \( j \) over the estimation period
- \( D_j \) = no. of observed trading day return for firm \( j \) over the estimation period
- \( \overline{R}_m(\text{event.window}) \) = return on the market (KLCI) at time \( t \) over the estimation period
- \( \overline{R}_m \) = mean return on the market (KLCI) over the estimation period

To determine the total SAR (TSAR) result is significant for each day in the event window, Z-statistic approach on the TSAR are used as a following

\[ Z = \frac{\text{TSAR}_t}{\sqrt{\frac{\sum_{j=1}^{N} D_j - 2}{\sum_{j=1}^{N} D_j - 4}}} \]

Where,
- \( Z \) = Z-statistic for each day in the event window
- \( \text{TSAR}_t \) = TSAR for each day in event window
- \( D_j \) = number of observed trading day returns for firm \( j \) over the estimation period.
- \( N \) = number of firm in the sample

The test statistic that is used to measure the level of significance of the results are involved.

\[ \text{CumulativeTSAR}_{T_1,T_2} = \sum_{t=T_1}^{T_2} \text{TSAR}_t \]

Where,
- \( \text{CumulativeTSAR}_{T_1,T_2} \) = cumulative TSAR for each day in the event window
- \( \text{TSAR}_t \) = TSAR for each day in the event window
- \( T_1 \) = earliest date in the event window (-15)
- \( T_2 \) = later date in the event window (range from -15 through +15)

Z-statistic approach on the cumulative TSAR are used as the equation below:

\[ Z_t = \frac{1}{\sqrt{N}} \left[ \sum_{t=T_1}^{T_2} \text{SAR}_{jt} \right] \left[ \sqrt{(T_2 - T_1 + 1)} \frac{D_j - 2}{D_j - 4} \right] \]

Where,
- \( Z_t \) = The Cumulative TSAR Z-statistic for each day in the event window
- \( N \) = Number of the firm in the sample
- \( \text{SAR}_{jt} \) = SAR for firm \( j \) for each day in the event window
- \( T_1 \) = earliest date in the event window (-15)
From One-sample T-test perspective, we will obtain information on the mean and standard deviation. These two variables are used as it measures the risk of the companies and differentiate between the means.

To test the hypotheses developed in this study, they are the one-sample T-test. The T statistics, in which it is calculated as follows:

\[
T = \frac{\bar{X} - \mu}{s/\sqrt{n}} \tag{3.3.1}
\]

\(\bar{X}\) = mean is the random sample = CAR, 
\(s/\sqrt{n}\) = estimated standard error of \(X\), 
\(n\) = number of observations in the sample.

**Hypothesis Formulation**

**Hypothesis for Average Abnormal Return**
- \(H_0\): There is no abnormal return during the fixed official public holidays
- \(H_1\): There is an abnormal return during the fixed official public holidays

**Hypothesis for Cumulative Average Return:**
- \(H_0 (c)\): There is no cumulative abnormal return during the fixed official public holidays
- \(H_1 (c)\): There is a cumulative abnormal return during the fixed official public holidays

### 4. Findings and Results

**One Sample T-Test**

For the overall results of this project, there are abnormal returns during the fixed official public holidays for the overall result. The overall results include all the three fixed official public holidays including New Year, Labor Day and National Day from the year 2002 until 2006. Based on the p-value, most of the results have significant level of 1% or 5% level of significant from the one sample T-test.

The result can be defined as:

- \(H_0\) : AR = 0
- \(H_1\) : AR > 0 @ AR < 0

Where:
- \(H_0\): There is no abnormal return during the fixed official public holidays
- \(H_1\): There is an abnormal return during the fixed official public holidays
Table 2: AR for overall results

<table>
<thead>
<tr>
<th></th>
<th>One-Sample Test</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t</td>
<td>df</td>
<td>Mean Difference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sig. (2-tailed)</td>
<td></td>
</tr>
<tr>
<td>AR_before15</td>
<td>0.591</td>
<td>749</td>
<td>0.555</td>
</tr>
<tr>
<td>AR_before14</td>
<td>1.179</td>
<td>749</td>
<td>0.506</td>
</tr>
<tr>
<td>AR_before13</td>
<td>0.665</td>
<td>749</td>
<td>0.490775</td>
</tr>
<tr>
<td>AR_before12</td>
<td>-1.425</td>
<td>749</td>
<td>0.599</td>
</tr>
<tr>
<td>AR_before11</td>
<td>-2.340</td>
<td>749</td>
<td>0.520</td>
</tr>
<tr>
<td>AR_before10</td>
<td>-2.155</td>
<td>749</td>
<td>0.506</td>
</tr>
<tr>
<td>AR_before9</td>
<td>2.291</td>
<td>749</td>
<td>0.320</td>
</tr>
<tr>
<td>AR_before8</td>
<td>-4.446</td>
<td>749</td>
<td>0.665</td>
</tr>
<tr>
<td>AR_before7</td>
<td>-1.25</td>
<td>749</td>
<td>0.901</td>
</tr>
<tr>
<td>AR_before6</td>
<td>2.387</td>
<td>749</td>
<td>0.017</td>
</tr>
<tr>
<td>AR_before5</td>
<td>-3.413</td>
<td>749</td>
<td>0.001</td>
</tr>
<tr>
<td>AR_before4</td>
<td>2.512</td>
<td>749</td>
<td>0.012</td>
</tr>
<tr>
<td>AR_before3</td>
<td>-1.593</td>
<td>749</td>
<td>0.112</td>
</tr>
<tr>
<td>AR_before2</td>
<td>2.633</td>
<td>749</td>
<td>0.009</td>
</tr>
<tr>
<td>AR_before1</td>
<td>2.124</td>
<td>749</td>
<td>0.034</td>
</tr>
<tr>
<td>AR_after1</td>
<td>0.28</td>
<td>749</td>
<td>0.779</td>
</tr>
<tr>
<td>AR_after2</td>
<td>1.712</td>
<td>749</td>
<td>0.087</td>
</tr>
<tr>
<td>AR_after3</td>
<td>1.390</td>
<td>749</td>
<td>0.165</td>
</tr>
<tr>
<td>AR_after4</td>
<td>-1.892</td>
<td>749</td>
<td>0.059</td>
</tr>
<tr>
<td>AR_after5</td>
<td>1.201</td>
<td>749</td>
<td>0.197</td>
</tr>
<tr>
<td>AR_after6</td>
<td>-3.245</td>
<td>749</td>
<td>0.001</td>
</tr>
<tr>
<td>AR_after7</td>
<td>-2.152</td>
<td>749</td>
<td>0.032</td>
</tr>
<tr>
<td>AR_after8</td>
<td>2.748</td>
<td>749</td>
<td>0.006</td>
</tr>
<tr>
<td>AR_after9</td>
<td>2.322</td>
<td>749</td>
<td>0.020</td>
</tr>
<tr>
<td>AR_after10</td>
<td>1.054</td>
<td>749</td>
<td>0.0292</td>
</tr>
<tr>
<td>AR_after11</td>
<td>0.176</td>
<td>749</td>
<td>0.0861</td>
</tr>
<tr>
<td>AR_after12</td>
<td>-1.512</td>
<td>749</td>
<td>0.131</td>
</tr>
<tr>
<td>AR_after13</td>
<td>-5.323</td>
<td>748</td>
<td>0.000</td>
</tr>
</tbody>
</table>

The P-value of abnormal return for overall fixed holidays season is 0.000 till 0.034 for t= (-10, -9, -8, -7, -5, -3, -2, -1, 1, 2, 8, 9, 10, 11, and 15) with the confidence level of 99% and 95% level. So the null hypothesis is rejected for overall fixed official public holidays result.

Cumulative Total Standardized Abnormal Return (CTSAR)

The results for the cumulative abnormal return can be defined as:
H0 (c): There is no cumulative abnormal return during the fixed official public holidays
H1 (c): There is a cumulative abnormal return during the fixed official public holidays

Table 3: Result of the T-test on Cumulative Average Abnormal Return (CAAR) for all categories of fixed official public holidays

<table>
<thead>
<tr>
<th>DAY</th>
<th>t-value</th>
<th>min</th>
<th>max</th>
<th>mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAAR For Overall Results</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAAR (-15, +15)</td>
<td>0.038</td>
<td>0.1337866</td>
<td>4.51231523</td>
<td>2.3229694</td>
</tr>
<tr>
<td>CAAR For New Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAAR (-15, +15)</td>
<td>0.000</td>
<td>2.1574162</td>
<td>4.4418661</td>
<td>3.2996411</td>
</tr>
<tr>
<td>CAAR For Labor Day</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAAR (-15, +15)</td>
<td>0.008</td>
<td>-3.27507</td>
<td>-0.5005414</td>
<td>-1.887805</td>
</tr>
<tr>
<td>CAAR For National Day</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAAR (-15, +15)</td>
<td>0.049</td>
<td>0.0336372</td>
<td>12.60645</td>
<td>6.3200439</td>
</tr>
</tbody>
</table>

* significant at $\alpha = 0.10$ ; **significant at $\alpha = 0.05$, ***significant at $\alpha = 0.01$
For the P-value for cumulative abnormal return in overall fixed official public holidays is 0.038 for \( t = (-15, 15) \) which is 5% level of significant. Therefore, the null hypothesis can be rejected \( H_0 \) (c) and accept \( H_1 \) (c) for overall fixed official public holidays results.

**Selected Holidays Results**

**Figure 1:** Stock market reaction towards New Year holiday

![CAAR New Year Holiday graph](image1)

The figure shows that there is an abnormal return during the New Year holiday season whereas there is a tendency the price crash before the event and the price will increase radically after day of the event. The figure shows the CAAR drop the most during day 9 before the event and raise maximum return at day 3 after the New Year holiday.

**Figure 2:** Stock market reaction towards Labor Day holiday

![CAAR Labor Day graph](image2)

The graph demonstrates that there is an abnormal return during the Labor Day holiday season whereas there is an inclination the price collapse before the event and the price enhances radically after day of the event. The graph demonstrates the CAAR drops the most during day 5 before the event and raise highest return at day 9 after the Labor Day holiday.
Figure 3: Stock market reaction towards National Day holiday

The chart shows that there is an abnormal return during the National Day holiday season whereas there is a propensity the price decline before the event and the price swell radically after day of the event. The chart shows the CAAR drop the most during day 1 before the event and raises the premier return at day 11 after the National Day holiday.

Figure 4: Stock market reaction towards overall fixed official public holidays

The diagram shows that there is an abnormal return during the overall fixed holidays season whereas there is a proclivity the price decline before the event and the price swell up radically after day of the event. The chart shows the CAAR drop the most during day 5 before the event and lifted uppermost return at day 11 after the fixed official public holidays.

5. Conclusion and Recommendation

Conclusion
From all the findings and analysis done, this study had replied to the question on how the fixed official public holidays relate with stock return. An exploration on the 50 companies has shown that the fixed official public holidays did relate with the stock market in Malaysia by handing out the evidence in which abnormal return exist before and after the holidays. It is identified that there is a impact on the companies’ share price as when there is a public holiday. This shows that, there is an abnormal return during the fixed holiday’s seasons. As for the cumulative abnormal return, whereas there is a proclivity the price decline before and the price swell up radically after day of the event. The result obtained is consistent with Ryan et al (2005). So, we can conclude that the trend of abnormal return occur every single year during the fixed official public holidays.
Recommendation
Since calendar anomalies as fixed public holiday gives a very significant impact on a particular firm’s stock price and that has also been proven by the existence of abnormal return, investors are advised to focus more on the stocks or companies due to the holiday effect. This suggestion is especially to those investors that intend to seek short term capital gain. As when the prices go up, investors may sell the stocks they hold and immediately gain profit from the selling. Besides that, for further research, it is suggested that the period of studies be extended. In addition, it is also recommended that to increase the sample size for any further research to obtain a more accurate result.

References