A Comparative Examination of Calendar Anomalies between Islamic and Conventional Stock Markets in Indonesia

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Abstract:
This study empirically explores the differences between the Islamic and conventional stock returns of Indonesia during the period from December 1, 2009 to January 30, 2016. It also attempts to empirically investigate the effects of calendar anomalies of weekend effects, January effects, and Ramadan effects on both Islamic and conventional stock markets of Indonesia. The independent sample t-tests was used to the differences between the Islamic and conventional stock returns, while the multiple regression analysis was adopted to examine the effects of calendar anomalies on the stock returns of both markets, Islamic and conventional. The study found that there was no difference between Islamic and conventional stock returns, indicating higher level of integration between the stocks. Unlike the January effect that has significantly influenced both Islamic and conventional stock returns; the study documented no weekend and Ramadan effects on both Islamic and conventional stocks in Indonesia. These findings implied that the investors still could gain abnormal returns by diversifying their investment into both Islamic and conventional stock market during certain months in Indonesia.

Keywords: Calendar anomalies, weekend effect, January effect, Ramadan effect, Islamic stocks, conventional stocks, Abnormal returns

1. Introduction

Investment is one of the economic activities that are highly recommended in Islam as part of the mu'amalah (transactions). Through investment, assets become productive and generate benefits to investors in particular, and to economy at large. Investment activities, especially in the capital market, are activities that greatly affect a country's economic progress. In addition to existing conventional stock market, Indonesia has launched the Islamic stock markets in 2000, operated in line with the shari'ah principles that are free from the elements of interest (riba), uncertainty (gharar), and gambling (maysir). The introduction of Islamic stocks in the biggest Muslim populous country, Indonesia offers an alternative investment avenue for Muslim investors who seek not just for higher returns, but also for shari'ah compliant investment activities that are permissible (halal) in Islam (Majid, 2016; Majid, 2018a; Majid, 2018b; and Yusof and Majid, 2008).

The emergence of Islamic stocks has attracted more interests of scholars and policy makers to find out whether the existing Islamic stock market behaves differently from the conventional counterpart that has long existed, especially in terms of their performances and risks and returns offered to the investors. Do the stock markets have similar level of efficiency? Do the stock markets encounter similar calendar anomaly effects? If not, which stock market offers more abnormal returns for investors? These questions have been the concerned of the researchers and investors alike.

There have been many studies investigated the issue of efficiency of stock market and documented that the market was not fully efficient. Rio (2009) found that the stock market failed to react towards all arising information and then reflect it into the prices, a phenomenon so-called anomalies or disturbances. An event is considered an anomaly when it is difficult to explain rationally with existing theories or logical assumptions. The efficient market concept presented by Fama (1991) shows that all market information is reflected in stock prices, as a result investor cannot predict future stock prices based on the stock historical prices. With the existence of seasonal effects, the stock market becomes inefficient because the seasonal effects violate the basis of an efficient market.

In their study, Hansen and Lunde (2003) found the existence of calendar anomalies in the stock markets. These calendar anomalies include the Monday effect, January effect, Weekend effect, Day of the Week effect, Turn of the Month effect, Rogalski effect, Turn of the Year effect, Holiday effect, and end of December effect. These findings contradicted the

Efficient Market Hypothesis (EMH). In the Indonesian context, previous studies on the calendar anomalies only focused on the presence of January effect and Turn of the Month and Year effects in the conventional stock market. For example, Subekti (2006), Fauzi (2007), Rio (2009), Nagastara and Utami (2012) found a January effect, while Faisal and Majid (2016) documented the Turn of the Month and Year effect in conventional stock market in the country. Unlike these previous studies, this present study is intended to empirically explore the existence of several calendar anomalies (i.e., Weekend effect, January effect, and Ramadan effect) in both Islamic and conventional stock market in Indonesia.

The findings of this study are hoped to shed some lights for the investors to strategize their portfolios diversification and for the policy makers to design proper strategy to regulate the capital markets. Additionally, the findings of the study also hoped to enrich the existing literature on calendar anomalies for both Islamic and conventional stock markets from the Indonesian capital market perspective.

The rest of this study is structured as follows. Section 2 reviews the related previous studies on calendar anomalies. Section 3 provides the research method, while Section 4 discusses the findings and their implication. Finally, Section 5 concludes the study.

2. Literature Review

Calendar anomaly is an anomaly in the stock market that relates to calendar. Brooks (2004) defines it as the inclination of stock returns to show organized fashions at certain period, i.e., day week, month or year. There is various type of calendar anomalies include the effects of the day, the week day, the week of the month, and the month of the year (Elton and Gruber, 1995). The presences of calendar anomaly in global stock markets contradict the market efficient hypothesis of the weak-form form due to their prices predictability.

Many previous studies on calendar anomalies focused on the developed and emerging stock markets. For examples, studies on anomalies in the stock markets of the US (Gibbons and Hess, 1981), Russia (Compton et al., 2013), Canada (Tinic et al., 1987), Japan (Kato and Schalheim, 1985), eastern Europe (Ajayi et al., 2004), Greece (Floros, 2008), Jordan (Maghayereh, 2003), Nigeria and Zimbabwe (Ayadi et al., 1998), Thailand (Chan et al., 1996; and Tangjitprom, 2011), China (Gao and Kling, 2005), Bangladesh (Bepari and Mollik, 2009; and Rahman and Amin, 2011); India (Raj and Kumari, 2006), Pakistan (Khan et al., 2014), and Malaysia (Muhammad and Rahman, 2010).

Meanwhile, the studies on the stock market of Indonesia have been scare considering the potential market in the region. Several studies have explored the day of week effect (Kamaluddin, 2004), the week-four effect and the January effect (Cahyaningdyah, 2005), the Monday effect (Sumiyana, 2008), the weekly and monthly effects (Iskamto, 2015), the month of year and the turn-of-year effects (Faisal and Majid, 2016). The studies found mixed evidences; few documented the presences of the anomalies, while few others did not.

Among the studies found the existences of calendar anomalies in the stock markets include Rozeff and Kinney (1976), Haugen and Jorion (1996) in the US, Kato and Schalheim (1985) in Japan, Tinic et al. (1987) in Canada, Chan et al. (1996) and Muhammad and Rahman (2010) in Malaysia and Singapore, Ayadi et al. (1998) in Ghana, Kamaludin (2004), Cahyaningdyah (2005), Sumiyana (2008), Faisal and Majid (2016), and Majid et al. (2016) in Indonesia, and Gao and Kling (2005) in China. Meanwhile, the non-existences of the calendar anomalies were found by Chan et al. (1996) in Thailand, Ayadi et al. (1998) in Nigeria and Zimbabwe, Maghayereh (2003) in Jordan, Raj and Kumari (2006) in India, Bepari and Mollik (2009) in Bangladesh, Floros (2008) in Greece, and Iskamto (2015) in Indonesia.

Previous studies provide explanation for the presence of the calendar anomalies. According to Branch (1977), Givoly and Ovalia (1983), and Tangjitprom (2011), it existed due to the tax-loss selling hypothesis, showing that the loss in December to reap benefits of tax within the year investors. On the other hand, Lakonishok et al. (1991) and Ng and Wang (2004) claimed that, the calendar anomalies existed due to the window dressing hypothesis, explaining that institutional investors would attempt to avoid loss of stock prior to the end of every quarter, particularly during the end quarter of the year to show good performance of their portfolio investment. Next, Ogden (1990) stated that the liquidity hypothesis could explain the calendar anomaly phenomenon if dividends, interest, and salaries which are accumulated normally at the end of the month leads to ascend the purchasing demands during the time. Another reason is probably because of some flows of informational form, for example, announcement of positive earnings might cluster around the commencement of the month. Finally, the calendar effects are present caused by the pattern of information flows, which is related to macroeconomic forces or company's specific determinants. For instance, company might release bad news more often on Friday, after the session closed to allow assimilation of information by investors to purchase or and sale stocks (Damodaran, 1989; and Steeley, 2001).

The above reviewed literatures have focused their analysis on the calendar anomalies in the conventional advanced and emerging stock markets, and limited researches have investigated the calendar anomalies in both Islamic and conventional stock markets, especially in Indonesia. Thus, this study intends to fill the existing gap in the literatures by investigating three kinds of calendar anomalies, namely the weekend, January, and Ramadan effects.

3. Research Method

Daily stock indices spanning from December 1, 2009 to January 30, 2014 were utilized in this study. As for the Islamic stock market, the daily closing stock index of Jakarta Islamic Index (JII) were used, while the daily closing stock index of the LQ-45 were used for the conventional stock market.

As mentioned earlier, this study has two objectives, namely: (i) To empirically investigate the differences in returns between the Islamic and conventional stock markets; and (ii) To empirically explore the presences of calendar anomalies of the weekend effect, January effect, and Ramadan effect in both Islamic and conventional stock markets.

To answer the first objective of the study, the independent sample t-test is used to compare the mean differences between the Islamic and conventional stock returns. Referring to Aly et al. (2004), the stock returns of both stock markets are measured in the study as the following formula:

$R_{ti} = (P_{ti} - P_{ti-1})/P_{ti-1}$ .... (1a)
$R_{tc} = (P_{tc} - P_{tc-1})/P_{tc-1}$ .... (1b)

where R_{ti} is the Islamic stock return on day t, R_{tc} is the conventional stock return on day t, P_{ti} is the closing Islamic stock price on day t, P_{ci} is the closing conventional stock price on day t, P_{ti-1} is the closing Islamic price of the previous day's stock, and P_{tc-1} is the closing conventional price of the previous day's stock.

Finally, to empirically explore the presences of calendar anomalies of the weekend effect, January effect, and Ramadan effect in both Islamic and conventional stock markets, the following multiple regression models (Aly et al., 2004) were adopted.

For the Weekend effect:

$R_{ti} = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \beta_4 D_4 + \mu_t$ ....(2a)
$R_{tc} = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \beta_4 D_4 + \mu_t$ ....(2b)

where R_{ti} is the Islamic stock returns on day t, R_{tc} is the conventional stock returns on day t, β_0 is the intercept value, $\beta_1 - \beta_4$ are the average returns of each day (Monday, Tuesday, Thursday, and Friday), $D_1 - D_4$ are the dummy variable for each trading day which is between 1 or 0, and μ_t is the error term.

For the January effect:

$R_{ti} = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + ... + \beta_{11} D_{11} + \mu_t$ ....(3a)
$R_{tc} = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + ... + \beta_{11} D_{11} + \mu_t$ ....(3b)

where R_{ti} is the Islamic stock returns on day t, R_{tc} is the conventional stock returns on day t, β_0 is the intercept value, $\beta_1 - \beta_{11}$ are the average returns of each day (January, February, March, April, May, June, July, August, September, October and December), $D_1 - D_{11}$ are the dummy variable for each trading day which is between 1 or 0, and μ_t is the error term.

For the Ramadan effect:

$R_{ti} = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \mu_t$ ....(4a)
$R_{tc} = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \mu_t$ ....(4b)

where R_{ti} is the Islamic stock returns on day t, R_{tc} is the conventional stock returns on day t, β_0 is the intercept value, $\beta_1 - \beta_3$ are the average returns of each day (July, August, and September), $D_1 - D_3$ are the dummy variable for each trading day which is between 1 or 0, and μ_t is the error term.

Ramadan is the fasting month, where it is obligatory for all Muslim to do fasting one full month in a year. Fasting in whole month of Ramadan once in Islamic (Hijri) calendar year is the third pillar of Islam that should be obliged by all Muslim. At the end of the Ramadan month, the Muslims celebrate the Eid al-Fitr (one of the two joyous days in Islamic calendar).

However, before the regression models are estimated, the classical assumption tests were firstly conducted. These include the normality test to ensure the normally distribution of the data; the multicollinearity test to ensure the independent variables are non-correlated; the autocorrelation test to ensure the non-correlation between current and past error terms; and the heterocedasticity test to ensure the residual variance are similar.

4. Findings and Discussion

In this section, the descriptive statistics for both mean daily and monthly stock returns of both Islamic and conventional was reported first. In the next section, the findings for testing the mean differences in returns between the Islamic and conventional stock market would be reported. Finally, the findings for the presences of calendar anomalies of weekend, monthly, and Ramadan effects using the multiple regression models were presented.

4.1. Descriptive Statistics

Table 1 provided the descriptive statistics of the daily Islamic and conventional stock returns during the period December 1, 2009 to January 30, 2016. Table 1 showed that the mean daily stock returns were fluctuating across the trading days. As for the Islamic stock returns, the highest average returns were recorded on Tuesday (0.13%), followed by Wednesday (0.12%), Thursday (0.03%), Friday (-0.02%) and Monday (-0.20%). Meanwhile, for the conventional stock returns, the highest returns were documented on Wednesday (0.20%), followed by Thursday (0.10%), Tuesday (0.09%), Friday (-0.04%), and Monday (-0.30%).

These findings supported earlier evidences by Tandelilin (1999) who found that the 40 most active stocks traded in the Jakarta Stock Exchange over the period from January to December 1996 have recorded the highest positive returns on Tuesday, Wednesday, and Friday, but their returns were negative on the Monday and Thursday. Similarly, Cahyaningdyah (2004) also found that the 73 most active stocks in 2001-2003 in Indonesia recorded the lowest returns on Monday, but the highest return was found on Friday, indicating the presence of weekend effect in the stock markets.

Stock Market	Day	Minimum	Maximum	Mean	Std.deviation
Islamic	Monday	-7.70	3.70	-0.20	1.90
	Tuesday	-4.00	3.10	0.13	1.60
	Wednesday	-4.70	4.60	0.12	1.70
	Thursday	-2.70	6.10	0.03	1.60
	Friday	-3.40	3.80	-0.02	1.50
	Mean	-4.50	4.30	0.00	1.60
Conventional	Monday	-7.00	3.20	-0.30	1.70
	Tuesday	-3.70	2.30	0.09	1.40
	Wednesday	-3.60	4.30	0.20	1.30
	Thursday	-3.00	4.80	0.10	1.00
	Friday	-3.30	3.80	-0.04	1.30
	Mean	-4.10	3.70	0.00	1.40

Table 1: Descriptive Statistics of Daily Stock Returns (In %)

Table 2 reported the descriptive statistics of average monthly stock returns for both stocks, Islamic and conventional. Similar to the daily stock returns, the monthly returns of both Islamic and conventional stock markets were also fluctuating across the study period. As for the Islamic stock market, during March the mean returns were found to be the highest by 6.38%, followed by October (4.8%). April (4.03%), September (2.95%), December (2.51%), July (2.37%), February (1.89%), January (0.28%), June (-0.14%), August (-3.10%), November (-3.40%), and May (-4.61%). Meanwhile, the highest returns for the conventional stock market was also documented in March by 5.07%, followed by October (4.51%), April (3.46%), December (3.19%), September (2.49%), February (1.87%), July (1.63%), January (-0.19%), June (-0.33%), August (-3.20%), November (-3.60%), and May (-4.63%).

Stock Market	Month	Minimum	Maximum	Mean	Std.deviation
Islamic	January	-12.5	5.5	0.28	8.57
	February	-1.4	6.1	1.89	3.32
	March	1.2	12.5	6.38	4.74
	April	-0.6	8.4	4.03	3.72
	May	-10.1	0.1	-4.61	5.08
	June	-4.3	6.5	-0.14	4.72
	July	-11.3	8.5	2.37	9.22
	August	-5.2	0.2	-3.1	2.32
	September	-8.1	12.1	2.95	9.85
	October	-3.9	9.0	4.8	6.04
	November	-7.1	0.01	-3.4	2.87
	December	-0.6	5.6	2.51	2.57
	Average	-5.3	6.2	1.16	5.25
Conventional	January	-12.2	4.3	-0.19	8.04
	February	-0.9	6.2	1.87	3.08
	March	-0.2	9.6	5.07	4.29
	April	-0.8	7.7	3.46	3.49
	May	-10.1	-0.2	-4.63	4.24
	June	-4.8	4.3	-0.33	3.75
	July	-9.4	5.9	1.63	7.38
	August	-6.9	0.2	-3.2	3.05
	September	-9.4	12	2.49	9.42
	October	-3.6	9.7	4.51	5.76
	November	-6.4	-1.4	-3.6	2.04
	December	1.4	4.2	3.19	1.26
	Average	-5.3	5.2	0.85	4.65

Table 2: Descriptive Statistics Monthly Stock Returns (In %)

4.2. Differences in Returns between the Islamic and Conventional Stock Markets

As observed from Table 2, on the average, the mean returns of Islamic stocks were found to be higher (1.16%) than their conventional counterparts (0.85%). However, to arrive at the conclusive empirical finding- which stock is recorded higher returns, the empirical test using the independent sample t-test need to be conducted.

Table 3 reported the finding of differences in returns between the Islamic and conventional stock markets using the independent sample t-test. However, to conduct the test, the study needed to check for the variances of the variables first whether they are equal or unequal. For this purpose, the Levene test is adopted. As observed from Table 3, the

Levene's test for equality of variances was found to be significant at the 5% level, indicating that the variances of the variables were dissimilar. Thus, this study used the assumption of unequal variances to test for differences in the two stock returns using the independent sample t-test. The study found that there no significant differences in the mean returns between the Islamic and conventional stock markets. The higher mean returns of Islamic stocks as compared to their conventional returns were simply due to the sampling errors. This finding indicated that the investors who invest their monies in the Islamic and conventional stock markets would gain similar mean returns.

Test		Assumptions of Returns	
		Equal variances	Unequal variances
Equality of Variances	F-statistics	9.432	
	Significant value	0.003	
	Q-statistics.	0.342	0.543
	Degree of freedom	3416	3304.321
Equality of Means	Significance (2-tailed)	0.814	0.814
	Mean Difference	0.000	0.000
	Std. Error Difference	0.000	0.000

Table 3: Testing of Mean Differences in Stock Returns

The similar returns gained by the investors who purchased both Islamic and conventional stock markets further implied that the Islamic stock market become more integrated with their conventional counterparts (Karim and Majid, 2009). Both stock markets have responded to the available information, including macroeconomic variables (Yusof and Majid, 2007) locally and international, thus lead to similar movements of their stock prices. Our finding supported earlier finding by Hanafi and Hanafi (2012) and Majid et al. (2016) who documented no significant different between the Islamic stock returns and conventional stock returns in Indonesia.

4.3. Calendar Anomalies in the Islamic and Conventional Stock Markets

Before exploring the presence of calendar anomalies in the stock markets, as stated earlier, the classical assumptions of normality, multicollinearity, autocorrelation, and heterocedasticity were firstly tested. The study found that all the classical assumptions were fulfilled by the data. For the brevity and to conserve the space, the detailed findings of these classical assumption tests were not reported here.

After ensuring all the classical assumptions were fulfilled, the study then proceeded to investigate the existence of three calendar anomalies using the multiple regression analyses. Table 4 reported the findings of the presence of weekend, January, and Ramadan effects in both Islamic and conventional stock markets in Indonesia.

Calendar Anomaly	Model	Islamic Stock Market		Conventional Stock Market	
		t-statistics	p-value	t-statistics	p-value
Weekend Effect	Constant	0.532	0.600	0.765	0.654
	Monday	-1.345	0.327	-1.231	0.333
	Tuesday	0.018	0.887	-0.432	0.678
	Thursday	-0.311	0.677	-0.657	0.523
	Friday	-0.532	0.564	-0.876	0.645
January effect	Constant	-1.212	0.312	-1.432	0.234
	January	0.786	0.666	0.876	0.432
	February	1.321	0.332	1.654	0.321
	March	2.211	0.037*	2.654	0.042*
	April	1.854	0.091**	1.786	0.081**
	May	-0.341	0.811	-0.333	0.612
	June	0.814	0.543	0.987	0.354
	July	1.444	0.213	1.543	0.222
	August	0.086	0.876	0.321	0.876
	September	1.633	0.321	1.765	0.321
	October	2.121	0.037*	2.312	0.043*
	December	1.600	0.231	1.765	0.062**
Ramadan effect	Const ant	-0.213	0.765	0.243	0.654
	July	1.523	0.234	0.564	0.666
	August	- 0.325	0.976	- 0.412	0.876
	September	-1.142	0.423	-1.643	0.412

Table 4: Calendar Anomalies in the Islamic and Conventional Stock Markets
*Note: * and ** Indicate Significance at the 5% and 10% Levels, Respectively*

As observed from Table 4, the study found no weekend and Ramadan effects in both Islamic and conventional stock markets in Indonesia over the period from December 2009 to January 2016. This finding indicated that the abnormal returns could not be gained by the investors during the weekend and the month of Ramadan, findings supported the presence of efficient market hypothesis in the weak-form in Indonesia. This finding is similar to study by Rodoni (2004) who found no weekend effect in the conventional stock market of Indonesia.

Furthermore, the similar finding of no presences of weekend and Ramadan effects in both Islamic and conventional stock markets in Indonesia further supported our earlier finding of no differences in the returns between both stocks in the biggest Muslim populous country in the world. These findings further confirmed that, if the investors only seek for gaining higher returns, thus investing either in Islamic stock or conventional stocks provide similar returns. However, as strongly believed by the Muslim, investing monies in the stock markets is not just for the sake of getting maximum profit, but it also for the gaining permissible (halal) profits. This only could be done by investing their monies in Islamic stocks which are free from the prohibited elements in Islam (i.e., riba, gharar, and maysir) (Majid and Yusof, 2007; Majid and Yusof, 2009; Ismail et al., 2013; and Majid and Kassim, 2015).

As for the January effect, however, the study documented the presence of this calendar anomaly in both markets that is in the months of March, April, and October for the Islamic stock market, and in the months of March, April, October, and December in the conventional stock markets. The presence of anomalies during these months in the Indonesian stock markets was partly due to the several events happened in the markets; include the announcement of increasing the price of oil, the political agenda of elections, and the turn-of-the year during December. The presence of January effect further indicated that the abnormal returns still existed and could be gained by the investing into the Islamic and conventional stocks. These findings also implied that the Indonesian stock markets are not fully efficient, finding contradicted to the market efficient hypothesis.

5. Conclusion

This study empirically explored the differences in returns between the Islamic and conventional stock returns in Indonesia during the period from December 2009 to January 2016. It also attempted to empirically investigate the effects of weekend, January, and Ramadan effects on both stock markets. Based on the independent t-test, the study found that there was no significant difference in returns between Islamic and conventional stock returns. This finding indicated that both Islamic and conventional stock markets have become more integrated in the country.

Furthermore, based on the multiple regression analysis, the study found the presence of January effect in both Islamic and conventional stock markets in Indonesia. On the contrary, as for the weekend and Ramadan effects, the study documented no significant effects on the returns of both Islamic and conventional stocks markets in Indonesia. These findings implied that the investors still could gain abnormal returns by diversifying their investment into both Islamic and conventional stock market during certain months in Indonesia.

Further studies on the calendar anomaly are suggested to investigate wider aspects of calendar anomalies, adopt a longer data period, and focus on wider geographical areas of the globe including both Islamic and conventional stocks to provide more robust empirical findings.

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