The Impact Of Ramadan On Abnormal Returns Toward Indonesia Stock Exchange (IDX) (Case Study On Jakarta Islamic Index Year 2014-2018)

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ABSTRACT: The Holy Month of Ramadan which is one of the biggest Islamic event that occurred annually may bring an impact of economic activities in a country that majority people is a Muslim. IDX as a capital market of Indonesia and 87% of total population are Muslim which considered as the majority have a vital role in elaborating the economic condition. This study aims to examine the seasonal anomaly (Ramadan Effect) by conducting an event study. Data that used are secondary data which gathered through purposive sampling method on companies listed in Jakarta Islamic Index. Average abnormal return (AAR) was used to measure and compare data before, at the moment, and after Ramadan from year 2014 until 2018. Cumulative average abnormal return (CAAR) was also used to measure and compare data during Ramadan. Market-adjustment model has been used for 7-days before Ramadan until 7-days after Ramadan. The result on Kolgomorov-Smirnov and Sharpio-Wilk test showed the data is normally distributed on all AAR and CAAR data. Using One-way Anova to test AAR showed the phenomena of Ramadan is not significantly impact. Same result occurred on CAAR using Paired Sample T-Test showed between 1st day and 5th, 10th and 15th inside Ramadan are not significantly impact.
KEY WORD: Event Study, Ramadan, Average Abnormal Return, Cumulative Average Abnormal Return, Market-Adjustment Model
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Date of Submission: 30-06-2019   Date of acceptance: 20-07-2019

I. INTRODUCTION AND LITERATURE REVIEW

Capital markets of any country plays a vital role in elaborating the economic condition of that country. It facilitates company to get fund easily then boost national economy to be better, create more jobs opportunity, and increase tax income for government. But, capitalist economic system that accused as a trigger of global crisis which marked by decreasing in stock price value around the world make some people switch to implement sharia economic system includes in banking and capital market. Sharia capital market can be interpreted as a capital market that implementing sharia principal in economic transaction activity and detached from things which forbidden such as: usury, gambling, speculation and etc.

The general difference between conventional capital market with sharia capital market can be seen from instrument and transaction mechanism, where stocks in sharia capital market must from companies that moves in particular sectors which meets in sharia principal and avoid various speculation or gamble practices in transaction activity (Dewan Syariah Nasional - Majelis Ulama Indonesia 2011)

Sharia capital market is developed in order to fulfill Muslims needs in investing capital market products according to basic sharia principal. Various products and facilitation will help lots of people to choose investment alternatives which suit to him/her, besides common investment and developed in banking sector such as deposit and etc.

In Indonesia, stocks are traded through stock exchange called Indonesia Stock Exchange (IDX). Besides stocks, IDX serves another transaction such as obligations, warrant, options and others. IDX also provide indicator number which functions as average price of listed stocks. Stock indices that provided by IDX have several categories, where the total is 21 stocks indices, such as Jakarta Islamic Index (JII), IndeksHargaSahamGabungan (IHSG), Liquidity 45 (LQ45), Kompas100, Indonesia Sharia Stock Index (ISSI), and others.
IDX determined and selected the Islamic shares on JII constituents. The liquidity criteria used in selected 30 Islamic shares on JII constituents are follows(Islamic Stock Index 2018):
1. Sharia stocks that are included in the constituents of Indonesia Sharia Stocks Index (ISSI) that have been recorded for the last 6 months
2. Selected 60 stocks based on the highest average order of market capitalization during the past 1 year

3. Of the 60 stocks, then selected 30 stocks based on the highest average daily transaction value in the regular market.
4. 30 stocks remaining are the selected stocks.

From the results of various studies, it was found that market efficiency concept often suffer deviation, which called market anomalies. Causative factor of these anomalies is difficult to explain exactly, even with various research that have been done. In the event of market anomalies found things that should not be happen when market efficient is truly exist. This means, an event can be used for investors to gain abnormal return. In financial theory, also known at least four kind of market anomalies, which are: firm anomalies, seasonal anomalies, event anomalies, and accounting anomalies (Gumanti 2011).

Ramadan Effect is one type of market anomaly which is seasonal anomaly that quite interesting because company's stock price with high seasonal sales tend to rise during the month of Ramadan than usual trading day. Ramadan is the occasion of pursuing the temper and judgment of the believers. Throughout Ramadan for about one month, Muslim are engaging to search for a closer affiliation by Allah and chase a place of approved principles of behavior proposed to formulate them turn into improved Muslims and further accountable component of society, which can develop their way of thinking of self-esteem (Ali 2015).

Figure 1: JII Stocks Movement when Ramadan Occurred in 2014
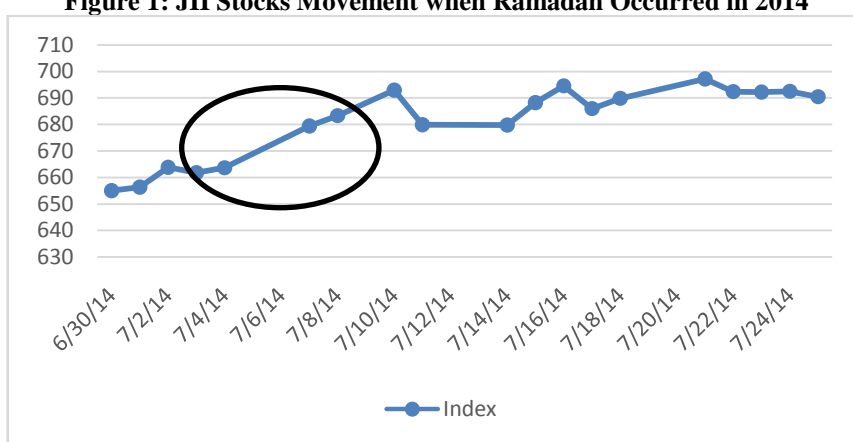
Source: finance.yahoo.com

Figure 2: JII Stocks Movement when Ramadan Occurred in 2018
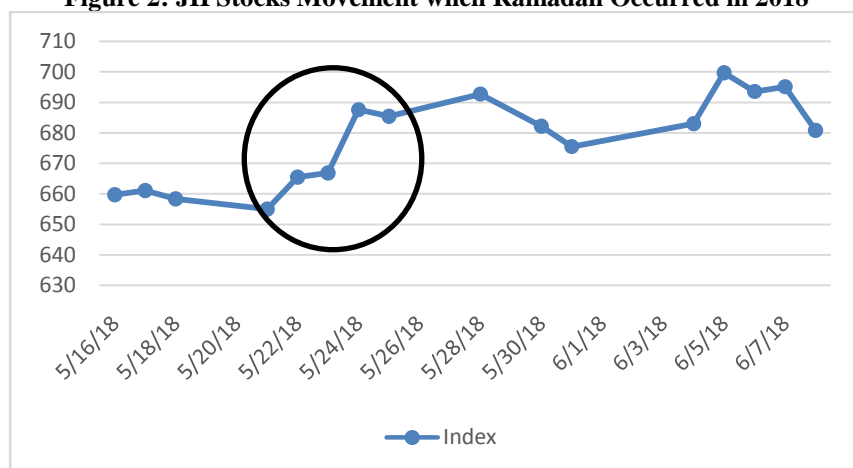
Source: finance.yahoo.com

Figure 1 and 2 are the price index of JII when Ramadan occur in 2014 and 2018. Picture 1.2 shows JII stocks movement increase gradually start from June 30th until July 24th, 2014 but the significant increase happened after seven days of the beginning of Ramadan. Picture 1.3 shows different things, when Ramadan occur in 2018 between May 16th and June 14th, the chart showed increasing price of stocks in JII but it is fluctuated, the significant increase happened in May 24th but then drop prominently in the next few days.

When market anomalies occur, it is possible for investors to get additional profit due to inefficient market which affect actual return may have significant difference with expected return. There are several

models can be used to count abnormal return of stocks, such as mean-adjusted model, market model, and market-adjusted model.

(Al-Khazali et. al, 2017) did a research about the impact of Ramadan on 15 Muslim countries from December 31, 2005 until December 31, 2015. They divided into two periods of five years each (a pre-Arab spring sub-period covering the period from December 31, 2005 to December 17, 2010, and a post-Arab spring sub-period from December 18, 2010 to December 31, 2015). They apply an ARMAX-GARCH framework to examine the impact of Ramadan on stock return and volatility on daily basis. They also tested the Ramadan effect on the returns and the conditional volatility using dummy variable to examine the first 10 days, the second 10 days, and the last 10 days of Ramadan and extended to include the seven days post-Ramadan. The first result, the general positive mood of the population that exists throughout the period of Ramadan has a positive impact on stock returns per unit of risk. Second, they observe that the increase in return and decrease in volatility during Ramadan is mainly affected by religious practice and not by political uncertainty of Arab Spring.

(Jędrzej Białkowski et. al, 2012) conducted a research to prove that mutual fund managers exploit the Ramadan anomaly in order to gain maximum profit from Turkish stock market within time period from January 2000 until March 2011. The sample are from 166 domestic and 30 foreign mutual funds. They did the research on two differences model of mutual fund, the first one is Type A which have an obligation to invest at least 25% of their assets in equities that issued by Turkish companies. The second one is Type B, which has no obligation same as Type A and this type usually invest in fixed income securities such a treasury paper or bond. The result, domestic mutual funds earn positive and significant risk-adjusted returns during Ramadan over the 2000 to 2011 period and for foreign mutual funds also deliver risk-adjusted returns during Ramadan that are more than three times larger than during the other months.

(Shah, 2014) did a research about the impact of Ramadan on Pakistan stock market called Karachi Stock Exchange using KSE 100 index, start from January 1, 2010 until December 31, 2012. The researcher using dummy variable and regression analysis technique to measure the change on stock market during Ramadan. To check the effect of Ramadan on stock market, the financial software of EViews is used to calculates the p-value, t-value, R square and Durban Watson. The result, the market remains the same during Ramadan as any other month of the year.

(Sonjaya, 2016) conducted a research about the impact of Ramadan effect on 10 Muslim majority countries from 1989 until 2013. The researcher was using three models to estimate normal return using market, constant-mean and market-adjusted models. Then, using cumulative abnormal return since the time related are long. The observation period is seven days before, at the moment, and seven days after Ramadan. The result, Ramadan effect is persistently present in only three Muslim-majority countries: Kuwait, Oman and Tunisia.

With this, the primary objectives of the paper are to Identify whether there was a significance difference of average abnormal return on companies that listed on JII before, at the moment and after Ramadan year 2014-2018 and Identify whether there was a significance difference of cumulative average abnormal return on companies that listed on JII when Ramadan occurred in 2014-2018.Therefore, structure of the paper is organized as follows. Section 1.1 of the paper introduces the concept and tried to justify the possible reasons behind the study through a brief review of literature. Section 1.2 clearly mentioned the basic research objectives of the paper. Section 1.3 clarifies the data and methodology of the paper. Finally, section 1.4 interprets the result and concludes

1.2 Research Objectives
The objective of the research are:
1. Identify whether there was a significance difference of average abnormal return on companies that listed on JII before, at the moment and after Ramadan year 2014-2018.
2. Identify whether there was a significance difference of cumulative average abnormal return on companies that listed on JII when Ramadan occurred in 2014-2018.

1.3 Research Methodology and Data Analysis
Author analysed the secondary data that already collected and test the hypothesis to know how significant is the impact. Phase of data analysis of this research as follows:
a. Define event window or event period
Event window of this research is more or less 44-days, which are 7-days before, 30-days when Ramadan occur, and 7-days after each years. It is based on the previous research that use 7-days before and after Ramadan as event window (Sonjaya, 2016). There is no estimation period for using Market-adjusted Model.
b. Calculate Return

$$\text{Stock Return} = \frac{P_t - P_{t-1}}{P_{t-1}} \times 100\%$$

Where:
P_t = Stock price on day t

P_{t-1} = Stock price on day t-1

c. Calculate Abnormal Return by Market-adjusted Model

$$AR_{i,t} = R_{i,t} - [R_{i,t} - R_{m,t}]$$

Where:

$AR_{i,t}$ = Abnormal return of i-securities on –t time

$R_{i,t}$ = Actual return of i-securities on –t time

$R_{m,t}$ = Actual return of market index on –t time

d. Calculate Average Abnormal Return

$$AAR_t = \frac{\sum_{i=1}^{k} AR_{i,t}}{k}$$

Where:

AAR_t = Average abnormal return on –t time

$AR_{i,t}$ = Abnormal return of i-securities on –t time

k = Amount of securities that affected by event

e. Calculate Cumulative Average Abnormal Return

$$CAAR_t = \sum_{i=1}^{k} AAR_t$$

Where:

$CAAR_t$ = Cumulative average abnormal return of i-securities on –t time

AAR_t = Average abnormal return of i-securities on –t time

k = Amount of securities that affected by event

f. Null hypothesis (H_0) and Alternative Hypothesis (H_a) Formulation

H_{01}: There is no significant difference of average abnormal return before, at the moment, and after Ramadan on Jakarta Islamic Index (JII) year 2014-2018.

H_{a1}: There is a significant difference of average abnormal return before, at the moment, and after Ramadan on Jakarta Islamic Index (JII) year 2014-2018.

H_{02}: There is no significant difference of cumulative average abnormal return when Ramadan occurred on Jakarta Islamic Index (JII) year 2014-2018.

H_{a2}: There is a significant difference of cumulative average abnormal return when Ramadan occurred on Jakarta Islamic Index (JII) year 2014-2018.

g. Determine Significance level

Significance level (α) that used in this research is 5% or with 95% of Confidence level

h. Normality Distribution Testing

To test normality data, this research use Kolmogorov-Smirnov (K-S Testing) andSharpio-Wilk(S-W Testing), that is comparing asymptotic significance(2-tailed) with α = 0,05. The criteria to define data normality as below:

1. If Asymp. Sig. (2-tailed) ≤0.05, data is not normally distributed

2. If Asymp. Sig. (2-tailed) >0.05, data is normally distributed.

i. Hypothesis Testing

There are two hypothesis testing, the first one is to find the significant difference of AAR before, at the moment and after Ramadan occurred year 2014 until 2018, and the second is to find the significant difference of CAAR inside Ramadan that occurred year 2014 until 2018. The hypothesis' are:

a. The research of finding significant difference of AAR is using one-way ANOVA, if the result of normality test is normal or using Kruskal-Wallis test if the result of normality test is abnormal.

The defined criteria in paired sample t-test method if the data is normally distributed as follows:

1. If significance (P value) t< 0,05, so H_{01} rejected and H_{a1} accepted. It means there is a significant difference between abnormal return on companies' category JII before, at the moment and after Ramadan year 2014-2018.

2. If significance (P value) t > 0,05, so H_{01} accepted and H_{a1} rejected. It means there is no significant difference between abnormal return on companies' category JII before, at the moment and after Ramadan year 2014-2018.

But if the data is not normally distributed, the defined criteria in using Kruskal-Wallis test as follows:

1. If significance (P value) t< 0,05, so H_{01} rejected and H_{a1} accepted. It means there is a significant difference between abnormal return on companies' category JII before, at the moment and after Ramadan year 2014-2018.

2. If significance (P value) t > 0,05, so H_{01} accepted and H_{a1} rejected. It means there is no significant difference between abnormal return on companies' category JII before, at the moment and after Ramadan year 2014-2018.

If the result H_{01} rejected and H_{a1} accepted after doing ANOVA test, then continue to Post hoc Test.

b. The research of finding significant difference of CAAR is using paired sample t-test if the result of normality test is normal or using Wilcoxon test if the result of normality test is abnormal.

The defined criteria in paired sample t-test method if the data is normally distributed as follows:

1. If significance (P value) t< 0,05, so H_{02} rejected and H_{a2} accepted. It means there is a significant difference of cumulative average abnormal return inside Ramadan on certain dates year 2014 until 2018.
2. If significance (P value) t > 0,05, so H_{02} accepted and H_{a2} rejected. It means there is no significant difference of cumulative average abnormal return inside Ramadan on certain dates year 2014 until 2018.

But if the data is not normally distributed, the defined criteria in using Wilcoxon test as follows:

1. If significance (P value) t< 0,05, so H_{02} rejected and H_{a2} accepted. It means there is a significant difference of cumulative average abnormal return inside Ramadan on certain dates year 2014 until 2018.
2. If significance (P value) t > 0,05, so H_{02} accepted and H_{a2} rejected. It means there is no significant difference of cumulative average abnormal return inside Ramadan on certain dates year 2014 until 2018.

1.3.1   Data Analysis to examine whether Average Abnormal Return before, at the moment and after Ramadan Year 2014 until 2018 have significant difference

In this research, the author uses average abnormal return before, at the moment and after Ramadan year 2014-2018, where N Before_Rmd consist of 7-days before Ramadan for five years, Moment_Rmd with average 19 days for five years, and After_Rmd consist of 7-days after Ramadan for five years.

Table 1: Average Abnormal Return Descriptive Statistics

AAR (%)	N	Mean	Std. Deviation	Minimum	Maximum
Before_Rmd	35	.1016	.67332	-1.20	1.76
Moment_Rmd	95	-.0144	.63107	-1.66	1.70
After_Rmd	35	.1970	.97439	-1.57	2.86
Total	165	.0551	.72571	-1.66	2.86

Table 1 shows the mean before Ramadan was 0.1% then decrease when Ramadan occurred with -0.01% but significantly increase after Ramadan with 0.197%. The lowest standard deviation is happened when Ramadan occurred with 0.631 and the highest is happened after Ramadan as many as 0.974.

In the research, Author use Kolmogorov-Smirnov and Sharpio-Wilk test to know whether the data is normally distributed or not. Average abnormal return grouped into three, namely Before_Rmd, Moment_Rmd and After_Rmd. Before_Rmd variable consist of 7-days average abnormal return before Ramadan occurred year 2014 – 2018. Moment_Rmd variable consist of more-less 30-days average abnormal return when Ramadan occurred year 2014 – 2018. After_Rmd consist of 7-days average abnormal return after Ramadan occurred year 2014 – 2018. Data is normally distributed if Sig. value is more than significance level of (α=5%). If the Sig. value is less than the significance level of (α=5%), it means the data is not normally distributed. The normality test of cumulative average abnormal between Before_Rmd, Moment_Rmd and After_Rmd are stated as follows:

Table 2: Average Abnormal Return Normality Test

	Time	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
AAR (%)	Before_Rmd	.118	35	.200[*]	.976	35	.636
	Moment_Rmd	.056	95	.200[*]	.986	95	.439
	After_Rmd	.094	35	.200[*]	.971	35	.466

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

From Table 4.8, Sig. value of Kolmogorov-Smirnov and Sharpio-Wilk for all variable (Before_Rmd, Moment_Rmd and After_Rmd) are more than the significance value (p > 0.05). From the information above, it can be concluded that the data is normally distributed. Therefore, the hypothesis testing of cumulative average abnormal return will be conducted with One-way ANOVA.

Hypothesis testing is used to examine whether The Holy Month of Ramadan give significant difference of return or not for companies that listed on Jakarta Islamic Index. Month of Ramadan will give significant difference of return to companies that listed on JII if Sig. (2-tailed) less or equal than significant value (p ≤0.05). Otherwise, it will give no significance difference of return if Sig. (2-tailed) is more than significant value (p > 0.05). Average abnormal return hypothesis testing by One-way ANOVA is stated as below:

Table 3: Average Abnormal Return One-Way ANOVA Test

AAR (%)	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.240	2	.620	1.180	.310
Within Groups	85.131	162	.525		
Total	86.371	164			

From table 3, hypothesis testing of average abnormal return 7-days before, at the moment and 7-days after Ramadan variable shown Sig. (2-tailed) of all pair are more than significant level (p > 0.05). It means that The Holy Month of Ramadan have no significant difference of average abnormal return on companies that listed on Jakarta Islamic Index during the event period.

1.3.2 Data Analysis to examine whether Cumulative Average Abnormal Return during Ramadan Year 2014 until 2018 have significant difference

In this research, the author uses cumulative average abnormal return inside the moment of Ramadan year 2014-2018 to measure the significances from the first day of Ramadan represented by CAAR (n_1, n_2), where n_1 is the first day of Ramadan and n_2 is the last day of event period, which in this research means the 5th, 10th, and 15th as the last day of event period.

Table 4: Cumulative Average Abnormal Return Descriptive Statistics

		Mean	N	Std. Deviation
Pair 1	N_1	.2986	5	.91997
	CAAR (0,5)	1.0203	5	1.26283
Pair 2	N_1	.2986	5	.91997
	CAAR (0,10)	.4583	5	2.24214
Pair 3	N_1	.2986	5	.91997
	CAAR (0,15)	.5735	5	2.43829

Table 4 shows the highest mean was happen on the 5th of Ramadan with 1.02% and decrease on 10th with 0.458% but increasing on 15th with 0.573%. The lowest standard deviation occurred on 5th of Ramadan as many as 1.26283, whereas the highest value of standard deviation is occurred on 15th of Ramadan with 2.43829, it means the data distribution is farther than the day before.

In this research, Author also use Kolmogorov-Smirnov and Sharpio-Wilk test to know whether the data is normally distributed or not. Cumulative Average Abnormal Return divided into four, namely N_1, CAAR (0,5), CAAR (0,10) and CAAR (0,15). N_1 variable consist of cumulative average abnormal return of 1st day of Ramadan year 2014 until 2018. CAAR (0,5) variable consist of cumulative average abnormal return of 1st day until 5th day of Ramadan year 2014 until 2018. CAAR (0,10) variable consist of cumulative average abnormal return of 1st day until 10th day of Ramadan year 2014 until 2018. CAAR (0,15) variable consist of cumulative average abnormal return of 1st day until 15th day of Ramadan year 2014 until 2018. Data is normally distributed if Sig. value is more than significance level of (α=5%). If the Sig. value is less than the significance level of (α=5%), it means the data is not normally distributed. The normality test of cumulative average abnormal between CAAR (0,5), CAAR (0,10) and CAAR (0,15) are stated as follows:

Table 5: Cumulative Average Abnormal Return Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
N_1	.201	5	.200[*]	.939	5	.660
CAAR(0,5)	.230	5	.200[*]	.950	5	.735
CAAR(0,10)	.249	5	.200[*]	.944	5	.692
CAAR(0,15)	.237	5	.200[*]	.950	5	.740

[*]. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

From Table 5, Sig. value of Kolmogorov-Sminrov and Sharpio-Wilk for all variable (N_1, CAAR (0,5), CAAR (0,10) and CAAR (0,15)) are more than the significance value (p > 0.05). From the information above, it can be concluded that the data is normally distributed. Therefore, the hypothesis testing of cumulative average abnormal return will be conducted with Paired Sample T-Test.

Hypothesis testing is used to examine whether The Holy Month of Ramadan give significant difference of return or not for companies that listed on Jakarta Islamic Index. Month of Ramadan will give significant difference of return to companies that listed on JII if Sig. (2-tailed) less or equal than significant value (p ≤

0.05). Otherwise, it will give no significance difference of return if Sig. (2-tailed) is more than significant value (p > 0.05). Cumulative average abnormal return hypothesis testing by Paired Sample T-Test is stated as follows:

Table 6: Cumulative Average Abnormal Return Paired Sample T-Test

Pair	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
N₁ - CAAR(0,5)	-.72175	.84112	.37616	-1.76613	.32264	-1.919	4	.127
N₁ - CAAR(0,10)	-.15973	1.39529	.62399	-1.89221	1.57274	-.256	4	.811
N₁ - CAAR(0,15)	-.27497	1.62565	.72701	-2.29348	1.74355	-.378	4	.724

From table 6, hypothesis testing of cumulative average abnormal return CAAR (0,5), CAAR (0,10) and CAAR (0,15) variable shown Sig. (2-tailed) of all pair are more than significant level (p > 0.05). It means that The Holy Month of Ramadan have no significant difference of cumulative average abnormal return on companies that listed on Jakarta Islamic Index during the event period.

1.4 Findings and Interpretation

From table 1, it could imply that average abnormal return for five years is declining when Ramadan occurred but increasing after Ramadan occurred. The reason might be the trading volume activity that decreasing when Ramadan occurred which is caused by investors funding is changing to preparation for Eid ul-Fitr and back to normal activity after Ramadan.(Market: Bisnis.com 2016).

The hypothesis testing of average abnormal return showed no significant difference although it has positive value on average abnormal return 7-days before and 7-days after Ramadan. It means investors could not gain significant profit toward Ramadan which is included into seasonal anomalies.

During Ramadan, Muslims can experience a whole series of emotions and moods, a positive emotion, such as optimism and social satisfaction or happiness, can create a cognitive change in the form of improvement in self-confidence and boldness in assessing a risky asset as well as in making investment decisions (Han et. al, 2007). This most likely will lead to optimistic behaviour, which in turn will affect Muslims' investment decision making. Cumulative average abnormal return is used to examine the behaviour of investors during Ramadan. In this research, the author tried to compare the 1st day of Ramadan to 5th, 10th and 15th of Ramadan.

Table 4 showed cumulative average abnormal return of the 1st day of Ramadan is lower than 5th, 10th and 15th during Ramadan, this could indicate during Ramadan, Muslim investors feel happier and more optimistic, driving the behavior of increasing the risky asset portion of their portfolio. This takes the form of purchasing more attractive stocks, increasing the stock prices to up. It is supported by the fact on table 7, cumulative average abnormal return in 2014 until 2016 are mostly on minus condition because more than 50% of domestic shares possessed by foreign investors that majority investors might be non-Muslims. But different in 2017 and 2018 that display positive conditions of cumulative average abnormal return because more than 50% of domestic shares held by domestic investors that majority investors might be Muslims.

Table 7: Cumulative Average Abnormal Return 2014 – 2018

	N₁	CAAR (5)	CAAR (10)	CAAR (15)
2014	0,0030	-0,0046	-0,0057	-0,0028
2015	-0,0039	0,0058	-0,0040	-0,0213
2016	-0,0065	0,0060	-0,0201	-0,0059
2017	0,0053	0,0146	0,0146	0,0165
2018	0,0170	0,0293	0,0381	0,0422

The hypothesis testing of cumulative average abnormal return showed no significant difference. It means the behaviour of investors in Indonesia is not affected by the presence of Ramadan despite positive values on the 5th, 10th and 15th during Ramadan.

From this research, it can be concluded that Indonesia Stock Exchange (IDX) using Jakarta Islamic Index as a market comparison is a semi-strong efficient market mode because there are abnormal returns that can be seen during the event period but it had no significant difference both average abnormal return and cumulative average abnormal return.

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