



PERFORMANCE OF ISLAMIC INDICES: RISK ADJUSTED RETURNS OF SHARIA COMPLIANT STOCKS ON JAKARTA ISLAMIC INDEX AND DOW JONES ISLAMIC TURKEY

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ABSTRACT

The purpose of this research was to analyze the performance of Islamic indices compared to their counterparts. The research elaborated the performance of Islamic index in developing countries, which were Indonesia and Turkey represented by Jakarta Islamic Index and Dow Jones Islamic Market Turkey. This research was conducted during the period of 2010 until 2014. Populations in this research were all of companies listed in Jakarta Islamic Index, Dow Jones Islamic Market Turkey and their counterpart index. While sample was determined by purposive sampling method to eliminated stocks listed in both Islamic and counterpart index (dual listing). Data collection techniques used was method of documentation, literature review and internet search. The result based on three risk adjusted performance measurements consist of Sharpe, Treynor and Jensen Alpha, Islamic index did not significantly result in poor performance compared to its counterpart. Moreover, Islamic index in Indonesia has insignificantly outperformed its counterpart LQ45 index, while in Turkey has insignificantly underperformed it counterpart Dow Jones Turkey Titans 20 index. This study also revealed that Sharia compliant did not significantly affect the performance of Islamic index related to risk and return payoffs. Therefore, investors who are concerns with investing in Sharia compliant stocks could also benefit by holding portfolio of investments adhering to Sharia principles.

Keywords : Risk Adjusted Performance, Sharia Compliant stocks, Islamic Index, Counterpart Index, Risk, Return

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1. INTRODUCTION

Islamic investment has become a new phenomenon after the global financial crises in year 2008. Islamic investment was able to moderate the consequences of capitalist financial system and proved to be more resilient to the financial shock (Kassim & Majid, 2010; Asutay, 2012). Thus, investors are more interested in Islamic investment which based on *Sharia* compliant as the basic tenets in investment activities. As a result, the global assets of Islamic Finance are estimated to be around \$1.5 trillion at the end of 2014 (Hayat, 2015). Moreover, a number of stock exchanges have also launched Islamic index to facilitate and accommodate *Sharia* compliant investments such as Dow Jones Islamic Market Index (DJIM), Financial Times Islamic Index Series (FTSE), Standard & Poor *Sharia* Index (S&P), Jakarta Islamic Index (JII), etc (Wilson, 2007).

Islamic stock index measures the performance of a certain group of securities which based on *Sharia* compliant to screen prohibited stocks (Powell & Delong, 2014). Islamic index excludes securities using two types of criteria: business activity and financial ratios (Habib & Ul Islam, 2014). Involvement of the primary business in *Riba*-based financial services; gambling; manufacture of non-*halal* products; conventional insurance; entertainment activities that are non-permissible according to *sharia*; manufacture or sale of tobacco-based products or related products; stock-broking or share trading in non-*sharia* approved securities are not permissible in the Islamic index (Kassim, 2010). *Sharia* compliants also do not allow investment in companies deriving significant income from interest or companies having excessive leverage, thus Islamic index uses financial restrictions to screen stocks. However, regarding the financial restrictions, different Islamic index requires different financial ratio to screen stocks.

Dow Jones Islamic Market Index (DJIM) requires upper limits of 33% for the debt ratio, 45% for the accounts receivables to total assets and 5% for the interest income to revenue (Listyaningsih & Krishnamurti, 2014). While, Jakarta Islamic Index (JII) uses 45%, 55%, and 10% respectively for debt ratio, account receivables to total assets and interest income from revenue (Listyaningsih & Krishnamurti, 2014). Having different screening criteria might lead to difference in returns (Albaity & Ahmad, 2011).

Moreover, the performance of *Sharia* compliant indices has resulted in a research gap which needs further examination. Few studies concluded that these investments underperform the conventional ones due to the lower diversification benefits (Hassan, 2002; Bauer et al., 2005). Habib et al (2014) found that Islamic index in India has underperformed the conventional index based on the return and risk adjusted measurement.

However, Hanafi (2012) found that JII does not result in poor performance compared to its counterparts. Powell & Delong (2014) also found that DJIM index performance has outperformed in return to the comparable conventional indices. Albaity and Ahmad (2011) found that stock market returns between three Islamic stock market indices, Kuala Lumpur Syariah Index (Malaysia), Dow Jones Islamic Market Index (US), and Financial Times Stock Exchange Global Islamic Index (UK) do not significantly different from their counterparts.

Despite the increasing attention and growth of Islamic equity market, empirical studies on Islamic index in developing countries are scarce. Past studies have more concerned on popular Islamic Market which are Malaysia, US and UK (Albaity & Ahmad, 2011). Therefore, this study is interested in comparing Islamic index in Indonesia and Turkey as most profitable index in developing countries (Chievo, 2011; GSIA Review, 2014). Moreover, both Indonesia and Turkey have Muslim as the majority of the population; therefore there is a large potential market for Islamic investment.

Based on the explanation above, researchers are interested in conducting a comparative study of both types of investments by comparing two Islamic indices from two different countries and their conventional counterparts with the proposition "Performance of Islamic Indices: Risk Adjusted Performance of *Sharia* Compliant Stocks (Study on Jakarta Islamic Index and Dow Jones DJIM Turkey for the years 2010-2014)".

2. DATA ANALYSIS METHOD

Type of this research was a comparative study which uses quantitative approach in order to obtain measurement data and interpretation of result analysis from problem formulation. The population and sample selection criteria in this study were presented as follow, **Conceptual and Operational of Variables :**

1. Index Return

Returns are calculated using the compounded return formula (Albaity & Ahmad, 2011). The calculation is done as follows:

$$R_{it} = \ln \left(\frac{P_{i,t}}{P_{i,t-1}} \right)$$

where R_{it} is the return for the index I at time t , $P_{i,t}$ is the price for the index i at time t and $P_{i,t-1}$ is the price of index i at time $t-1$.

2. Index Beta

Beta specifically is a measure of the volatility, or systematic risk, of a security or portfolio compared to the market as a whole (Klein et al., 2010: 335). Beta is calculated as a factor in the Capital Asset Pricing Model (CAPM) as represented below:

$$E(R_i) = R_f + \beta [E(R_m) - (R_f)]$$

Where $E(R_i)$ represents the expected return of the index (either JII or DJIMTR), R_f represents the risk free rate, R_m is the expected return on the market. For risk free rate of Indonesian Index, this study uses Treasury Bills of Indonesian Government. Then, risk free rate for Turkey Index use Turkey Government Bond.

3. Risk Adjusted Performance

While Beta calculation for each index is important to show the overall correlation of Islamic Index and its counterpart, it does not account for the risk associated with a portfolio that invests in the index (Powell & Delong, 2014). Since the Islamic indices and their index counterparts are not from the same category of risk, and since the raw returns are not adjusted for risk, it's necessary to utilize the Capital Asset Pricing Model (CAPM) in order to estimate the risk-adjusted returns (Hussein, 2005). There are three kind of risk-adjusted performance measurements commonly used by researchers to examine the performance of the index. These methods are:

a. Sharpe Ratio

Sharpe ratio divides average portfolio excess return over the sample period by the standard deviation of returns over that period. It measures the reward to (total) volatility trade-off. The Sharpe ratio is expressed as:

$$Sharpe = \frac{(R_i - R_f)}{\sigma_i},$$

Where R_i represents the return of the index, R_f is the risk-free rate and σ_i is the standard deviation of the index's returns (Kevin Dowd, 2000).

b. Treynor Ratio

Treynor ratio measures excess return per unit of risk, but it uses systematic risk instead of total risk (Hakim et al., 2004). The Treynor ratio is expressed as:

$$Treynor = (R_i - R_f) / \beta_i$$

Where R_i represents the return of the index, R_f is the risk-free rate and β_i equals the Beta of the index (Hakim et al, 2004).

c. Jensen Alpha

A disadvantage of the Treynor and Sharpe measures is that they produce relative, but not absolute, rankings of portfolio performance (Reilly & Brown, 2003). Jensen alpha has advantage over the Treynor and Sharpe, because it is estimated from a regression equation, it is possible to make statements about the statistical significance of the index's performance level, or the difference in performance levels between two different indices. The Jensen measure of performance requires using a different Risk Free Rate for each time interval during the sample period (Reilly & Brown, 2003).

Jensen's measure is the average return on the portfolio over and above that predicted by the CAPM, given the portfolio's beta and the average market return. Jensen's measure is the portfolio's alpha value.

$$E(R_i) = RFR + \beta_j [E(R_m) - RFR]$$

$E(R_j)$ = the expected return on index

RFR = the one-period risk-free interest rate.

β_j = the systematic risk (beta) for the index.

$E(RM)$ = the expected return on index portfolio of risky assets.

To examine the difference in performance between Islamic indices in comparison to the counterpart indices, and the difference in performance Islamic indices in JII and DJIM, this research use the t-test statistical method

1. Descriptive Statistics

The objective in descriptive statistics is to quantitatively describe data (Fabozzi et al., 2014). Descriptive statistics are calculated from a sample of data. Descriptive statistics measure the geometric mean of data (and the arithmetic mean of the data (Brooks, 2014: 60-64).

2. t test

The t-test assesses whether the means of two groups are statistically different from each other (Trochim, 2006: 287). This analysis is appropriate to compare the means of two groups (Trochim, 2006: 287). The t-test uses ratio to compare the statistical difference, thus this study uses Sharpe ratio, Treynor ratio and Jensen alpha to assess the statistical difference of Islamic indices.

To examine the differences between scores for two groups, it's necessary to determine the means relative to the spread or variability of group scores (Trochim, 2006: 288). If the variability of the group means is homogeny and the sample amount of each group is relatively not same, formula for the t-test is:

$$t = \frac{\bar{X}_i - \bar{X}_C}{SE(\bar{X}_i - \bar{X}_C)}$$

$\bar{X}_i$ = average Islamic index ratio

$\bar{X}_C$ = average index counterpart ratio

SE = standard error of the groups

$$SE(\bar{X}_T - \bar{X}_C) = \sqrt{\frac{var_i}{n_i} + \frac{var_C}{n_C}}$$

var_i = variability of Islamic index ratio

var_C = variability of counterpart index ratio

n_i = number of Islamic index ratio

n_C = number of counterpart index ratio

3. RESULT ANALYSIS AND DISCUSSION

1. Normality test

Preliminary analysis on the data distribution has been carried out using One-sample Kolmogorov-smirnov. All of the index monthly returns show greater value of asymptotic significance than α (0.05). The asymp.sig (Z tailed) for JII is 0.412 greater than 0.05. The asymp.sig (Z tailed) for LQ45 is 0.436 also greater than 0.05. Both DJIM Turkey and DJ Turkey Titans 20 are greater than 0.05 with asymp.sig (Z tailed) of 0.144 and 0.963. Thus, based on the result of normality, all of the sample data were eligible to be examined.

2. Descriptive Statistics

Descriptive statistics table below showed that Jakarta Islamic Index has greatest mean return than others. While, Dow Jones Islamic Market Turkey has lowest return compared to others. Jakarta Islamic Index yielded greater return on monthly basis than its counterpart LQ45, while DJIM Turkey has lower return compared to its counterpart Dow Jones Turkey Titans 20. When indices were compared on the basis of volatility, JII experiences higher standard deviation than its counterpart. On the other hand, Dow Jones Islamic Market Turkey (0.0533) possesses lower standard deviation compared to its counterpart. Therefore, Jakarta Islamic Index resulted in superior performance and DJIM Turkey performed relatively inferior based on monthly raw return and total risk basis (σ).

Table 1. Descriptive Statistics

Index	Mean Return	Standard Deviation
JII	0.016426	0.1271915
LQ 45	0.009585	0.0475153
DJIM Turkey	0.006347	0.0532524
DJ Turkey Titan 20	0.007443	0.0690904

3. Risk Adjusted Performance

Since the Islamic index and its counterpart were not from the same category of risk, thus this study used CAPM model to estimate beta of the sample indices. Furthermore, risk adjusted performance measurements consist of Sharpe, Treynor and Jensen Alpha were used to estimate the overall index performance.

a. Index Beta

Beta measured the sensitivity of all the stocks in both conventional and Islamic indices to a very broad index. A Beta of 1 represented a perfect correlation with the market. A Beta of 0 demonstrated that the index has no correlation with the overall market. A negative Beta indicated an inverse relationship with the market and could be used to hedge against market downturns (Hakim & Rashidian, 2004). As noted in the table, JII and LQ45 have high correlation with the market movement. A beta higher than 1 also indicated both JII and LQ45 were riskier than the market.

Table 2 Index Beta

Index	Beta
JII	1.176944
LQ 45	1.022237
DJIM Turkey	0.651376
DJ Turkey Titan 20	0.664935

b. Sharpe Ratio

Sharpe ratio represented the excess return of the index per total unit of risk. A higher Sharpe ratio indicates a greater return per unit of total risk. From the result of Sharpe ratio in the table below, JII and DJIM Turkey showed lower value compared to their counterparts. These results indicated that Islamic indices experienced lower excess return per unit total risk than conventional indices.

Table 3. Sharpe Ratio

Index	Sharpe Ratio
JII	0.0935700
LQ 45	0.106506
DJIM Turkey	0.0120281
DJ Turkey Titan 20	0.025132

c. Treynor Ratio

Treynor ratio was calculated in the same way as the Sharpe ratio, the difference was it represented the excess return of the index per total unit of systematic risk (β). The Treynor ratio as noted in the table indicated different results from both country indices. The JII showed higher Treynor ratio than its counterpart which referred to superior performance. Conversely, Dow Jones Islamic Market Turkey did not perform as well as JII. According to Treynor ratio, Islamic index in Turkey showed lower return compare to its counterpart Dow Jones Turkey Titans 20.

Table 3. Treynor Ratio

Index	Treynor Ratio
JII	0.010112
LQ 45	0.004951
DJIM Turkey	0.000983
DJ Turkey Titan 20	0.002612

d. Jensen Alpha

The intercept of the regression (alpha) was the performance measure. A positive alpha means that the index achieves excess return relative to the market, and negative alpha means underperformance (Ho, et al., 2013).

Jensen Alpha indicated Islamic market in Indonesia perform is better than its counterpart LQ45. JII experienced positive alpha while LQ45 indicated negative alpha. Meanwhile, DJIM Turkey experienced lower alpha value compared to its counterpart Dow Jones Turkey Titans. However, the positive alpha value of DJIM indicated positive excess return. Therefore, DJIM Turkey did not result in poor performance compared to the market as a whole.

Table 4. Jensen Alpha

Index	Jensen Alpha
JII	0.003378869
LQ 45	-0.00234
DJIM Turkey	0.00005766
DJ Turkey Titan 20	0.001142

3. Hypothesis Testing

a. Hypothesis $H1a$

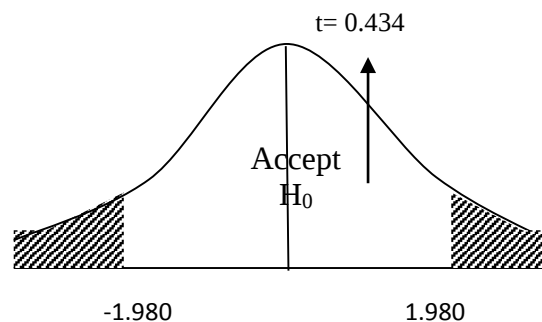


Figure 1. Area of Hypothesis

Based on risk adjusted performance measurements, JII experienced superior performance compared to its counterpart. However, this result was not statistically significant according to t test. Thus, JII insignificantly outperformed its counterpart and the $H1a$ is accepted.

This result was consistent with some previous research such as Girard & Hassan (2005); Hussein & Omran (2005); Ho et al. (2013); Powell and Delong (2014) and Zamzamir (2014). Moreover, this result supports the finding from Ni'mah (2006) who separated pure Islamic stocks from conventional index due to dual listing problem.

b. Hypothesis $H1b$

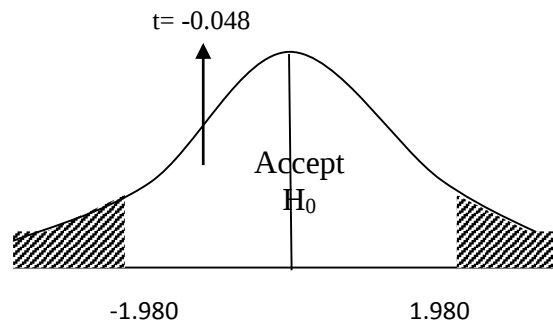


Figure 2. Area of Hypothesis Testing

DJIM Turkey also indicates insignificant lower return than its counterpart based on Sharpe, Treynor and Jensen Alpha. Despite the fact that the differences were not statistically significant, it also failed to reject the null hypothesis that risk adjusted returns of Islamic index outperform its counterpart. Thus, the hypothesis $H1b$ was rejected.

This result is consistent with the previous finding from Gozbazi (2010) who suggested that Dow Jones Islamic Market Turkey did not significantly different from its counterpart. Others reported that the Islamic portfolios provides slightly less mean returns performance relative to the conventional counterparts, though the result was also shown a statistically insignificant difference (Mansor & Bhatti, 2011; Dharani & Natarajan, 2011).

c. Hypothesis $H2a$

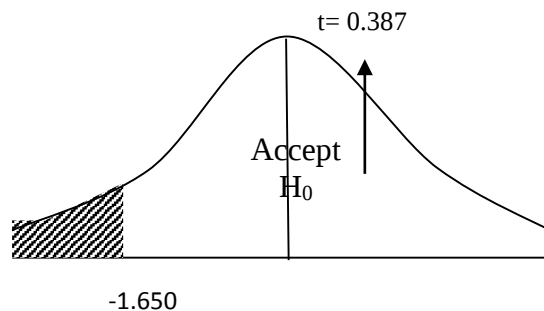


Figure 3. Area of Hypothesis Testing

The average monthly raw return of Jakarta Islamic index as noted in the descriptive statistics table above showed highest value than other indices. Moreover, the t test result also revealed that JII did not achieve lower return compared to its counterpart. P value also indicates insignificant value at 5% ($0.699 > 0.05$). Thus, the hypothesis stated Jakarta Islamic Index achieves lower return than its counterpart is rejected.

This result was in line with previous research found that Islamic investment achieved higher return compared to conventional index (Hussein, 2004; Kassim, 2013; Powell & Delong, 2014). This result was interesting since in this study eliminated stocks which have dual listing in JII and LQ45.

d. Hypothesis H2b

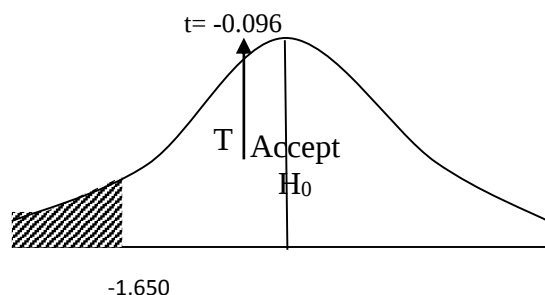


Figure 4. Area of Hypothesis Testing

test indicates that DJIM Turkey does not experience significant lower monthly raw return than its counterpart. Nevertheless, the raw return of DJIM Turkey has lower value, the finding in this study concluded that DJIM Turkey overall return can not reject the given null hypothesis. Thus, $H2b$ is rejected.

This result confirms the result reported by Hussein, 2004; Gozbazi & Erdem, 2010; Kassim, 2013. They concluded that Islamic index slightly experienced insignificant lower returns than its counterpart.

e. Hypothesis $H3a$

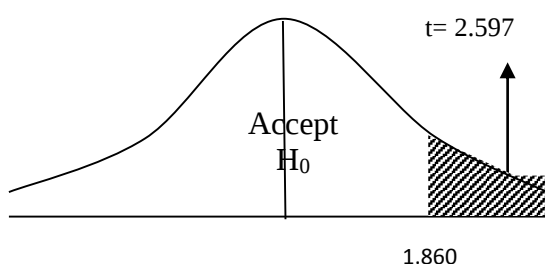


Figure 5. Area of Hypothesis Testing

To gauge the risk involved in the two categories of Indices standard deviation has been used. The t test value is higher than t table ($2.597 > 1.860$), thus it reject the null hypothesis. Furthermore, p value also indicates value lower than α ($0.032 < 0.05$). This result shows that Islamic index bears higher standard deviation as the measure of portfolios volatility. Hence, $H3a$ is accepted.

Previous researchers who have studied in earlier time periods and in other indices have similar and different methodology coming up to the same results (Hashim, 2008; Hooi & Parsva, 2012; Reddy & Fu, 2014). Moreover, Setiawan and Oktariza (2013) argued that conventional portfolio is much riskier than Islamic stocks in Indonesia.

f. Hypothesis $H3b$

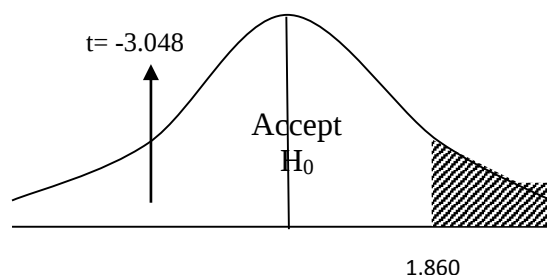


Figure 6. Area of Hypothesis Testing

The result from descriptive statistics showed lower standard deviation value of DJIM Turkey compare to its counterpart Dow Jones Turley Titans 20. The t test value shows lower value than t table ($-3.048 < 1.860$), thus DJIM Turkey experienced lower risk than its counterpart. Hence, Hypothesis $H3b$ is rejected.

This result is consistent with the result for Hakim & Rashidian (2004) that DJIMI has lower risk than the comparable benchmarks. Furthermore, other researchers also concluded that Islamic index yielded lower risk than its conventional index (Albaity &

Ahmad, 2006; Ashraf, 2013; Habib & Ul-Islam, 2014).

g. Hypothesis $H4$

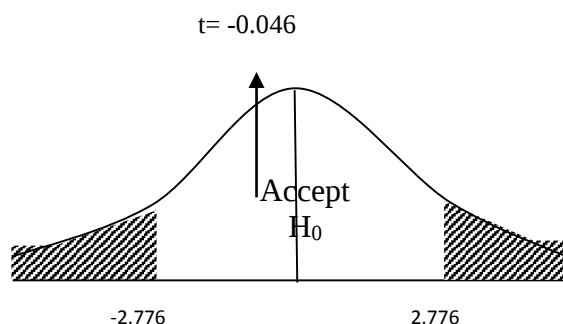


Figure 7. Area of Hypothesis Testing

The null hypothesis of Islamic Indices did not perform any differently than their counterparts. If Islamic Indices did not perform any differently than their respective benchmarks then α should not be statistically different from zero and β should be equal to 1 (Ashraf, 2013). If null hypothesis was not rejected, it would imply that the *Sharia* compliant applied by Islamic Indices did not affect the performance and produce similar risk and return payoffs as the benchmark index (Ashraf, 2013).

The statistical significance of α value for both JII and DJIM Turkey indicated lower value than table. Thus, it can be concluded that α value for both JII and DJIM Turkey did not significantly different from zero. Beta also indicated insignificantly different from 1 based on statistical significant as noted in the t test above. This result suggested that the performance of

Islamic indices is similar to their respective benchmark indices. Thus, the hypothesis *H4* was rejected.

This result was in line with the finding from Ashraf (2013) who found that the difference in screening criteria does not significantly affect the performance of Islamic index compared to conventional index. Hanif et al. (2013) also reported that *Sharia* compliant securities and screening has made no impact on pricing of securities by investors during period under review.

4. DISCUSSION

The result of this study particularly followed the wisdom of finance where the higher risk of an asset will yield higher return and *vice versa*. JII has high return and followed by high risk. Meanwhile, DJIM Turkey yielded low return with low volatility. Nevertheless, those results were not statistically significant according to *t* test statistics.

JII has not only experienced greater returns than its counterpart but also performed better than Turkey Islamic and conventional index. JII also experienced higher volatility than compared to its counterpart as noted in the value of standard deviation. This result indicated that portfolios JII as a weighted combination of a group of assets returns were not well diversified portfolios (Myers, 1972). Since Sharpe ratio was based on the total risk (σ) involvement in the excess return, higher standard deviation supposedly is due to smaller diversification benefit in JII portfolios (Habib & Ul-islam, 2014). This was likely because this study eliminated some of stocks having dual listing problem from the index, thus it limited the diversification opportunity. The pure Islamic stocks in this study might have high correlation with each other and shares much of the same kind of riskiness in the index portfolios.

Meanwhile, DJIM Turkey performance was not statistically different from the counterpart index returns in the term of risk-adjusted performance. It indicated that DJIMTR could effectively reflect the benchmark index returns. Although mean and risk-adjusted returns were lower than the benchmark index, DJIMTR has less non-systematic risk and systematic risk compared to DJ Turkey Titans. It can be concluded that Islamic market in Turkey did not significantly different from its conventional counterpart index. In overall, Islamic index did not result in poor risk-based returns.

The lower return of DJIM Turkey stems from relative riskiness of Islamic index with respect to conventional indices used as benchmarks. This also means that investing in the benchmark index, was on average, equivalent to investing in the Islamic index, without significant differences in return or risk (Schroder 2007). The result also implied that the Islamic index promises higher return along with higher risk as suggested by modern portfolio theory. The risk of the Islamic index was tolerable and the level of risk achieved is adequate for the level of return achieved. This study concluded that the filtering criteria adopted to eliminate non-compliant firms leads to an Islamic index with a unique risk-return characteristics that are not affected by the broad equity market.

The fact that the performance of Islamic index did not significantly result in different performance to other investment securities indicates that investor who put their money in Islamic index can expect a similar risk-return payoff as conventional index. Furthermore, Elf & Riffo (2012) found that investors who are concerned about investing in *Sharia* compliant stocks are not worse off than non-restricted investors.

Most previous studies suggested that Islamic index outperformed its conventional index only during the bearish economic trend and the crisis period. That was actually the reason why Islamic securities are preferred as hedging instruments during financial collapse and economic slowdown periods. Hence, the result of this study was interesting to provide

more information about the characteristics of Islamic securities performance aside from economic slowdown periods.

5. CONCLUSIONS AND IMPLICATIONS

5.1. Conclusions

1. Jakarta Islamic Index (JII) has outperformed its counterpart index (LQ45).
2. Dow Jones Islamic Market Turkey (DJIMTR) did not outperform its counterpart index (Dow Jones Turkey Titans 20). However, it also did not statistically result in poor performance.
3. Jakarta Islamic Index (JII) achieved higher return than LQ45 index.
4. Dow Jones Islamic Market Turkey (DJIMTR) achieved insignificant lower return than Dow Jones Turkey Titans 20.
5. Jakarta Islamic Index (JII) experienced higher risk than LQ45 index.
6. Dow Jones Islamic Market Turkey (DJIMTR) experienced lower risk compared to Dow Jones Turkey Titans 20.
7. *Sharia* compliant screening criteria did not significantly affect the performance of Islamic index.

5.2. Implications

1. The finding suggested that the behavior of the Islamic indices does not differ from that of their conventional counterparts after global financial crises in 2008. The result of this study provides more information for non-Muslim investors about the characteristics of Islamic securities performance aside from economic slowdown period.
2. Overall, similar reward to risk and diversification benefits exist for both types of indices. This study also demonstrated that Islamic and conventional index displayed different performances under different market. This is interesting for global investors who seek for diversification in their portfolio investments.
3. These results indicated that investors who are concerned about investing in *Sharia* compliant stocks are not penalized in the long-term decision making as long as the portfolios track the index. The result assures that the Islamic index is keeping up with the performance of the market in terms of risk and return.
4. Islamic index in Turkey is suitable for investors who plan for low volatility return from the investment selection based on the market trend performance because DJIMTR provide less risk which in line with the nature of Islamic value to invest in small uncertainty (*Gharar*).

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