Risk and Performance of Islamic Indexes during Subprime Crisis

Mariem Touiti,
RED-ISG Gabes Tunisia.
E-mail: touiti_mariem@yahoo.fr

Jamel E. Henchiri
RED-ISG Gabes Tunisia.
E-mail: jamelhenchiri@yahoo.fr

Abstract

We looked for evaluating and comparing the risk and performance of both Islamic and conventional indices during subprime crisis. We used daily closing stock indices data of the Dow Jones Index series and we evaluated the volatilities of Islamic indices over a period of eleven years. The results suggested that Islamic indexes family is not fully sheltered from the subprime crisis. Similar to the conventional indexes, all Islamic indexes recorded lower average returns and higher volatility in the crisis period compared to the pre-crisis as well as after crisis period.

However, outcomes results from Sharpe ratio, Treynor index and Jensen’s alpha affirm that the impact of the crisis on ethical investment is as severe as it is on the conventional peers except four Islamic index that prove their resilience versus their counterparts during turbulent time and they continue their outperformance even during calmness period. Meanwhile, geographical factor is shown to be relevant diversification criteria particularly during the crisis period.

In term of portfolio diversification benefits, investors should be aware of the market condition in strategizing their capital portfolio in the context of both the level of development and also depending on geographical area and ethics factors.

Key Words: Islamic indices, subprime crisis, Sharpe ratio, Treynor index, Jensen’s alpha, portfolio management

JEL Classification: G11, G15, N 25, F 3
1. Introduction

The global Financial Crisis shook the international financial system throughout the world and its effects are being involved unfavorable repercussions. It is considered as the worst since the great depression due to its severity.

During subprime crisis, the current financial crisis brought Islamic financial system into the limelight as a prospective alternative but it has not completely being exempt to the crisis. Despite this, the global downturn affect Islamic finance by a much more moderate extent way comparing to their counterparts which may lead to possible correlation between Islamic finance industry and its conventional peer as it lives under the same umbrella and are administered by the same basics of the game (Smolo and Mirackor, 2010).

The global financial system was strongly shaken by the crisis, so, the evidence shows that Islamic financial industry was somewhat more resilient to the global financial crisis rather than the conventional system. Chapra (2008) argue that Islamic economists have asserted that the financial crisis has revealed the inherent weaknesses of the conventional financial system that could be explained because of many factors.

Ahmad (2004) identifies a number of advantages of Islamic finance. According to him, these advantages can be presented below:

- Efficient allocation of resources to profitable and more productive use of capital that will lead to promotion of economic growth, equitable distribution of wealth and employment generation.
- Information cost saving through partnering with the entrepreneur.
- Debt burden reduction through encouraging conversion of debt into equity.
- Promoting ethical behavior.
- Reduction in run-on-deposits since Islamic financial institutions use profits and loses sharing principle to mobilize resources.
- Less likelihood of flight of capital.
- Reduction in speculative transactions.
- Reduction of inflationary pressures.
- Reduction in unproductive use of borrowings since under use profits and loses sharing principle, lending is directly related to project appraisals and feasibility.

Since the aftermath of the subprime crisis, the level of inequality and poverty was augmented considerably. So, researchers and policy makers have been looking for a new financial structure in order to provide potential solution to the ongoing global financial crisis and prevent its reoccurrence by building empirical ethical sides and adequately taking care of the poor by its fairness sides, stabilize the financial system and ban the retrieval of the crisis damages. Furthermore, searching for a new financial architecture which is concerned by
achieving basic human needs may develop opportunities for the poor and by the way appreciating ethical dimensions (Dogarawa, 2012).

The current debate on the problems and solutions to the global financial crisis that rocked the global economy since 2007 opens the horizons to determine the efficiency of Islamic financial system. Chapra (2008) observes that the mainly causes might have participated to the crisis especially in the past are: absence of profit and loss sharing principle, lack of exercise of moral restraint largely due to the so-called notion of “too big to fail” and inadequate market discipline are the primary causes of the crisis over the decades.

The degree of the crisis has serious effect on the global economy. It was so severe that from a world credit loss of $2.8 trillion in October 2009 and 33% (approximately $14.5 trillion) of the values of the world’s companies has been scratch out (Dogarawa, 2012).

Chapra (2008) and Hassan (2009) observe that the impact of the crisis was minimal on Islamic finance comparing to the conventional system and appear like the appropriate alternative. It was known as suitable choice for its ethics, morality, investments in the real economy and mostly Islamic finance is well equipped with all that an economy required achieving financial stability and economic prosperity. Islamic products appear and show their immovability during the financial crisis. Among them, we tend to evaluate Islamic indices and put to test their risk-adjusted performance comparisons of share indices in conventional markets which are analyzed in sub-periods covers as crisis and non-crisis periods in order to discuss their stability.

2. Literature Review

The performance of Islamic indices is less studied given the recent appearance of these equities. While, most of quantitative studies focused on Islamic indices performance seek to compare Islamic indices with their conventional counterparts.

Depending on previous research, the most processed indexes were American, English and Malaysian. However, results are divergent and inconclusive through existing studies. Some of these researches are reviewed as follows.

The first study of compared performance was that of Atta (2000) who assesses the return of the Dow Jones Islamic Market Index (DJIMI) against the DataStream Global Total Market Index which is used as the proxy for the market portfolio and the three-month US Treasury bill return is used as proxy for the risk-free rate. On the period from January 1996 to December 1999 using weekly data and examines the Sharpe, Treynor unconditional and conditional performance of the DJIMI versus its benchmarks during the sample period. Results revealed that the DJIMI showed superior performance over the studied period and it offers more return than their peers by over-performing them.
Hassan (2001) empirically examines the issues of market efficiency and the time-varying risk return relationship of daily and monthly data for DJIM from January 1996 through December 2000 were collected to conduct statistical analysis over the 1996-2000 periods. To this end, he employs serial correlation, variance ratio and Dickey Fuller tests to examine the market efficiency of the DJIM.

His paper shows that DJIM returns are normally distributed and the returns show that DJIM returns are efficient. Utilizing a generalized autoregressive conditional heteroscedasticity (GARCH) framework, the study examines volatility of the DJIM returns and found a significant positive relationship between conditional volatility and DJIM equity index returns. Ahmad and Ibrahim (2002) investigated the risk and return performance of Kuala Lumpur

Shariah Index (KLSI) versus Kuala Lumpur Composite Index (KLCI) over the period from April 1999 to January 2002 using daily observations.

They used several risk adjusted performance measures such as a Sharpe ratio (SR), the Treynor Index (TI), the adjusted Jensen Alpha, and the t test for comparing the means. The analysis found that the KLSE did not outperform the market and there is no significant differences in the risk adjusted performance of both indices which is not very much different from each other.

Hakim and Rashidian (2002) are the pioneers to measure the risk of Islamic investments assigned to as the “Islamic Beta”. They employ a cointegration and causality analysis to examine the relationship between the DJIM, Wilshire 5000 Index, and the risk-free rate proxied by the three month Treasury bill for the sample of weekly data over the time period 1999-2002.

The study indicates that no correlation between the DJIM and the Wilshire 5000 Index, or the three month Treasury bill exists. They conclude also that the filtering criteria adopted to eliminate non-compliant firms leads to an Islamic index with unique risk-return characteristics unaffected by the broad equity market.

Hakim and Rashidian (2004) use the parameters of the CAPM which are estimated using the generalized method of moment for weekly data extended from January 2000 to August 2004 combined the Dow Jones World Index (DJW) and the Dow Jones Sustainability World Index (DJS) or green index.

They observe that the DJIM has done relatively well compared to the DJW, but has underperformed in relation to the DJS. They reach also that investors in the Muslim index are not suffering a discernible costs related to shariah screens in order to be complying with the Shariah restriction.

Hussein (2005) seeks to evaluate the impact of the Shariah screening on the performance of FTSE Global Islamic index and Dow Jones Islamic Market Index. The sample period is represented by monthly returns and extended from January 1996 to December 2004. In order
to check if Islamic index achieve abnormal returns for investors, the study utilized the parametric t statistic and the non parametric signed-rank test.

The findings indicate that Islamic index statistically over perform against conventional one during the whole period and first bull market periods which is from December 1993 to December 2000 but fail to sustain their better performance over the bear and second bull market period (from September 2002 to December 2004). As a consequent, shariah investment performance offer the same return compared to unscreened portfolios.

Al-Zoubi and Maghyereh (2007) focused on the relative risk performance of Islamic products while comparing of the Dow Jones Islamic Index (DJIS) with Dow Jones World Index (DJIM) in terms of risk from 1 January 1996 to 20 May 2005 using the most recent Value-at Risk (VaR) methodologies (Risk Metrics, Student-t APARCH, and skewed Student-t APARCH).

The authors pointed that the Islamic index presents unique risk characteristics and its risk level is significantly lower than the market basket of stocks. Finding that Islamic index to be less risky than the benchmark is attributing to the profit and loss sharing principle in Islamic finance.

Sadeghi (2008) examined the influence of the introduction of Bursa Malaysia Islamic index on the financial performance and liquidity of the screening securities involved in the Islamic index in Malaysia. Event study methodology was employed to estimate the mean cumulative returns of the Shariah compliant stocks in the days surrounding the event and also investigate the changes in liquidity using trade volume and bid ask spread surrounding the event days as liquidity proxies. The author compared Bursa Malaysia SI to the Bursa Malaysia Composite Index (BMCI). Data for the study includes daily stock prices, bid-ask spread and volume of trade for 188 publicly traded companies.

The study found that the introduction of the Shariah index has positive and strong impact on the financial performance of the Shariah compliant stocks. This positive change in bid-ask spread, is attributed to the increase in liquidity risk and asymmetric information costs around the event period.

Sukumana and kholid (2010) examined the impact of the financial crisis on Jakarta Composite Index (JCI) and Jakarta Islamic Index from January 3, 2001 to 30 December 2009 using daily observations.

As volatility measure risk, they have employed two approaches: ARCH and GARCH models. The study found that Islamic stock index is more resilient towards crisis compare to conventional stock index.

For this reason, risk avoider investors will opt for the Islamic index which proves to have a lesser risk than the conventional peer.

Hassan and Girard (2010) evaluated the performance of seven indexes from the Dow Jones
Islamic Market Index (DJIMI) and their non Islamic counterparts from MSCI index family. The sample period has been divided into two sub periods: the first one is from January 1996 to December 2000 and the second one is from January 2001 to December 2006 using closing prices of monthly returns. They use a variety of measures such as Sharpe, Treynor, Jensen and Fama’s selectivity, net selectivity and diversification.

The study suggests that the behavior of DJIMI is not different from that of their conventional counterparts and both indices have similar reward to risk and diversification benefits where Islamic and conventional indices achieve similar performance.

Dharani and Natarijan (2011) analyzed the performance of Islamic indices in India and found no difference between average daily returns of the Nifty Shariah index. To get this result, they empirically examined the risk and return of the both indexes during the period 2nd January 2007 to 31st December 2010 by using risk adjusted measurement such as Sharpe index, Treynor index and Jensen alpha.

Finally, the study disclosed that Islamic and conventional index in India are performing in a similar manner through the specified period.

Boujelbene (2012) analyzed the risk and return characteristics of the Islamic market indices and their conventional benchmarks of developed markets, emerging markets, Arab and GCC market. The author used -over the period of June 2002 to April 2012- Sharpe ratio test and the CAPM model to investigate the risk adjusted performances of both kinds of indices. Subsequently, the author points out that there is no significant difference between performance of Islamic indices and conventional indices in risk adjusted return basis. Hence, the study infers that Muslim investors can pursue passive stock investment matching with their religious beliefs and convictions without sacrificing financial performance.

In order to study the volatility of Shariah index, Romli et al. (2012) examined the volatility during the financial crisis period from November 2007 to January 2010 on FTSE Bursa Malaysia Hijarah index. The index considered for the study was FTSE Bursa Malaysia Hijarah index versus the composite index.

Using Capital market line (CML) and the capital asset pricing model (CAPM), It was deduced that the Malaysian Bursa index performs in a diverging manner to its counterparts it was less volatile during the crisis period compared to conventional indices of Malaysia noting that Shariah index should serve as a platform for investors to help companies that traded their stocks to get money.

Another study by Lean and Parsva (2012) who investigated the relation between risk and return using the Capital Asset Pricing Model (CAPM) in the Malaysia stock exchange, particularly during the 2008 global financial crisis. The sample consists of Islamic stocks in Malaysia Financial Times Stock Exchange (FTSE) market while FTSE Bursa Malaysia EMAS
Shariah Index and FTSE Bursa Malaysia Hijrah Shariah Index are proxy for the Islamic portfolio.

These authors accentuate that Malaysian indices were affected by the recent financial crisis and found that the risk of the Islamic indices is high in a downturn economy status in comparison with normal period.

Albaity and Mudor (2012) studied the returns difference, the long run relationship, and the short run dynamics of Islamic indices compared to non-Islamic indices by employing Unit Root, Cointegration and Causality tests. They focused on Dow Jones Islamic Market Index (DJIMI) and FTSE Bursa Malaysia Hijrah Shariah index from February 2007 up to May 2011. On return performance, they found no significant difference between the Islamic and conventional indices during different crisis periods.

The authors found also that Islamic indices do not provide a superiority of performance compared with a conventional index. However, Islamic investment provides peace of mind, something that is desired by some investors who are looking to comply with Islamic ideology.

Kassab (2013) analyzed a comparative approach between the Islamic and a conventional index using the GARCH model. The sample consists of daily returns both of the Islamic Sharia SP500 and its conventional counterpart during the period from 29 December 2006 to 07 March 2011. This period involved the subprime crisis of 2007. The author proved presence of heteroscedasticity effect for both Islamic and conventional indexes. Moreover, the results of modeling and estimating parameters showed that there is significant persistence volatility for both indexes, pointing out that Islamic index is less volatile on the long run than its benchmark and it does present less risk at crisis periods. Arouri et al. (2013) pursue a different approach by testing the Islamic index performance during the recent financial crisis in three global areas by examining three Dow Jones Islamic indices versus three conventional counterparts from 14 August 2006 to 30 June noting that the data is daily. For this purpose, they employed a number of performance measurement techniques.

Particularly, Arouri et al. (2013) apply Multivariate Vector Autoregressive (VAR) tools to test the interaction between conventional and Islamic financial products, and implement the Granger causality test to specify the dependence orientation of feedback between Islamic and conventional stock prices.

They draw conclusion that the influence of financial crisis is less marked than on conventional finance. Then, portfolios that include Islamic products offer high return, reduce systematic risks and generate a considerable diversification benefits.

Ho et al. (2013) made an attempt to analyze empirically the risk adjusted performance of share indices from Islamic and conventional market. For this investigation, monthly return of twelve global conventional and Islamic indices the sample period is further divided into four sub-periods analyzed as crisis and non-crisis periods. The risk adjusted performance
measurement methods utilized include: Sharpe ratio, Treynor index and Jensen alpha while beta is designed to measure the level of systematic risk.

Therefore, this study devolved to indicate that during crisis-periods, Islamic indices perform better than conventional ones and are less influenced by the crisis providing a hedging selection due to their lower volatility and betas. But for non-crisis periods, results are inconclusive because of the conservative nature of shariah-compliant investment.

Al khazali et al. (2013) compared the risk and returns performance of nine Dow Jones Islamic Indexes to their conventional counterparts during January 1996 to December 2012 and used stochastic dominance (SD) to find out whether Islamic stock indexes outperform conventional stock indexes.

They concluded during the 2007-2012 period the global, European and US Islamic stock indexes dominate their conventional counterparts. However, the reverse is true in the earlier period 2001-2006. Since the 2007-2012 periods include the recent financial crisis, they find that Islamic indexes outperform their conventional benchmarks during that meltdown period.

Jawadi et al. (2013) tried in their study to analyze the financial performance of Islamic and conventional indexes for three major regions: Europe, the USA, and the world during the recent global financial crisis. For this, the authors used the Dow Jones Islamic indexes for the three regions and they compare it with the Dow Jones Industrial indexes for the world and the USA while the Eurostoxx50 was used for Europe. The sample covers daily closing prices in the period ranging from 3 January 2000 through 27 June 2011.

By employing the CAPM- GARCH model, the results showed that Islamic finance has not escaped the recent global financial downturn but that the latter's impact on Islamic returns is less significant than its impact on conventional returns.

Islamic indexes outperform conventional finance, particularly during turbulent times, while standard funds seem to be preferred in calmness periods suggesting that investors may well be better off controlling the risk associated with their portfolio through investment in Islamic funds and they can expect some interesting investment opportunities.

Miniaoui et al. (2014) investigated the impact of the financial crisis of 2008 and test whether Islamic indices were less risky than conventional indices during downturn period in the Gulf Cooperation Council Countries (GCC). The authors used weekly data from 4 January 2006 to 26 December 2012. This study further uses GARCH models in order to analyze the sample size of 364 observations. Their findings show that the GCC Islamic index exhibits similar attributes of the conventional indices in all the period of analysis and indicate that the GCC Islamic index has similar risk profile as its conventional counterparts.

Lately, Reddy and Fu (2014) look into weekly stock prices of Fifty Shariah stocks and fifty conventional stocks from Australian Stock Exchange (ASX) for the period 2001-2013. This research uses Risk-Adjusted Return Measurement among them three popular ratios that are:
Sharpe ratio, Treynor ratio and Jensen’s Alpha. Results suggest that performance of Islamic indices tends to be better higher compared the conventional portfolio returns. Otherwise the performance of the Shariah compliant stocks tends to be similar to the conventional stocks.

Despite these findings, there is not a unanimous agreement on Shariah-compliant indexes if Islamic securities provide a refuge during financial crisis for investors. Moreover, Islamic stock market indices have gained popularity due to the greater potential of growth and profitability.

In summary, existing literature relating to index performance is contradictory and limited. These empirical studies neglected the importance of behavioral finance in such analyzes omitted that Investor sentiment is an important variable that affect all financial markets significantly.

3. Methodology

3.1 Research Questions

The central question of our research is: To what extent do the Islamic indexes outperform (in term of Risk and Return) their index counterparts during the Financial crisis?

The testable hypotheses are stated as follows:

H0: The Islamic investment indexes are not significantly riskier than the conventional indexes.
H1: The Islamic investment indexes are significantly riskier than the conventional indexes.

H0’: Shariah stocks’ returns are not significantly higher from the returns of the conventional stocks.
H1’: Shariah stocks’ returns are significantly higher from the returns of the conventional stocks.

3.2 Empirical approach

This work seeks to analyze the behavior and market efficiency of Islamic index of Dow Jones family with regard to the global financial crisis which has directed the attention of various financial markets world over towards Islamic finance.

In order to avoid spurious results, Unit Root analysis has been firstly employed to ensure the stationarity of the time series data.

We need to perform a unit root test in order to find out whether the indices are stationary or not. The stationarity or unit root test is conducted using the Augmented Dickey Fuller (ADF) unit root test.

Besides, unit root test enables us to identify whether the external financial shocks have permanent or temporary influence on the stock market.

The model suggest that if the coefficients are statistically positive and significant it will be concluded that there is predictability in returns and it follows a trend in the market which allows investors to earn abnormal profit which is prohibited in the principles of Islamic finance.
Then, if time series data has unit root (non-stationary), the impact of the financial shock will never die out, and the market return will permanently deviate from the long-run equilibrium.

However, if unit root does not exist, the effects of external shocks will only be temporary. Although in the short-run, there may be drift away from long term equilibrium, the deviation will be reverted back to the equilibrium level in the long-run.

Before processing data, we first study the stochastic characteristics of time series of Islamic market indices and conventional ones which constitute our sample.

In order to achieve this aim, we studied their autocorrelation function and stationary to see if the mean and variance are invariant or are modified over time.

As an example, we show the results for the return of DJIM and W1DOW index. Thus, the correlogram obtained using Eviews software by including 20 lags.

This test is to test the following hypotheses:

- H (0): presence of unit root, "non-stationary process"
- H (1): absence of unit root, "stationary process"

This test will allow us to detect any possible non-stationarity and know its type (deterministic or random). The non-deterministic stationary process (Trend Stationary or TS) is time dependent and therefore the effect of an unexpected shock to a time "t" is temporary, it may be stationary using ordinary least squares.

However, the non-random stationary process (Differency Stationary or DS) is stochastic; the effect of an unexpected shock to a time "t" is permanent. This process becomes stationary by differentiating the "d" when it is said integrated of order "d". (Khamlichi, 2013).

### 3.3 Data

The data set consists of the conventional and Islamic stock indexes. It is formed by daily closing prices of the DOW JONES INDEXES family. It includes 20 indexes.

The data is gathered from Google Finance. We use daily data of well major regions indexes: Europe, USA, UK, Canada, Developed Market, Emerging Market, Japan, Malaysia, and Global Titans 50 Index available for the period from 18 September 2003 to 28 May 2014, enabling us to assess the contribution of Islamic index investments before and after the subprime crisis and also, to capture the impact of changes in economic conditions on indices performance.

This gives us a sample size of T=2789 observations. The sample consists on daily closing prices index level data in US dollars for all Islamic indices and their conventional benchmarks. The whole series is expressed in logarithmic terms to reduce variance.

Moreover, we use the yield on three-month Treasury bill. Their yield corresponds to the best measurement of the risk-free rate, it is considered, as a proxy for risk-free rate obtained from Federal Reserve Bank US database.
For the purpose of this study, the samples were divided into three sub-periods: before crisis, during crisis and after crisis. The selection of the beginning of the sample period is strictly due to the data availability for all twenty indices.

The Table 2 in annex gives us more details by showing the Islamic and conventional pairs of indices included in our study. Lists of global Islamic and conventional indices below represent the selected indices investigated in the study. In order to enable equitable comparisons, dual availability of indices in both the conventional and Islamic markets must be present.

Twenty major global Islamic and conventional indices from five countries worldwide are carefully chosen to be investigated. For each Islamic Index, we chose a conventional counterpart considered as reference. The correspondence between the index and the benchmark was made taking into account the investment universe of and the geographic area. The Islamic indexes and their conventional counterpart being selected are as follows in annex. All the chosen stocks were ranked according to the availability of data. The rebalancing of the portfolio was done on a daily basis.

Islamic ethical funds are often over weighted in some sectors such as technology and service sectors. The Islamic ethical universe completely avoids sectors which are against the Islamic Shariah criteria. This can have a positive or negative effect depending on the balance of sectors in the portfolio compared with the unconstrained universe. (Reddy and Fu, 2014) Overall, companies included were selected to be Shariah compliance if the income derived by company is not from the sale of alcohol, tobacco, pork, pornography, polluting industries, gambling and military equipment.

Also, companies selected for this research belong to the following industry: industrial metal and minerals, gold, building materials, aluminum, Coal, Steel, Oil and Gas, utilities regulated Electric, Engineering and Construction, Utilities Regulated Gas, Telecom Services, Medical Care, Utilities-Independent Power Producers, Copper and Gas Refining and Marketing, Consumer goods, Financial Technology

Islamic ethical restrictions will have an impact on the size and structure of the resulting investible universe. It is often said that ethical investment funds exhibit a smaller-companies effect since they tend to invest in smaller or medium size companies. (Gregory et al., 1997)

4. Results and Discussion

We focus to the size of our sample to get significant result so we choose appropriate benchmarks and cover unexplored areas by the previous literature including the question of the persistence of performance. The analysis intends to identify the distinguishing features in the

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1 Derived from Dow Jones 2011
risk and return characteristics between Islamic portfolios and conventional portfolios and makes a comparative performance between risks of the two types of portfolio.

Before processing data, we started by studying the stochastic characteristics of time series of Islamic equity indices and Conventional sample.

The performance of the auto correlation function as well partial autocorrelation function, it allows rejecting the hypothesis unit root presence with a critical probability of 0.0000, which shows that the process (DJIM and W1DOW) are stationary and that series are well integrated of order 0.

4.1 Descriptive Statistics

The descriptive analysis of the characteristics and performance of each portfolio is now discussed. Tables 1 & 2 (see annexes) report descriptive analysis of all indices.

The descriptive statistics of the Dow Jones index family provides information on the symmetry of the distribution and its normality. Indeed, we note that the median is systematically lower than the mean that is lead to say that the distribution is symmetrical and spread out to the right; this is confirmed by the negative skewness for all indexes except for 2 Islamic indices (DJIDEV, DJIUS50).

The kurtosis shows that the distribution is leptokurtic, kurtosis is greater than 3 for all returns of stock market indices in this family, and that abnormal values upward or downward are quite common. This is confirmed also by the jarque-Bera test.

By analyzing the mean, we remark that five Islamic returns have the higher mean compared to the conventional indices which are Dow Jones Islamic Market U.S. Index (IMUS), Dow Jones Islamic Market U.K. Index (DJIUK), Dow Jones Islamic Market Europe Index (DJIEU), Dow Jones Islamic Market U.S. Titans 50 Index (DJUS50), and Dow Jones Islamic Market World Index (DJIM) although five conventional indices show their superiority in term of return versus their benchmarks which are Dow Jones Emerging Markets Index (W5DOW), Dow Jones Japan Index (JPDOWD), Dow Jones Canada Index (CADOWD), Dow Jones Malaysia Index (MYDOWD), Dow Jones Developed Markets Index (W3DOW).

This sort of equality between indices performance would create such parity enable the investor to be indifferent against both kind of indices. This result confirms the findings of Ahmad and Ibrahim (2002) that prove that Islamic and conventional indices perform in a similar manner.

The descriptive statistics for the daily returns of the twenty indices in our study provides interesting insights into absolute time independent volatility of the returns, as represented by the standard deviations. The standard deviations for the Islamic indices with high return are relatively higher than conventional ones confirming that the conventional wisdom of “high risks, high returns” is also applicable to the Islamic index where the markets with higher returns are more volatile.
The standard deviation shows that Islamic indices appear as the most risky portfolio compared to the conventional one owing to different nature of the Islamic financial system which is in line with Albaity and Mudor (2012) who suggest that ethical screened investment offer varying levels of exposure to risk, potential and cover different asset classes.

Results seem similar to the aforementioned related literature of Al Khazali et al. (2013) and Jawadi et al. (2013) concerning Islamic indices outperforming in term of return.

At this juncture, we cannot make any clear argument in favor of the Islamic indices as being a better or worse option for investment during crisis or in calmness times but we can confirm the hypotheses above mentioned related to that Shariah stocks’ returns are not significantly higher from the returns of the conventional indexes.

Further analysis can be carried out to achieve the first objective of the study. The main objective of this analysis is to investigate the level of risk volatility as well as return level of the portfolios, especially the Islamic-based portfolio.

4.2 Risk Adjusted Return Performance Result

Conventional and Islamic indices are ready for comparison during non-crisis period as well as turbulent phase and the overall period in order to well analyze the Risk and Return characteristics of both portfolios.

Three risk-adjusted return measurements are applied to evaluate performances of global Islamic and conventional indices which are Sharpe ratio (SR), Treynor index (TI) and Jensen’s alpha (JA).

The systematic risk (β) is considered as a statistical measure of the relative volatility of the index. It is also estimated according to CAPM for the different time periods.

Jensen’s alpha is a portfolio performance measure based upon the Capital Asset Pricing Model (CAPM), which calculates the excess return of a portfolio over time. Alpha of Jensen can be interpreted also as a measure of how much the portfolio “beat the market”. A portfolio with a consistently positive excess return (adjusted for risk) will have a positive α and vice versa.

Table 4: Risk-Adjusted Return Performance of Islamic and Conventional Stocks for the Overall Period

<table>
<thead>
<tr>
<th>ISLAMIC PORTFOLIO</th>
<th>CONVENTIONAL PORTFOLIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharpe ratio</td>
<td>Treynor ratio</td>
</tr>
<tr>
<td>IMUS</td>
<td>-1.339902485</td>
</tr>
<tr>
<td>DJUK</td>
<td>-1.041422185</td>
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<tr>
<td>DJEU</td>
<td>-1.997318482</td>
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<tr>
<td>DJIEMG</td>
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<td>DJuSSO</td>
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<td>DJIP</td>
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<tr>
<td>DJICA</td>
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<tr>
<td>DJIMY</td>
<td>-1.451045771</td>
</tr>
</tbody>
</table>
Table 4 shows that the differences in Sharpe, Treynor and Jensen ratios calculated over the period were negative in almost all cases. A plausible reason could be that the daily returns of both Islamic and conventional stocks are mostly negative.

This means that traditional indices outperform their Islamic peers regardless of the performance measure used.

Hence, performances of conventional and Islamic indices during the overall period show that the Islamic indices underperform their conventional indices according to all three performance measures which confirm the results found by Lean and Parsva (2012).

For the overall period, the betas are generally low which is consistent with theoretical understanding because they are market indices which possess relatively low systematic risks.

### Table 5: Risk-Adjusted Return Performance of Islamic and Conventional Stocks for the Three Sub-Periods

<table>
<thead>
<tr>
<th>YEAR</th>
<th>ISLAMIC PORTFOLIO</th>
<th>CONVENTIONAL PORTFOLIO</th>
<th>Economic Situation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sharpe ratio</td>
<td>Treynor ratio</td>
<td>Jensen's Alpha</td>
</tr>
<tr>
<td>IMUS</td>
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<td>-0.014071335</td>
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<tr>
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<td>-0.02967049</td>
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<td>DIJEMG</td>
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<tr>
<th>YEAR</th>
<th>ISLAMIC PORTFOLIO</th>
<th>CONVENTIONAL PORTFOLIO</th>
<th>Economic Situation</th>
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<tr>
<td></td>
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<td>Treynor ratio</td>
<td>Jensen's Alpha</td>
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Our performance analysis covers the three different periods, that is, before, during and after the Global Financial Crisis as presented in Table 5.

It is assumed that an investor has the choice between two portfolios: Islamic portfolio is composed of Islamic indices and other conventional constituted by the conventional indices from Dow Jones index family.

Results show that there are differences in the risk and returns between the Islamic portfolio and Conventional one.

Although the average value of Islamic and conventional portfolio is negative during the sampling period, it shows that the Sharpe, Treynor and Jensen ratios of conventional portfolio are greater than that of the Islamic portfolio. This indicates that the conventional portfolio is performing better compared to the Islamic portfolio, and is more diversified as the Sharp ratio has a negative relationship between risk and return. Specifically, the value of Sharp Ratio for Shariah stocks (-1.342540577) is lower than the value for conventional stocks (-1.246120688). The Treynor and Jensen ratios of the two types of portfolio shows the same result where Treynor index for conventional portfolio (-0.052089944) is higher than Treynor index which refers to Islamic portfolio (-0, 191047835). Jensen’s Alpha for Shariah and conventional stock demonstrate the outweigh of conventional portfolio by (-0.006256042) compared to Islamic portfolio (-0.013128537).

By analyzing the first sub period from 2003 to 2006, we note that Islamic index underperform their conventional counterparts. This indicates that the conventional portfolio is performing better compared to the Islamic portfolio. Specifically, the value of Sharp Ratio for conventional index is higher than the value for Islamic stocks. The Treynor and Jensen ratios show the same result as Sharpe ratio.

However, during crisis period the betas for both conventional and Islamic indices are relatively higher, especially during the global financial crisis. It is noticeable that all indices show a period of high volatility in returns during 2007 and 2008 confirming results of the
financial crisis that blew out in an economic collapse in US and a recessionary phase in all major economies.

There seem to be higher market risk for Islamic indices relative to their conventional counterpart during crisis periods inconvenient with Hussein (2005).

During the global financial crisis (2007–2008), results are mixed some Islamic index appear by proving their performance in terms of risk and return.

Performances of conventional and Islamic indices during the global financial crisis show that the majority of conventional indices have outperformed their conventional counterpart during turbulent times which infers findings of Ho et al. (2013).

The results reveal that during this period, the returns on Islamic indices are less drastically affected than the conventional indices according to all three performance measurements which imply that presented less risk level compared to their counterparts.

Some Islamic indices have performed relatively better than their conventional counterpart according to the three performance measures.

The return performances for all indices are negative and findings confirmed that four Islamic indices seem to be able to outperform their conventional benchmarks.

The indices which attain to beat their conventional counterparts are Dow Jones Islamic Market U.S. Index (IMUS), Dow Jones Islamic Market World Emerging Markets Index (DJIEMG), Dow Jones Islamic Market U.S. Titans 50 Index (DJUS50) and Dow Jones Islamic Market Japan Index (DJIJP). It can be deduced that their outperformance comparing to the others was according to Treynor and Jensen measurements.

Higher betas or risks during normal periods may result in higher returns for some of these global indices while it is interesting to note that during the period from 2007 to 2008 the major indices have a negative return and as a result lower risk.

These findings are similar to Arouri et al. (2013) where both groups of indices experienced negative returns during the crisis but Islamic indices performed slightly better than its conventional peers.

Results from the last period extended from 2008 to 2014 in Table 5 showed mixed performance because the four Islamic indices which beat their conventional benchmarks continue to demonstrate their outperformance even after turbulent phase by using different evaluation ratios.

Albaity and Mudor (2012) reported that the conventional index in Malaysia minimally outperforms the Shariah stocks index which is consistent with our results during normal period which mean outside crisis period.

The study reached that Islamic indices underperform their conventional counterparts during the subprime crisis period from 2007 to 2008. However, the other four Islamic indexes
outperform their conventional indices. In summary, the conventional indices seem to perform better relative to crisis period.

The overall results confirm that the conventional portfolio is less risky than the Islamic portfolio during the study period where some indexes were outperforming their conventional counterparts and others underperforming them which are consistent with previous study of Hassan and Girard (2010).

The study finds that Islamic portfolio underperformed their peers during the sample as well as sub sample periods.

The risk adjusted returns for both indices reveals that were underperforming with respect to risk free rate of return. The study has also disclosed the high volatile nature of Islamic indexes than their conventional counterparts.

In addition, non-crisis period attests that conventional indices are less risky than Islamic ones but during crisis period, we tend to observe some Islamic index give less negative performance than their benchmarks.

This study indicated that during crisis periods, some Islamic indices perform better than conventional ones so they are less affected by the subprime crisis providing a hedging alternative due to their lower volatility and betas which is asserted by Sukmana and Khold (2010) where Islamic stock index is more resilience towards crisis compare to conventional stock index.

This finding can guide investors in their investment decision by providing information on the risk and return relation during turbulent time.

Results are mixed but not definitive, Risk averse investors who seek lower risk and volatility of returns should invest in the less risky Islamic indices which can generally satisfy their risk appetite, especially during crisis.

Therefore, Islamic investors who seek more equitable investments in accordance with the Islamic norm of allowing little uncertainty (Gharar) should definitely seek to invest in Shari’ah compliant indices. Lastly, conventional investors can also diversify their investments into the less risky Islamic ones, especially during bear periods. (Ho et al, 2013)

The investigation of the two portfolios employing risk-adjusted returns mainly using Sharpe ratio shows the Islamic portfolio had higher adjusted returns than the conventional portfolio.

In the crisis period, the CAPM alphas parameters show an enhanced decrease and increase in the two kind of portfolios. The increasing of alpha in those markets can be explained by the fact that Islamic index excludes bank and financial services stocks, which have been more affected in the crisis period.
Moreover, the no significance of all alphas parameters suggests that in the entire period as well as in the crisis period Islamic indices do not outperform significantly conventional indices in risk adjusted return basis.

Recalling our research objective on focusing investigating whether Islamic indices show higher dependence compared to conventional counterparts in times of crisis. Hence, the study infers that Islamic stocks are the viable and ethical investment avenue to the Muslim investors as they can invest their capital in accordance with their religious beliefs without sacrificing financial performance. (Boujelbene, 2012)

The implication of this, is that an investor following the Islamic indices, would not be better protected in times of economic crisis originating from financial sector that differ from region to another which consolidate the geographical factor as relevant element in diversification criteria.

Furthermore, despite their lower performance, Islamic investment attracts many investor who choose to respect Islamic financial rules so investor behavior appears like a significant criterion which make Islamic indices their favorite choice rather than conventional investment by being sure that their choices are coherent with their personal values.

5. Conclusions and Recommendations

The results based on the descriptive analysis suggest that Islamic index family is not fully sheltered from the subprime crisis. Similar to the conventional index, all Islamic index recorded lower average returns and higher volatility in the crisis period compared to the pre-crisis as well as after crisis period.

However, outcomes results from Sharpe ratio, Treynor index and Jensen’s alpha affirm that the impact of the financial crisis on ethical investment is as severe as it is on the conventional peers except four Islamic index that prove their resilience versus their counterparts during turbulent time and they continue their outperformance even during calmness period.

This four Islamic indices show lower dependence as compared to conventional counterparts in times of crisis. Meanwhile, geographical factor is shown to be relevant diversification criteria particularly during the crisis period.

In view of related literature, the findings of study confirm that the general belief, that Islamic financial markets are not ruled out from the adverse of financial shocks due to its interest-free nature, is flawed. As a result, policy-makers, industry-players academics and Shariah-scholars need to convene and work together to equip the Islamic capital markets with suitable techniques and tools to mitigate and avoid as much as possible the impact of the global financial crisis on the Islamic index and reduce systematic risk. It’s also substantial to take preemptive measures to safeguard their stability in times of financial uncertainties.

The study documents several interesting findings which can be summarized as follows:
Islamic indexes are not spared from the global financial crisis as all the conventional indexes included in this study were adversely affected by the financial crisis. This is reflected by the lower returns and more volatile nature of ethical investment in the crisis period than the non-crisis period.

The practical implementations of the findings are enormous. Since it is shown that Islamic indexes are as vulnerable as the conventional indexes to the global financial shock, it’s important that the industry players and policymakers remained vigilant to ensure stability of the Islamic indexes.

This significant stability can be explained by several factors such as the exclusion of conventional banking and insurance shares and stocks that failed to pass the screening criteria due to the nature of their business, from Islamic indices.

This highlights the importance of ensuring continuous prudent risk management practices and devising suitable hedging mechanisms and relevant risk mitigation techniques.

In term of portfolio diversification benefits, investors should be aware of the market condition in strategizing their capital portfolio in the context of both the level of development and also depending on geographical area factor.

The results substantiate the authors’ hypothesis, that during crisis, Islamic indices provide though not complete, but partial insulation, thus a safer haven where they are less exposed to crisis financial damages.

Since the study is limited to only ten Islamic indexes, the results of the study are indicative but not conclusive for the Islamic investment in general. As more data becomes available, the study can be extended to include greater number of Islamic index representing various regions around the world.

This study can be expanded and findings be tested for validity for other regions and country specific indices using the same methodology.

The study focused on a single index family, which may not portray the real picture of Islamic financial markets around the world, is considered as a shortage to go beyond in future works.

An important extension is to develop the degree of Islamic index integration level depending the global economic and financial downturn phases then we could focus on improving performance measures and extending the performance analysis to Islamic fund data.

References


Kassab S. 2013, "Modeling volatility stock market using the ARCH and GARCH models: comparative study between an Islamic and a conventional index (SP Sharia VS SP 500)". European Journal of Banking and Finance.


Institutional Reports


Annexes

Table 1: Islamic and Conventional Indices Included on the study

<table>
<thead>
<tr>
<th>Islamic indices</th>
<th>Conventional indices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dow Jones Islamic Market U.S. Index (IMUS)</td>
<td>Dow Jones U.S. Index (DJUS)</td>
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<td>Dow Jones Islamic Market U.K. Index (DJIUK)</td>
<td>Dow Jones U.K. Index (GBDOWD)</td>
</tr>
<tr>
<td>Dow Jones Islamic Market Europe Index (DJIEU)</td>
<td>Dow Jones Europe Index (E1DOW)</td>
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<tr>
<td>Dow Jones Islamic Market World Emerging Markets Index (DJIEMG)</td>
<td>Dow Jones Emerging Markets Index (W5DOW)</td>
</tr>
<tr>
<td>Dow Jones Islamic Market U.S. Titans 50 Index (DJUS50)</td>
<td>Dow Jones Global Titans 50 Index (DJGT)</td>
</tr>
<tr>
<td>Dow Jones Islamic Market Japan Index (DJJP)</td>
<td>Dow Jones Japan Index (JPDOWD)</td>
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<td>Dow Jones Islamic Market Canada Index (DJICA)</td>
<td>Dow Jones Canada Index (CADOWD)</td>
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<tr>
<td>Dow Jones Islamic Market Malaysia Index (DJIMY)</td>
<td>Dow Jones Malaysia Index (MYDOWD)</td>
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<tr>
<td>Dow Jones Islamic Market Developed Markets Index (DJIDEV)</td>
<td>Dow Jones Developed Markets Index (W3DOW)</td>
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<tr>
<td>Dow Jones Islamic Market World Index (DJIM)</td>
<td>Dow Jones Global Index (W1DOW)</td>
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### Table 2: Descriptive Statistics of Returns of the Islamic Indices for the Dow Jones family

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<th>DJIEMG</th>
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<th>DJIJP</th>
<th>DJICA</th>
<th>DJIMY</th>
<th>DJIDEV</th>
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### Table 3: Descriptive Statistics of Returns of the Conventional Indices for the Dow Jones Family

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