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Does it pay to be a faithful investor? A risk-based approach performance analysis of Islamic funds vs UCITS schemes

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Abstract

Purpose – This paper empirically investigates the performance of Islamic funds, which have been praised for weathering the 2008 financial storm relatively well and compares it to a European product designed to protect the most vulnerable of investors, UCITS funds.

Design/methodology/approach – This paper builds on 128 time-series regressions using various factor models to analyse the risk-return relationship of 242 Islamic and UCITS funds relative to a market benchmark, over a 10-year period starting January 2006, to capture severe bear and bull market conditions.

Findings – Islamic funds do not face a competitive disadvantage arising from their strict compliance with Sharīʿah principles, and their performance and investment style is relatively similar to UCITS schemes.

Practical implications – Islamic funds represent a low risk investment due to their very mild betas. Therefore, when forming part of a diversified portfolio, they can act as a hedging tool against adverse market movements.

Social implications – Muslim investors are not punished relative to conventional retail investors when following their own beliefs. Other investors can consider Islamic funds in their portfolio allocation, especially those who seek socially and ethically responsible investments.

Originality/value – This paper fills a lacuna in the existing literature, because the sample is made up of Islamic funds established worldwide and includes not only equity, but also fixed income and mixed allocation funds.

Keywords Islamic funds, UCITS, Matched-pair analysis, Performance evaluation, Fama-and-French four-factor model, Fung Hsieh seven-factor model, Market-timing abilities

Paper type Research paper

1. Introduction

What goes up must come down.

The quote which Sir Isaac Newton used to define the law of gravity could be easily applied to the modern financial markets.

The severity of the 2008 financial crisis brought the world to its knees, and for such reason, it has been labelled as the worst financial crisis since the Great Depression. Albeit its

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devastating effects, the global crisis of 2008 brought the Islamic Financial Industry ("IFI") into the limelight, for its stability and resilience during periods of economic stress. Traditionally, the IFI was developed to serve the financial needs of the faithful Muslim population. The basic principles of Islamic Finance ("IF") revolve around the promotion of greater social justice. Nowadays, promoters of IF believe that the doctrines upon which the IFI is built may present a possible solution to avoid future recurrence of the crisis.

The IFI was not immune to the repercussions of the financial crisis and its subsequent recessions, yet several studies show that Sharī'ah-based financial products weathered the storm better than their conventional counterparts (see, e.g. Abdullah *et al.*, 2007; Chapra, 2008; Alam, 2011). This is primarily because, IF prohibits certain investments such as derivative instruments and hence Sharī'ah compliant financial products are relatively disassociated from the sub-prime market.

This paper investigates a smaller segment of the IFI, namely Islamic collective investment schemes ("CIS"). The Islamic faithful investors' choice of CISs is limited to those funds that strictly abide by Sharī'ah law. Islamic funds are only allowed to gain exposure to assets that are compliant with Sharī'ah Law and prohibited from entering into transactions which are considered unethical.

The conservative approach of Islamic funds has worked in favour of the industry during certain market conditions. These funds have managed to limit the repercussions of the collapse in the asset prices during the financial crisis of 2008, which had its epicentre in high leverage and speculative instruments. By way of a real example, the *Eurekahedge Islamic Fund Index* fell by 28.72% in 2008, whereas the *MSCI AC World Index All Core (Local)* plunged 41.1% [1].

While there are various contributions to literature regarding IF, the majority revolve around the Islamic banking system. Moreover, the limited existing studies that have examine the performance of Islamic funds focus primarily on equity, or otherwise restrict the data sample to include funds established in the Asia Pacific region, particularly Malaysia. This study will continue to add to the existing literature on Islamic funds and aims to fill a small lacuna in the existing finance literature, by studying Islamic funds established worldwide through a sample which is not limited solely to equity funds, but also includes fixed income and mixed allocation funds, and compare their performance to that of the heavily regulated UCITS schemes.

UCITS schemes are a product of a European Union ("EU") Directive on Undertakings for Collective Investment in Transferable Securities ("UCITS"). The first UCITS Directive was adopted in 1985, with the aim to reduce regulatory arbitrage for mutual funds across Europe and ensure that European citizens receive the same level of protection across all EU member states. UCITS schemes' investment policies and restrictions have to be in line with a list of eligible assets as set out in the UCITS Directive. UCITS funds are only allowed to invest in transferable securities and other financial assets that are liquid. The exception to this rule is the so called "Trash Ratio". A UCITS scheme may invest up to 10% of its assets in illiquid transferable securities and money market instruments. The use of derivative instruments for investment or hedging purposes is also allowed on the basis that the underlying is an eligible UCITS asset or an approved index. Disclosure requirements are in place to ascertain that investors are made aware of the underlying assets and the risk associated with such investments. The UCITS Directive requires certain level of diversification such that the performance of the scheme is not based solely on a limited number of assets. The most common diversification rule is the so-called 5/10/40, meaning that investments in securities issued by a single issuer may account for a maximum of 10% of the funds' assets. Any exposures of more than 5% in single issuers may not, in aggregate, account for more than 40% of the whole portfolio.

One of the top hedge fund databases, Eurekahedge (July 2015) (April 2020), outlines that the flight to quality following the 2008 financial crisis has seen an increase in the interest and

demand for investments which offer greater protection against downside risk, and hedge fund investors shifted their savings to more regulated, transparent and liquid CISs, such as UCITS Schemes. Eurekahedge outlines that by the end of 2007, the UCITS funds industry was relatively small, with an AUM of US$105 billion spread amongst 300 funds. It was only after the 2008 financial crises that UCITS funds gained traction, increasing to circa 700 funds and US$250 billion of Assets under Management by the end of 2010. According to the European Commission, UCITS funds account for approximately 75% of all collective investment done by small investors in Europe.

This research is important from a practical point of view, as it provides a good basis for understanding the behaviour of these funds during both bullish and bearish market conditions. Investors and fund management companies may apply this study to better manage their asset allocations with the aim to maximise risk-adjusted returns during different market cycles. It could also inspire regulatory bodies to work towards legislation and regulation that encourages the development of Islamic funds.

The remainder of this paper is set out as follows. Section 2 is a brief literature review, Section 3 provides details of the data, models and methodology. Section 4 presents the empirical findings, and the conclusion is presented in Section 5.

2. Literature review

Many of the research studies that deal with the evaluation of funds' performance are based on the assessment of risk and return in relation to relative benchmarks. Sharpe (1964) and Lintner (1965) have been pioneers in this area, with the development of the Capital Asset Pricing Model. Michael Jensen (1968) was one of the first researchers to evaluate funds' performance using the implications of the CAPM. He measured the performance of 115 mutual funds between 1955 and 1964, using a single-factor measure, which later became known as Jensen's Alpha. He concluded that these funds were not able to outperform the buy and hold policy after considering their expenses, in support of the EMH. The presence of fees and transaction costs is detrimental to the performance of CISs (Sharpe, 1966; Grinblatt and Titman, 1993; Carhart, 1997).

Fama and French (1993) wrote one of the most influential papers, criticising the CAPM for being too simplistic in explaining the returns of stocks. They proposed a three-factor model, outlining that the returns of stocks are a function of their exposure towards the market, size and value factors. Carhart (1997) also acknowledged the criticism towards the CAPM and developed his own four-factor model, by adding a momentum factor to Fama and French's (1993) three-factor model. He found that equity funds underperformed the NYSE by approximately the same amount of their investment expense. Otten and Bams (2002) applied the Carhart's model to the European equity mutual fund industry during an eight year period ending December 1998, and also found that when costs are added back to the performance of the funds, all funds from different EU countries outperformed the market, with the exception of German funds.

In 2004, Fung and Hsieh argued against the application of conventional models. Instead, they developed a multi-factor model, using seven asset-based style factors. Kosowski *et al.* (2007) made use of the Fung and Hsieh (2004) seven-factor model and showed that, during the period 1990 till 2002, their sample of hedge funds was not able to generate statistically significant positive alpha. More recently, Fama and French (2015) developed a five-factor model, by adding on profitability and investment factors to their three-factor model.

Abedifar *et al.* (2015) outlined that the majority of the empirical literature on Islamic funds evaluates the risk and return characteristics of such schemes and test whether these are statistically different from those of other CISs, Islamic market indices and conventional debt securities. Generally, in pursuit of results and to be able to evaluate the risk-adjusted returns

of these CISs, such studies make use of performance metrics, and single and multi-factor regression models.

One of the earliest contributors to the Islamic funds' literature were Annuar *et al.* (1997). Through an empirical examination of the market timing and selectivity skills of 31 Malaysian mutual CISs, they showed that fund managers were not able to time the market correctly during the period 1990 till 1995. However, 81% of their sample outperformed the Kuala Lumpur Composite Index, which was used as a proxy for the market. This finding of positive securities selection ability is in line with the findings of Mansor (2012). She found evidence that Islamic fund managers have superior stock selection skills when compared to conventional fund managers, yet both have poor market timing abilities.

These findings are however divergent to the conclusions drawn by most other studies on Islamic funds. Elfakhani *et al.* (2005), Abdullah *et al.* (2007) and Hayat and Kräussl (2011) suggest that Islamic fund managers have poor market timing abilities and securities selectivity skills. Whereas Mohammad *et al.* (2015) in their study about Islamic Equity Indices found that, whereas the majority of Islamic equity indices have negative market timing abilities due to their conservative nature of investments, the Sharīʿah screening helps Islamic equity indices to select companies which are not financially distressed, with a positive momentum and growth oriented.

Another prominent study is the one conducted by Elfakhani *et al.* (2005), who studied the performance of 46 Islamic mutual funds from January 1999 till August 2002. They found that, normally, there is no difference in the behaviour of Islamic mutual funds when compared to conventional schemes. They suggest that any under- or over-performance is generally the result of the choice of the market benchmark and the performance measure used. In addition, they also showed that there is a positive relationship between funds' performance and the experience of the fund managers since the former tends to increase as fund managers gain more sense of the general markets.

Hayat (2006) compared the performance of 59 Islamic equity funds established worldwide against both Islamic and conventional benchmarks during a five-year period ending August 2006, making use of different performance measures, including an analysis of average return and other risk-adjusted measures. Hayat revealed that during normal market conditions, there is no statistical difference in the returns of Islamic funds as compared to the chosen benchmarks. Islamic equity funds performed significantly better than both benchmarks during the bear market of 2002. Hayat concluded by indicating that Islamic funds have low betas and thus are beneficial to use as part of a larger and well-diversified portfolio. Similarly, Ashraf *et al.* (2014) studied the performance of Islamic equity indices in comparison to conventional equity indices for the period 2000 till 2012 and suggest that generally Islamic equity indices perform better than conventional indices due to their lower systematic risk.

The finding of Hayat (2006) seems to tie in with more recent findings of Boo *et al.* (2017) who examined Islamic equity funds in comparison to conventional equity mutual funds over the period 1996 to 2013, capturing three financial crises. They conclude that there is no clear cut over-performance by Islamic mutual funds against their conventional peers, albeit Islamic funds showed a better risk management capability. Moreover, Boo *et al.* noted that there was an exception during the latest financial crisis, whereby Islamic funds generally outperformed their conventional peers. Similar results were also reported by Reddy *et al.* (2017), who compared risk adjusted performance of Islamic funds, socially responsible and conventional funds established in the UK. They confirmed that, generally, Islamic funds perform similarly to conventional funds. Their findings also showed that the UK-based Islamic funds' magnitude of loss during the financial crisis was lower than that of conventional funds.

Recent studies also compare Islamic Funds with other socially responsible investment funds. Climent *et al.* (2020) compared US Islamic, Socially Responsible, and conventional open-ended mutual funds for the period 1987 till 2018. They explained that the limitations on

investments and stock selection could have probably led Islamic funds to perform worse than conventional funds during the sub-period 1987 till 2000. However, during the sub-period 2000 till 2018, Islamic funds had similar performance to conventional funds, thus showing that market uncertainties made Islamic funds a viable alternative. Abdurahman and Aassouli (2020) evaluate the risk and return characteristics of Islamic funds in comparison to socially responsible investment via the use of absolute and risk adjusted performance measures on a sample collected from four different geographic regions. They did not find any statistically significant differences between Islamic funds and socially responsible investments. They indicate that embedding environmental, social and governance characteristics into Islamic funds investment decisions will not adversely affect their returns. Moreover, they suggest that the industry should consider developing Sharī'ah compliant Socially Responsible Investments, to target wider investor base in support of sustainable development goals.

Notwithstanding the different limitations and approaches to measure performance, there seems to be a consensus amongst Islamic funds literature. These funds tend to have a lower correlation with market movements, as evidenced by lower betas (see e.g. Hayat, 2006; Abderrezak, 2008). This could help to explain why Islamic funds perform better than conventional CISs during periods of financial distress, whereas conventional funds outperform Islamic funds during bearish economic conditions (e.g. Elfakhani *et al.*, 2005; Hayat, 2006; Abdullah *et al.*, 2007; Merdad *et al.*, 2010; Mansor, 2012; Boo *et al.*, 2017). Therefore, such common consensus seems to suggest that Islamic funds may be used to hedge against market downturn. Merdad *et al.* (2010) attribute such benefit to the restrictions that Sharī'ah law imposes on portfolio selection.

3. Data and methodology

This paper aims to address the following research questions:

(1) Do Islamic funds and UCITS schemes underperform the market?

(2) Do these type of collective investment schemes offer similar benefits to investors in terms of risk and return?

(3) Do these funds act differently in bullish and bearish market conditions?

(4) Do Islamic and UCITS funds' managers offer similar benefits to investors in terms of market timing expertise?

This study builds upon 128 regressions, split equally between the Islamic and the UCITS schemes across the four different periods. The data covers 120 monthly observations from January 2006 until December 2015.

3.1 Data

The universe of Islamic funds as presented on Bloomberg was filtered as follows: (1) funds with a complete 10 years of history plus an extra year to control for back-fill bias, from 2004 till 2015, (2) funds which invest in liquid financial instruments such as equities, fixed income instruments and CISs, particularly because UCITS schemes are only allowed to invest in liquid transferable instruments; and (3) funds which had missing Net Asset Value ("NAV") data for continuous periods (more than 2 months in a row) were eliminated from the sample. The Islamic funds sample was divided into three broad categories, namely, equity, fixed income and mixed allocation funds.

To perform a meaningful matched-pair analysis, the UCITS schemes were chosen on the basis of, and in line with, the particular characteristics of the Islamic funds. The Mixed Allocation funds was done meticulously, to ensure that, as much as possible, the underlying

assets of the selected UCITS schemes correspond, in similar percentage terms, to the underlying assets of the Islamic funds. Particular attention was paid to select UCITS schemes with similar geographical allocation to that of Islamic funds. Most Islamic funds invest in the Asian markets, focusing mainly on Malaysia. Whilst there are several UCITS equity funds that invest solely in Asia, the search for Fixed Income and Mixed Allocation UCITS schemes which invest in the same region proved difficult. To this effect, the focus was then widened to consider UCITS schemes that invest at least a portion of the portfolio in Asian countries (mostly Japan), emerging markets or have an ethical investment policy, and subsequently those that invest in international markets.

The final sample consists of 121 Islamic funds and 121 corresponding UCITS schemes, split up in 66 Equity, 39 Mixed Allocation and 16 Fixed Income. The MSCI All Country World Index ("MSCI ACWI") is used as a proxy for the market in respect of both Islamic and UCITS schemes. The choice of the index is based on the fact that the CISs under review are not restricted in terms of geographical allocation and a considerable number invest in the Asian markets, some of which also include emerging markets.

3.2 Methodology

The NAV of each fund was converted into one single currency, namely the United States Dollar ("USD"). The NAVs were then converted into returns. The US three-month Treasury Bill was used as a proxy for the risk-free rate.

The presentation of results is split into four categories based on the funds' underlying assets, and distinguishing between Islamic and UCITS schemes, namely (1) All Funds, (2) Equity, (3) Mixed Allocation and (4) Fixed Income – whereby the average of the results of the performance measures of the funds falling within the respective category is reported. This representation in results is maintained throughout the four periods under study, namely (1) the entire ten-year period (January 2006 till December 2015), (2) Sub-Period 1 (January 2006 till September 2007), (3) Sub-Period 2 (October 2007 till February 2009) and (4) Sub-Period 3 (March 2009 till December 2015). The sub-periods capture the variations in the performance of the funds during different market conditions and represent the months preceding the latest financial crisis (Sub-Period 1), the bear market (Sub-Period 2), and the years following the crisis (Sub-Period 3).

This paper adopts an equally weighted portfolio approach. The individual fund's monthly returns were grouped into four portfolios, according to the same underlying assets as described above, and calculated over the entire 10-year period and each of the sub-periods. The equally weighted portfolio approach shows an aggregate picture of funds' performance and thus provides insight into the performance from the perspective of a well-diversified investor.

The portfolio approach was subject to various time-series regressions. The time-series analysis focuses on the risk and return performance starting from the single-factor CAPM expressed as:

$$E\left(\bar{\bar{R}}_{jt}\right) = R_{Ft} + \beta_j\left[E\left(\bar{\bar{R}}_{mt}\right) - R_{Ft}\right] \tag{1}$$

whereby $E(\bar{\bar{R}}_{jt})$ is the expected return on portfolio (j) at time (t), $E(\bar{\bar{R}}_{mt})$ is the expected return on the market portfolio at time (t), R_F is the risk-free interest rate and β_j is a measure of systematic risk, and then extends to more complex multi-factor models, namely: the Fama and French (1993) three-factor model expressed as:

$$R_i - R_f = \alpha_i + b_i(R_M - R_f) + s_i SML + h_i HML + \varepsilon_i. \tag{2}$$

This model outlines that the portfolio's return in excess of the risk-free rate $(R_i - R_f)$ is dependent upon the sensitivity of the return to three factors, namely (1) the excess return on

the market as defined by $R_M - R_f$, (2) the size factor (SML), which is the difference between small stocks' and large stocks' returns and (3) the value factor (HML), which is the difference between high and low book-to-market stocks' returns. The b_i, s_i and h_i are the factor sensitivities or loading as measured by the time series regression. The Fung and Hsieh (2004) seven-factor model was also used, which is expressed as:

$$R_{it} - R_{ft} = \alpha_i + \beta_{is\&p} S\&P_t + \beta_{isc-LC} SC - LC_t + \beta_{i10Y} 10Y_t + \beta_{icredspr} CredSpr_t + \beta_{iptfsbd} PTFSBD_t + \beta_{iptfscom} PTFSCOM_t + \beta_{iptfsfx} PTFSFX_t \varepsilon_i \quad (3)$$

whereby $R_{it} - R_{ft}$ is the same as outlined previously, $S\&P$ is the S&P500 index monthly total return, $SC - LC$ represents the size spread factor as measured by the Russell 2000 index monthly return less the S&P500 index monthly total return, $10Y$ is the bond-oriented factor as measured by the change in the 10 years treasury constant maturity yield and $CredSpr$ is the credit spread factor, equivalent to the difference between the monthly change in the Moody's BAA yield and the 10 years treasury constant maturity yield. Finally, the PTFSBD, PTFSFX and PTFSCOM are the return of a portfolio of look-back straddles on bond, currency and commodity futures respectively.

In addition, the market timing skills of fund managers was analysed by using the quadratic version of the CAPM as developed by Treynor and Mazuy (1966), expressed as:

$$R_{pt} - R_{ft} = \alpha_{pt} + \beta_{pt}(R_{Mt} - R_{ft}) + \gamma_t (R_{Mt} - R_{ft})^2 + \mu_t \quad (4)$$

whereby $R_{pt} - R_{ft}$ is the return on each of the funds' portfolio less the risk-free rate and $R_{Mt} - R_{ft}$ is the excess return of the market over the risk-free rate, at time (t). Moreover, α_{pt} denotes the selectivity skill of the fund manager, β_{pt} represents the systematic risk, γ_t is the coefficient that indicates the market timing skill. Therefore, a positive and significant α and γ indicate that fund managers have superior selectivity and market timing skills respectively.

4. Findings

When analysing mutual fund performance, Jensen concluded, "*There is very little evidence that any individual fund was able to do significantly better than that which we expect from mere random chance*" (Jensen, 1968). This conclusion is also true for both Islamic and UCITS schemes across the different periods under analysis, as evidenced by the statistically insignificant intercepts of the CAPM across the different time periods. Therefore, this result supports the notion of an efficient market. The one exception to this rule is evidenced in the UCITS mixed allocation funds portfolio during the post-crisis period, which had a significant negative alpha value. The strongly significant Beta co-efficient for most of the cases also confirm the correlation with the market as previously explained.

The results of the time series regression of the Jensen's Alpha;

$$\bar{\bar{R}}_{jt} - R_{Ft} = \alpha_j + \beta_j \left(\bar{\bar{R}}_{Mt} - R_t \right) + \mu_{jt} \quad (5)$$

where $\bar{\bar{R}}_{jt} - R_{Ft}$ is portfolio (j)'s excess return over the risk free rate at time (t), $\bar{\bar{R}}_{Mt} - R_{Ft}$ is the market risk premium, α_j and β_j are the coefficient estimates denoting the return performance and the systemic risk respectively and μ_{jt} is the error term, with the usual assumption $\varepsilon_{it} \sim N(0, \delta_t^2)$, are shown in Table 1.

Results of the empirical literature on Islamic funds' performance are quite divergent on this front, and the main differences in results may be mainly attributed to several factors, including the differing periods under investigation and the benchmarks used. The results of

Table 1.
CAPM results

		Jensen's (1968) single factor model					
		Islamic funds			UCITS funds		
		α_p	β_p	Adj R^2	α_p	β_p	Adj R^2
All funds	10Y	0.001 (0.512)	0.646*** (17.835)	0.727	0.000 (0.313)	0.862*** (37.679)	0.923
	SP1	0.004 (0.980)	0.846*** (4.869)	0.532	0.003 (0.947)	0.922*** (8.362)	0.775
	SP2	0.003 (0.472)	0.631*** (6.626)	0.728	0.008 (1.501)	0.929*** (12.713)	0.909
	SP3	−0.001 (−0.611)	0.658*** (14.396)	0.718	−0.002 (−1.467)	0.872*** (33.955)	0.934
Equity	10Y	0.001 (0.830)	0.742*** (21.876)	0.801	0.001 (0.750)	1.065*** (39.538)	0.929
	SP1	0.004 (0.908)	0.922*** (5.508)	0.595	0.003 (1.038)	1.212*** (8.904)	0.796
	SP2	0.003 (0.459)	0.758*** (8.122)	0.802	0.007 (1.216)	1.129*** (14.936)	0.933
	SP3	0.000 (0.077)	0.731*** (17.295)	0.786	−0.001 (−0.376)	1.048*** (32.533)	0.929
Mixed allocation	10Y	0.001 (0.281)	0.630*** (13.043)	0.587	−0.001 (−0.554)	0.722*** (25.084)	0.841
	SP1	0.007 (1.119)	0.881*** (3.510)	0.361	0.002 (0.653)	0.697*** (6.759)	0.691
	SP2	0.003 (0.459)	0.758*** (8.122)	0.802	0.009 (1.199)	0.749*** (7.982)	0.797
	SP3	−0.003 (−1.114)	0.665*** (11.083)	0.601	−0.003** (−2.275)	0.760*** (22.664)	0.864
Fixed income	10Y	0.000 (−0.263)	0.290*** (8.666)	0.384	0.000 (0.247)	0.365*** (9.305)	0.418
	SP1	−0.001 (−0.230)	0.446*** (4.199)	0.454	0.001 (0.316)	0.276* (2.044)	0.137
	SP2	0.004 (0.664)	0.237** (2.895)	0.316	0.012 (1.124)	0.392** (2.788)	0.297
	SP3	−0.003 (−1.362)	0.344*** (7.597)	0.412	−0.002 (−1.128)	0.420*** (9.673)	0.533

Note(s): *, **,*** indicate that the result is statistically significant at the 10%, 5% and 1% level respectively

these study are in line with the works of Abdullah *et al.* (2007), Hoepner *et al.* (2010), Hayat and Kräussl (2011), Elfakhani *et al.* (2005) and Abderrezak (2008), who all reported insignificant alphas, whereas it goes against the results of Hayat and Kräussl (2011) who report that Islamic funds underperformed the market during the recent financial crisis, whereas Mansor (2012) found that Islamic funds significantly outperform the market over the period 1990 till 2009.

4.1 Analysis of beta

An interesting result is that the Beta of Islamic funds has always been much lower than that of UCITS schemes for all categories of funds and across all the different periods under analysis. Therefore, any attempt to compare the average returns of Islamic funds to the returns of the market without making an adjustment for risk would be biased against the Islamic funds. As can be observed in most of the Islamic funds' literature (such as Abdullah *et al.* (2007); Hayat and Kräussl, 2011; Mansor, 2012), Islamic funds have been less responsive to market risk, with beta less than one, across different market conditions. On the other hand, some categories of UCITS schemes, in particular, equity funds, have been riskier than the benchmark (with beta as high as 1.212 during the period preceding the crisis).

Therefore, Islamic funds are indeed less volatile than the market and may be classified as low-risk investments. As also suggested by Abderrezak (2008), due to their mild correlation with the market, Islamic funds may be used as a good hedging investment against market downturns. Inversely, in good market conditions, Islamic funds are likely to underperform the market.

Abdullah *et al.* (2007) attribute the low level of beta to the restrictions imposed by Sharī'ah principles. Islamic financial institutions were not directly affected by the financial crisis during its early stages particularly because they did not have any exposure to debt-based toxic assets (Askari *et al.*, 2010). The fact that Sharī'ah principles do not allow investors to gain exposure to conventional banking system (since these gain income from *ribā*) investors in Islamic funds were not immediately affected by the failure of the conventional banking system in 2007. However, due to the interconnectedness of the markets and as the financial crisis led to a global slowdown and economic recession, Islamic financial institutions were eventually influenced by the negative pressure of the crisis.

Judging by the results of the Adjusted R^2, the CAPM provides a fairly good fit for Islamic funds, with an average Adjusted R^2 (across periods and categories) of 58.7%. The single-factor model is yet more accurate in explaining the UCITS schemes' excess returns as evidenced by an average Adjusted R^2 of 73.2%. This is quite an expected outcome, because a conventional benchmark, such as the one used in this research, may not be the most adequate benchmark which reflects the true investable universe applicable under Sharī'ah Law.

In order to further validate the above findings, the analysis was extended towards the three-factor model following Fama and French (1993). One commonality in the results of the three factor model as shown in Table 2, with all the tests conducted so far, is that all categories of funds, bar the UCITS Equity Funds have lower volatility than the market. Moreover, Islamic funds have lower exposure to the market than UCITS schemes, indicating that Islamic Funds provide a better hedge, especially during market turmoil. In terms of style, it is apparent that both Islamic and UCITS schemes have significant negative loading on the size factor. This suggests that the return of both categories of funds is driven relatively more by the exposure to large capitalisation firms.

Whilst this is expected for UCITS funds, since these are not permitted to gain exposure to unlisted securities which by the very nature, tend to be small cap firms, the tilt of Islamic funds to large cap companies do contradict the findings of Abderrezak (2008) and Hoepner *et al.* (2010), who suggest that large-cap companies have a higher risk of receiving revenues

Table 2. Fama and French 3-factor model results

		Fama and French (1993) 3-factor model									
		Islamic funds					UCITS funds				
		α_p	Rm-Rf	SMB	HML	Adj R^2	α_p	Rm-Rf	SMB	HML	Adj R^2
All funds	10Y	−0.002 (−0.762)	0.686*** (12.617)	−0.218** (−2.147)	−0.104 (−1.185)	0.588	−0.003 (−1.513)	0.898*** (17.698)	−0.170* (−1.801)	−0.145* (−1.763)	0.744
	SP1	0.008 (1.336)	0.692** (2.629)	−0.110 (−0.418)	−0.061 (−0.199)	0.179	0.007 (1.510)	0.650** (2.873)	0.062 (0.275)	−0.105 (−0.394)	0.275
	SP2	0.004 (0.344)	0.773*** (4.770)	−0.502 (−1.138)	−0.273 (−1.465)	0.577	0.005 (0.427)	1.023*** (6.054)	−0.181 (−0.394)	−0.310 (−1.596)	0.728
	SP3	−0.005* (−1.816)	0.692*** (10.098)	−0.217* (−1.940)	0.020 (0.176)	0.589	−0.006*** (−2.669)	0.910*** (14.756)	−0.230** (−2.286)	−0.039 (−0.379)	0.754
Equity	10Y	−0.002 (−0.814)	0.802*** (15.137)	−0.218** (−2.206)	−0.148* (−1.723)	0.674	−0.003 (−1.448)	1.121*** (18.825)	−0.145 (−1.305)	−0.235** (−2.435)	0.768
	SP1	0.008 (1.413)	0.741** (2.880)	0.001 (0.002)	−0.199 (−0.657)	0.267	0.009 (1.544)	0.888*** (3.110)	0.062 (0.219)	−0.146 (−0.436)	0.315
	SP2	0.003 (0.266)	0.927*** (5.699)	−0.502 (−1.133)	−0.358* (−1.914)	0.676	0.003 (0.245)	1.314*** (7.600)	−0.264 (−0.560)	−0.518** (−2.602)	0.811
	SP3	−0.004 (−1.571)	0.779*** (11.960)	−0.232** (−2.180)	0.023 (0.209)	0.670	−0.006** (−2.141)	1.083*** (14.665)	−0.166 (−1.374)	−0.052 (−0.426)	0.757
Mixed allocation	10Y	−0.002 (−0.623)	0.654*** (9.579)	−0.245** (−1.927)	−0.091 (−0.822)	0.447	−0.003* (−1.706)	0.746*** (14.709)	−0.204** (−2.161)	−0.065 (−0.786)	0.668
	SP1	0.010 (1.347)	0.709* (2.027)	−0.284 (−0.815)	0.046 (0.113)	0.053	0.005 (1.383)	0.471** (2.538)	0.108 (0.586)	−0.044 (−0.202)	0.236
	SP2	0.004 (0.337)	0.724*** (3.814)	−0.607 (−1.174)	−0.287 (−1.316)	0.436	0.006 (0.471)	0.804*** (4.322)	−0.110 (−0.217)	−0.128 (−0.598)	0.570
	SP3	−0.006* (−1.912)	0.681*** (7.909)	−0.208 (−1.480)	0.036 (0.248)	0.467	−0.008*** (−3.239)	0.811*** (13.271)	−0.314*** (−3.146)	−0.027 (−0.268)	0.706
Fixed income	10Y	−0.001 (−0.717)	0.286*** (6.464)	−0.148* (−1.805)	0.042 (0.584)	0.281	−0.001 (−0.265)	0.350*** (6.578)	−0.193* (−1.947)	0.030 (0.349)	0.282
	SP1	0.000 (0.071)	0.446*** (3.308)	−0.138 (−1.030)	0.242 (1.531)	0.330	0.003 (0.793)	0.107 (0.602)	−0.052 (−0.292)	−0.082 (−0.391)	−0.140
	SP2	0.005 (0.705)	0.253* (2.052)	−0.246 (−0.731)	0.113 (0.798)	0.163	0.010 (0.719)	0.356 (1.621)	−0.016 (−0.027)	0.101 (0.398)	0.078
	SP3	−0.005* (−1.922)	0.361*** (5.886)	−0.178* (−1.779)	−0.028 (−0.277)	0.299	−0.004* (−1.806)	0.441*** (7.207)	−0.293*** (−2.933)	−0.012 (−0.119)	0.400

Note(s): *, **,*** indicate that the result is statistically significant at the 10%, 5% and 1% level respectively

from activities which are forbidden according to Sharī'ah Law. Yet, one could argue that large-cap companies tend to publish more detailed information about their operations on a more frequent basis, and accordingly, the availability of up to date information inevitably makes it easier for Islamic fund managers to clearly assess and distinguish between companies that generate *haram* and *halal* income. Abderrezak (2008) and Hoepner *et al.* (2010) suggest that Islamic equity funds favour growth stock due to their lower leverage when compared to value stock, and the same significant result was found for the whole ten year period under review for the Islamic Equity funds.

During crisis period, both the Islamic and also the UCITS Equity Funds gained significant exposure to growth companies, which companies are considered to be less risky than those with high book to market ratios. When looking at each individual category of funds, it is noticeable that Islamic funds performed less worse than their UCITS counterparts in respect of the All Funds, Equity and Mixed Allocation categories, whereas the UCITS Fixed Income portfolio fared better than its Islamic counterparts.

It is important to note that, in terms of the results of the Adjusted R^2 for all of the periods under analysis, the Fama and French (1993) three-factor model has lower explanatory powers than the CAPM, especially during the period prior to the crisis. This could partially be explained by two reasons. The Fama and French's three risk factors are built upon the US market, and thus the lower Adjusted R^2 might be suggestive of the fact that both Islamic and UCITS schemes are more exposed to international markets, as captured by the MSCI ACWI. Moreover, one could also argue that most of the changes in the returns of the funds could be explained by other factors which are not captured by the model.

For more robust test, this study analysis the performance of the funds relative to the Fung and Hsieh (2004) seven factor model, which model has proved to be more efficient at explaining the returns of different categories of funds when compared to the three-factor model. As evidenced by the results in Table 3, generally speaking, the null hypothesis that Islamic and UCITS schemes do not outperform the market, may not be rejected. Moreover, in times when the general market conditions start to regain following periods of market turmoil, the restrictions imposed by both Sharī'ah Law and the UCITS Directive are even more detrimental to investors. During the whole 10 year period, all the portfolios experienced statistically significant and positive exposure to the S&P500, yet the UCITS Equity portfolio was more volatile than the general equity market. Moreover, the Islamic Fixed Income portfolio was the only category of funds that did not have a statistically significant exposure to Credit Spread, whereas all the other portfolios followed a strategy of buying risky bonds vis-à-vis higher grade bonds (as evidenced by the negative coefficients). Prior to the crisis, albeit all the portfolios generated positive alpha, the results were statistically insignificant. In terms of style, the UCITS Fixed Income portfolio was the only category which did not have a statistically significant exposure to the S&P500, which Fung and Hsieh (2004) classify as an equity risk factor. This confirms the findings of the three-factor model, in that the UCITS Fixed Income funds did not gain exposure to the equity market during the period before the crisis. Moreover, the seven-factor model captured the positive exposure of the UCITS Fixed Income funds towards the foreign exchange trend factor (500bps (t-stat: 2.78)) and the negative exposure of the Islamic Mixed Allocation funds towards the credit spread factor, which were previously not captured by the Fama and French model. This explains the reason why the Adjusted R^2 of the Fung and Hsieh model (34.6 and 33.1% respectively) improved significantly when compared to the Fama and French model (−14 and 5.3% respectively) for these categories of funds.

In the midst of the crisis, the 7-factor model did not find any statistically significant alphas, yet, when it comes to style, it confirmed that the Islamic and UCITS Fixed Income portfolios were the only categories not exposed to the equity market. This could help explain why, during this period, the Fixed Income funds were the least to suffer in terms of their mean

Table 3.
Fung Hsieh 7-factor model results

10 year period (January 2006–September 2015)	Fung Hsieh (2004) 7-factor model							
	Islamic funds				UCITS funds			
	All funds	Equity	Mixed allocation	Fixed income	All categories	Equity	Mixed allocation	Fixed income
α_p	−0.001 (−0.551)	0.000 (−0.425)	−0.001 (−0.510)	−0.002 (−1.100)	−0.002 (−1.019)	−0.002 (−0.726)	−0.003 (−1.464)	−0.001 (−0.588)
PTFSBD	−0.021 (−1.281)	−0.022 (−1.342)	−0.025 (−1.191)	−0.011 (−0.796)	−0.010 (−0.644)	−0.010 (−0.541)	−0.012 (−0.755)	−0.006 (−0.386)
PTFSCOM	−0.007 (−0.490)	−0.002 (−0.144)	−0.016 (−0.864)	−0.007 (−0.588)	0.005 (0.373)	−0.003 (−0.180)	0.016 (1.097)	0.015 (1.070)
PTFSFX	−0.004 (−0.325)	−0.005 (−0.379)	−0.001 (−0.079)	−0.009 (−0.859)	0.006 (0.442)	0.009 (0.568)	0.004 (0.358)	−0.004 (−0.334)
SP500	0.590*** (10.188)	0.686*** (12.188)	0.557*** (7.632)	0.271*** (5.771)	0.833*** (15.039)	1.024*** (15.467)	0.706*** (12.864)	0.351*** (6.409)
SC-LC	−0.108 (−1.191)	−0.103 (−1.169)	−0.139 (−1.218)	−0.052 (−0.707)	−0.037 (−0.428)	−0.009 (−0.086)	−0.065 (−0.757)	−0.085 (−0.991)
Bond factor	−27.372** (−2.000)	−23.263* (−1.747)	−32.220* (−1.868)	−32.506*** (−2.925)	−29.787** (−2.277)	−24.094 (−1.540)	−29.465** (−2.272)	−54.056*** (−4.179)
Credit spread	−34.197** (−2.609)	−40.256*** (−1.747)	−35.840** (−2.170)	−5.245 (−0.493)	−34.397*** (−2.746)	−39.701*** (−2.649)	−29.798** (2.399)	−23.730* (−1.916)
Adj R^2	0.608	0.690	0.469	0.317	0.745	0.760	0.674	0.362
Sub-period 1 (January 2006–September 2007)	All funds	Equity	Mixed allocation	Fixed income	All funds	Equity	Mixed allocation	Fixed income
α_p	0.007 (1.031)	0.007 (1.014)	0.009 (1.170)	0.000 (−0.047)	0.009 (1.472)	0.012 (1.568)	0.005 (1.152)	0.003 (0.733)
PTFSBD	0.001 (0.022)	0.007 (0.113)	−0.007 (−0.105)	−0.001 (−0.037)	0.042 (0.857)	0.073 (1.131)	0.009 (0.255)	−0.009 (−0.284)
PTFSCOM	0.009 (0.251)	0.017 (0.436)	0.002 (0.050)	−0.006 (−0.264)	0.032 (0.989)	0.031 (0.738)	0.031 (1.302)	0.034 (1.730)
PTFSFX	0.039 (1.175)	0.028 (0.790)	0.067 (1.717)	0.015 (0.760)	0.038 (1.334)	0.032 (0.828)	0.045 (2.110)	0.050** (2.782)
SP500	0.720** (2.776)	0.740** (2.680)	0.795** (2.589)	0.457** (2.854)	0.620** (2.731)	0.857** (2.846)	0.449** (2.659)	0.055 (0.389)
SC-LC	−0.083 (−0.351)	0.014 (0.055)	−0.249 (−0.895)	−0.073 (−0.504)	0.138 (0.671)	0.162 (0.593)	0.158 (1.028)	−0.007 (−0.057)
Bond factor	−24.107 (−0.420)	−32.407 (−0.531)	−19.528 (−0.288)	−1.030 (−0.029)	−33.947 (−0.677)	−46.697 (−0.702)	−13.460 (−0.360)	−31.292 (−1.006)
Credit spread	−157.542 (−1.655)	−151.153 (−1.492)	−213.201* (−1.893)	−48.231 (−0.821)	−76.100 (−0.915)	−106.846 (−0.968)	−49.427 (−0.797)	−14.283 (−0.277)
Adj R^2	0.268	0.227	0.331	0.132	0.334	0.303	0.419	0.346

(*continued*)

Table 3.

Sub-period 2 (October 2007–February 2009)	All funds	Equity	Mixed allocation	Fixed income	All funds	Equity	Mixed allocation	Fixed income
α_p	0.001 (0.109)	0.003 (0.318)	−0.001 (−0.053)	−0.005 (−0.909)	0.005 (0.407)	0.008 (0.549)	0.001 (0.144)	−0.001 (−0.109)
PTFSBD	−0.037 (−0.543)	−0.024 (−0.324)	−0.051 (−0.674)	−0.053 (−1.473)	0.055 (0.709)	0.035 (0.358)	0.087 (1.234)	0.058 (0.780)
PTFSCOM	0.126 (1.808)	0.127 (1.657)	0.139 (1.774)	0.088** (2.393)	0.142 (1.784)	0.183 (1.812)	0.107 (1.463)	0.063 (0.821)
PTFSFX	−0.116** (−2.568)	−0.113** (−2.281)	−0.134** (−2.635)	−0.082*** (−3.413)	−0.123** (−2.372)	−0.143* (−2.188)	−0.107** (−2.263)	−0.077 (−1.551)
SP500	0.534** (3.199)	0.682*** (3.701)	0.445** (2.365)	0.144 (0.169)	0.813*** (4.235)	1.102*** (4.540)	0.598*** (3.405)	0.149 (0.808)
SC-LC	−0.474 (−1.405)	−0.536 (−1.440)	−0.551 (−1.449)	−0.034 (−0.188)	−0.260 (−0.669)	−0.433 (−0.882)	−0.074 (−0.208)	0.000 (−0.002)
Bond factor	−67.132 (−1.816)	−55.282 (−1.356)	−86.400* (−2.074)	−69.047*** (−3.520)	−45.145 (−1.061)	−26.170 (−0.487)	−54.376 (−1.399)	−100.918** (−2.472)
Credit spread	−24.505 (−0.846)	−35.641 (−1.115)	−23.143 (−0.709)	18.109 (1.178)	−27.409 (−0.822)	−30.632 (−0.727)	−23.808 (−0.782)	−22.894 (−0.716)
Adj R^2	0.681	0.706	0.608	0.695	0.751	0.736	0.729	0.540
Sub-period 3 (March 2009 – December 2015)	All funds	Equity	Mixed allocation	Fixed income	All funds	Equity	Mixed allocation	Fixed income
α_p	−0.005** (−2.062)	−0.004 (−1.596)	−0.007** (−2.306)	−0.006** (−2.527)	−0.006** (−2.390)	−0.005* (−1.823)	−0.007*** (−2.884)	−0.005** (−2.100)
PTFSBD	−0.016 (−0.868)	−0.022 (−1.224)	−0.013 (−0.564)	0.000 (−0.010)	−0.027 (−1.572)	−0.028 (−1.379)	−0.031* (−1.782)	−0.014 (−0.788)
PTFSCOM	−0.021 (−1.270)	−0.016 (−1.010)	−0.030 (−1.436)	−0.020 (−1.380)	−0.010 (−0.653)	−0.026 (−1.432)	0.008 (0.520)	0.012 (0.786)
PTFSFX	−0.004 (−0.255)	0.002 (0.143)	−0.010 (−0.490)	−0.015 (−1.124)	0.021 (1.469)	0.030* (1.776)	0.017 (1.179)	−0.006 (−0.450)
SP500	0.657*** (9.057)	0.733*** (10.559)	0.652*** (7.171)	0.352*** (5.489)	0.877*** (13.278)	1.049*** (13.399)	0.768*** (11.575)	0.437*** (6.581)
SC-LC	−0.085 (−0.819)	−0.096 (−0.963)	−0.068 (−0.522)	−0.083 (−0.900)	−0.080 (−0.851)	−0.002 (−0.019)	−0.172* (−1.817)	−0.179* (−1.890)
Bond factor	−38.195** (−2.035)	−28.280 (−1.573)	−51.471** (−2.187)	−46.735*** (−2.813)	−29.043* (−1.697)	−36.745* (−1.813)	−13.987 (−0.814)	−33.966* (−1.976)
Credit spread	−42.593** (−2.433)	−41.525** (−2.477)	−49.071** (−2.236)	−31.206** (−2.014)	−38.643** (−2.422)	−43.624** (−2.308)	−33.796** (−2.110)	−29.907* (−1.865)
Adj R^2	0.625	0.695	0.516	0.375	0.770	0.778	0.718	0.424

Note(s): *, **,*** indicate that the result is statistically significant at the 10%, 5% and 1% level respectively

returns. Consistent with the bear market effects, and also as specified in Fung and Hsieh (2004), the reduction in the exposure to the equity market by the Fixed Income and the Islamic Mixed Allocation portfolios was compensated by the statistically significant and negative exposure to the bond factor as proxied by the yield on the 10 years U.S. Treasury Bonds. Due to the inverse relationship of the price-to-yield of bonds, a more negative exposure is indicative of further investments in the bond market. During the crisis, all of the different fund portfolios (with the exception of the UCITS Fixed Income portfolio) experienced negative and statistically significant exposure to the currency trend-following factor. This could potentially indicate that these funds use foreign exchange for hedging purposes rather than for investment purposes. In addition, Islamic Fixed Income portfolio experienced a positive (0.088) and statistically significant exposure (at 95% confidence level) to the commodities trend following factor. Fung and Hsieh (2004) attribute the increase in the trend-following factor on commodities as a diversifying bet during stressful equity market conditions. Indeed Islamic funds are allowed to gain exposure to the commodities market, which is an investment style that UCITS schemes are precluded to delve into. As also evidenced by the three-factor model, the period following the latest financial crisis was characterised by the poor performance of the funds relative to the market. The only fund category which did not generate a statistically significant intercept after the crisis was the Islamic Equity portfolio, whereas the other categories produced statistically significant negative alphas, which ranged between 50bps and 70bps per month. Although one may say that the Islamic funds, in general, fared better than their UCITS counterparts, the difference is only marginal (10bps).

Once the bear market conditions came to an end, one can notice that the portfolios (with the exception of the UCITS Equity portfolio) no longer loaded on the foreign exchange trend following factor and instead gained a negative and statistically significant exposure to the credit spread factor. The negative exposure to the credit spread in theory implies that the funds moved away from the safe haven of government bonds and gained exposure to high yield bonds or corporate bonds. This increase in credit risk had a negative impact on the returns. However, most of the funds portfolios, namely the Islamic All Funds, Mixed Allocation, Fixed Income and the UCITS All Funds, Equity and Fixed Income, display a negative and statistically significant loading on the bond factor, meaning that they were long in the government bond market. Therefore, in view of the contradictory outcome, the negative exposure to the credit factor during this period signifies that the funds have probably sold credit swaps. It is also worth noting that, following the crisis, the Fixed Income funds decreased their exposure to the bond market and increased their exposure to the equity market (both in terms of statistical significance and magnitude).

In almost all categories of funds and across almost all periods, the seven-factor model was better at explaining the funds' excess returns when compared to the three-factor model, as evidenced by a higher Adjusted R^2. The magnitude of the Adjusted R^2 across all the ten year period and in the second and third sub-periods is indicative that these funds (especially the All Funds and the Equity portfolios whose Adjusted R^2 was above the 60% mark) take on a significant amount of factor risk. Although the single-factor model seems to have the highest explanatory powers between all models, the seven-factor model proved significantly better at explaining the excess return of Fixed Income portfolios during the crisis period.

This study also looked at the fund manager's market timing ability (as measured by coefficient γ_1), through the Treynor and Mazuy model. Results are presented in Table 4. It is evident that the null hypothesis that fund managers are not able to outguess the market cannot be rejected. Such result was expected and is in line with the EMH. This outcome is similar to the results of Hayat (2006), Hayat and Kräussl (2011) and Mansor (2012). The only category of funds that showed good market timing ability was the UCITS Fixed Income portfolio during the first sub-period (γ: 8.592 statistically significant at the 5% level). To note

Table 4.
Treynor and Mazuy model results

		Treynor and Mazuy (1966) model							
		Islamic funds				UCITS funds			
		α_p	β_1	γ_1	Adj R^2	α_p	β_1	γ_1	Adj R^2
All funds	10Y	0.001 (0.578)	0.643*** (16.662)	−0.109 (−0.271)	0.723	0.005 (0.403)	0.860*** (35.301)	−0.068 (−0.269)	0.922
	SP1	0.003 (0.571)	0.817*** (4.311)	2.476 (0.430)	0.511	0.001 (0.406)	0.893*** (7.481)	2.518 (0.695)	0.769
	SP2	0.004 (0.482)	0.578*** (3.208)	−0.418 (−0.347)	0.711	0.008 (1.474)	0.873*** (6.442)	−0.288 (−0.318)	0.904
	SP3	0.000 (−0.136)	0.668*** (13.999)	−0.502 (−0.714)	0.716	−0.002 (−1.246)	0.872*** (32.447)	0.008 (0.021)	0.933
Equity	10Y	0.002 (1.200)	0.730*** (20.300)	−0.367 (−0.977)	0.800	0.001 (0.752)	1.063*** (37.065)	−0.061 (−0.203)	0.929
	SP1	0.003 (0.530)	0.897*** (4.905)	2.194 (0.395)	0.576	0.004 (0.906)	1.217*** (8.156)	−0.475 (−0.105)	0.785
	SP2	0.004 (0.494)	0.663*** (3.791)	−0.757 (−0.648)	0.794	0.007 (1.146)	1.195*** (8.401)	0.523 (0.550)	0.930
	SP3	0.001 (0.471)	0.740*** (16.799)	−0.496 (−0.763)	0.785	−0.001 (−0.481)	1.045*** (31.028)	0.154 (0.309)	0.928
Mixed allocation	10Y	0.000 (0.144)	0.633*** (12.318)	0.111 (0.208)	0.584	0.000 (−0.285)	0.718*** (23.435)	−0.130 (−0.407)	0.840
	SP1	0.005 (0.719)	0.846*** (3.084)	3.041 (0.365)	0.331	−0.001 (−0.291)	0.639*** (6.022)	5.091 (1.582)	0.713
	SP2	0.004 (0.372)	0.545** (2.388)	−0.262 (−0.172)	0.551	0.009 (1.260)	0.610*** (3.530)	−1.106 (−0.957)	0.796
	SP3	−0.002 (−0.666)	0.674*** (10.751)	−0.475 (−0.514)	0.597	−0.003 (−1.590)	0.766*** (21.884)	−0.320 (−0.619)	0.862
Fixed income	10Y	−0.001 (−0.780)	0.304*** (8.559)	0.420 (1.133)	0.385	0.000 (0.158)	0.366*** (8.776)	0.051 (0.117)	0.413
	SP1	−0.002 (−0.542)	0.420*** (3.645)	2.265 (0.648)	0.437	−0.004 (−0.872)	0.177 (1.338)	8.592** (2.137)	0.273
	SP2	0.004 (0.607)	0.312* (2.030)	0.601 (0.584)	0.284	0.013 (1.183)	0.187 (0.719)	−1.641 (−0.946)	0.292
	SP3	−0.002 (−0.694)	0.355*** (7.530)	−0.598 (−0.859)	0.410	−0.003 (−1.116)	0.417*** (9.166)	0.209 (0.311)	0.528

Note(s): *, **,*** indicate that the result is statistically significant at the 10%, 5% and 1% level respectively

that the TM intercept of this category of funds during the same period is −0.004, whilst the JA was at 0.001. This result is similar to what has been identified by Hayat (2006). He explains that JA overestimates the value of alpha when positive market timing ability is found. Therefore, when extracting the positive market timing from alpha, it becomes clear that the fund managers are not good at stock picking.

The results of the Adjusted R^2 are very similar to those of the CAPM, as indeed, the TM Is an extension of the Jensen's model as it adds a quadratic term. The model had an exceptionally good fit for the UCITS All Funds, Equity and Mixed Allocation portfolios across all periods (Adjusted R^2 ranging from to 71.3–93.3%). The model proved good at explaining the excess returns on the Islamic All Funds and Equity portfolios during all periods (Adjusted R^2 ranging from 71.1 to 80%), with the exception of Sub-Period 1. However, and as expected considering the previous models' results, the TM is poor at explaining the excess returns of the Fixed Income portfolios across all the periods (Adjusted R^2 for both the Islamic and UCITS schemes portfolios ranging between 27.3 and 52.8%).

5. Conclusion

> The global financial crisis revealed the weakness of the global financial architecture on one side and provided an opportunity for Islamic finance to show the inherent strengths and qualities on the other. (Haneef and Smolo, 2014)

Academics suggest that albeit the Islamic Financial Industry did not emerge unscratched, the latest financial crisis had limited negative effects on this industry. The question arises as to how well Islamic funds, which are considered to be a small and relatively new segment of IF, perform during differing market conditions.

To be able to address this question, this research evaluates the risk and return performance of Islamic funds between January 2006 and December 2015, which period was marked by one of the most severe financial crisis in history. In order to gauge their resilience to diverse market conditions, their performance was compared to two different benchmarks, firstly to the general market as proxied by the MSCI ACWI and secondly to a category of conventional CISs which is synonymous for its conservative investment approach, namely UCITS schemes.

Evaluating the performance of Islamic funds and comparing it to the performance of UCITS schemes through a matched-pair analysis, it may be concluded that Islamic funds do not face a competitive disadvantage arising from their strict compliance with Sharī'ah principles and their performance is relatively similar to UCITS schemes. Results suggest that, generally, there is no statistically significant risk-adjusted abnormal return or penalty associated with investing in Sharī'ah compliant funds relative to UCITS scheme. Such similarity could arise due to the fact that both types of CISs are subject to certain investment restrictions, as imposed either by Sharī'ah law or by the UCITS Directive, which therefore hinder fund managers from allocating the portfolios more liberally. Moreover, according to the results of the three and seven-factor models, both categories of funds seem to follow similar investment strategies.

Therefore, investors who follow the Sharī'ah principles are not punished relative to conventional retail investors when following their own beliefs and other investors can consider Islamic funds in their portfolio allocation, especially those who seek socially and ethically responsible investments.

A very interesting finding relates to the risks associated with fund return performance. Both categories of funds have a beta of less than one (with the exception of the UCITS equity funds), yet Islamic funds are less exposed to market risk than UCITS schemes. This implies

that the market risk and volatility of Islamic funds is lower than that of conventional funds and even the market benchmark. This makes Islamic funds attractive to fund managers and risk-averse investors alike, since these funds can be used as a hedging tool against adverse market movements.

The results reveal that both Islamic and UCITS schemes' fund managers have no market timing abilities. Therefore, the implementation of market timing strategies by fund managers do not provide any benefits and value-added to investors in their portfolio management. Hence, fund managers are encouraged to make use of other key strategies, such as risk management and cost averaging, to sustain better performance and be able to overcome financial meltdown. Taking into account the market timing inabilities of fund managers, investors should gain the necessary knowledge about market events, particularly about bearish and bullish conditions. This also enhances the responsibility of regulators and policymakers to invest more resources in financial education.

Islamic Finance should be recognised as a system which works in parallel with the conventional one. Not putting all your eggs in one basket goes beyond allocating the portfolio amongst funds with different asset classes. These findings suggest that including Islamic funds to complement a portfolio made up of conventional funds would be beneficial to decrease the exposure to the market. Whilst it is true that what goes up must eventually come down, diversification across different fund categories can lessen the impact of the fall.

Note

1. Eurekahedge (2015) Overview: key trends in Islamic funds.

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