# The cost of being ethical: Evidence from Islamic equity funds

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**Abstract**

This paper examines the relationship between financial performance and ethical screening intensity of a special class of ethical funds that is rooted in Islamic values – Islamic equity funds (IEFs). These faith-based ethical funds screen investments on compliance with Islamic values where conventional interest expense (*riba*), gambling (*maysir*), excessive uncertainty (*gharar*), and non-ethical (non-*halal*) products are prohibited. We test whether these extra screens affect the financial performance of IEFs relative to non-Islamic funds. Based on a large survivorship-free international sample of 387 Islamic funds, our results show that IEFs on average underperform conventional funds by 40 basis points per month, or 4.8% per year (supporting the *underperformance hypothesis*). While Islamic funds do not generally perform better during crisis periods, they outperformed conventional funds during the recent sub-prime crisis (supporting the *outperformance hypothesis*). Using holdings-based measures for ethical screening intensity, results show IEFs that apply more intensive screening perform worse, suggesting that there is a cost to being ethical.

Keywords: ethical screening intensity, financial crisis, fund performance, Islamic equity funds, socially responsible investment

JEL classification: G11, G12, G34, A13, Z12

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## 1. Introduction

Over the last two decades, ethical investments[1] or more broadly socially responsible investments (SRIs) have become a major stream within the funds management industry. Besides financial characteristics (risk and return), this investment vehicle integrates certain philosophical beliefs such as those pertaining to social, environmental, governance, and religious matters into the investment decision making process. The most controversial issue about this investment approach is whether such an ethical overlay adversely affects fund financial performance. While a number of important papers have examined the relationship between ethical screening and financial performance (Margolis et al., 2007; Renneboog et al., 2008a), much uncertainty remains about the significance of this relationship.

In this paper, we shed further light on the association between ethical screening and financial performance by examining a special class of ethical funds that is rooted in Islamic values – Islamic equity funds (IEFs). While the investment guidelines of IEFs are for the most part consistent with those of SRIs, both in their approach and objective in terms of mandating social values and good governance, Islamic finance is an entire financial system in its own right targeting predominantly believers in the Islamic faith (Muslims).

Our research is partly motivated by the growth of Islamic finance. While the first IEF, *Dana Al-Aiman* managed by *Mura Unit Trust*, was established as early as 1968 in Malaysia, it was not until the early 1990s that equity investment was officially approved by the Council of the Islamic Fiqh Academy (CIFA) (Ayub, 2007). Spurred by the spectacular rise in petro-dollar revenues in oil-rich Muslim countries, recent years have witnessed Islamic finance as one of the fastest growing finance sectors globally (Al-Salem, 2008). Total assets under management (AUM), excluding capital appreciation, of IEFs have grown at an annual rate of more than 15%, three times that of conventional funds. Currently, there are more than 400 IEFs under

[1] Other commonly used terms for ethical investments include "green", "sustainable", "socially responsible", and "religious" investments. These are all different names for what is collectively known as "socially responsible investments" (SRIs).

management globally (www.eurekahedge.com). With more than US$25bn AUM, a large, expanding and untapped Muslim population, and a growing interest from both Muslim and non-Muslims alike, the importance of research into the financial performance of IEFs is immediately apparent.

Drawing on modern portfolio theory, we test whether the ethical screens employed by IEFs, and the resulting smaller investment opportunity set, adversely affect their performance (the *underperformance hypothesis*). Conversely, the act of ethical screening in itself suggests that IEFs may perform better than conventional funds (the *outperformance hypothesis*) as fund managers are more careful in selecting firms than their conventional counterparts. Further, by prohibiting investment in high leverage firms, conventional banks, and speculative financial transactions, IEFs may be more insulated from market downturns (e.g. financial crises), as is often publicized by the media.[2] However, contrary to these opposing hypotheses, much of the literature finds no strong evidence of performance differences between conventional and SRI funds (Kreander et al., 2005; Mallin et al., 1995; Renneboog et al., 2008b). Explanations provided are based on the convergence hypothesis: (i) conventional funds are becoming more like ethical funds where both ethical and conventional funds invest in ethical firms; or (ii) ethical funds are becoming more like conventional funds, where ethical funds do not comply with their ethical screens; the former argument is less likely to hold for Islamic funds due to the distinctive screens they employ, as we explain later.

Based on a sample of 387 IEFs domiciled in 32 countries with investments in 11 regions over the period January 1984 to March 2010,[3] we find IEFs underperform conventional and SRI funds by an average of 40 and 30 basis points per month respectively (the *underperformance hypothesis*), suggesting that investors pay a rather hefty cost for their Islamic faith. During the recent sub-prime crisis, however, IEFs outperformed (by 60 basis points per month)

[2] See for example: http://goliath.ecnext.com/coms2/gi_0199-9910749/In-credit-crisis-Islamic-funds.html.
[3] We note that only 9% of Renneboog et al.'s (2008b) sample of 440 SRI funds apply Islamic screens, i.e. they are IEFs.

conventional funds (the *outperformance hypothesis*) due perhaps to the minimum exposure that IEFs have to conventional banks and highly leveraged firms, both of which suffered more than other firms during the crisis. Employing the Fama & French three-factor model, IEFs tend to invest in lower beta, higher growth, and larger stocks than conventional funds. The Carhart model shows no difference in momentum strategy between IEFs and other funds. On the Islamic compliance factors, IEFs load heavier on the more stringent *MSCI Islamic* than other benchmarks, as expected.

Next, we examine the relationship between ethical screening intensity and fund performance. We employ three screening intensity measures. The first, derived from Sharpe's style analysis, is the factor loading on the return difference between *MSCI Islamic* and *MSCI AC* conventional index and between *MSCI Islamic* and *DJ Islamic* index. We find the (*MSCI Islamic* – *MSCI AC*) factor is negatively related to Islamic fund performance only when the latter is measured relative to religious funds. In contrast, the (*MSCI Islamic* – *DJ Islamic*) factor is positively related to Islamic fund performance only when benchmarked against conventional funds. Our second measure is based on fund disclosure (in the prospectus) on the type and number of ethical screens employed. The results show no significant relationship between the number of accounting screens employed and IEF performance although there is some evidence of a curvilinear relationship when IEF performance is measured relative to religious funds. Renneboog et al. (2008b) too find little evidence that screening intensity, proxied by the number of accounting screens used, explains SRI performance. . Our final measure applies the ethical screening filter of *MSCI Islamic* to fund holdings data: funds with a higher proportion of holdings passing this filter are considered to engage in more intense screening. We find a negative relationship between this measure of screening intensity and IEF performance relative to other funds. IEFs with more intense screening perform worse, supporting the *underperformance hypothesis*.

Younger and larger funds have higher risk-adjusted performance, in line with the extant literature (e.g. Capelle-Blancard and Monjon, 2010; Renneboog et al., 2008b). Funds managed by

Islamic investment companies also perform better. While differences in management fee do not explain cross-sectional differences in IEF performance, funds that charge higher purification (non-compliance) fees[4] perform worse.

For robustness, we compare the performance of Islamic indexes with matched (on region) conventional, SRI, and religious indexes. Results show that Islamic indexes underperformed the conventional, SRI, and religious benchmarks during the 2000.dotcom crisis but outperformed them during the GFC. However, compared to the fund-level results, the outperformance of Islamic indexes is economically much smaller, about 23 basis points per month or 2.8% per year. There is also a negative (curvilinear) relationship between the aggregate Islamic fund performance and the number of accounting screens. Further, employing the stricter accounting screen of the one-third threshold reduces the Islamic index performance (by 50 basis points per month), and so do purification fees. Finally, while the relationship between ethical screening intensity and fund performance relative to other conventional funds is mixed, we find a negative relationship between ethical screening intensity and the performance of Islamic funds relative to other SRI and religious funds.

Our research contributes to the literature in the following important ways. First, we provide the first global survivorship-free analysis of an important group of ethical funds, Islamic funds, over an extended time period. Our findings thus add to the relatively lean literature on Islamic finance, [5] specifically, and the ethical funds literature, in general, on whether ethical screening affects fund performance. Second, while some studies (Barnett and Salomon, 2006; Capelle-Blancard and Monjon, 2010; Lee et al., 2010; Renneboog et al., 2008b) examine the impact of the type and number of ethical screens on fund performance, we are able to more

[4] Purification fee is the donation of impure (prohibited) profits from investment to the poor.

[5] While there are numerous studies on the performance of SRIs (Renneboog et al., 2008a), studies on IEF performance are scarce due mainly to the small number of such funds existing up until recently. Of the few studies that examine the performance of Islamic funds, most focus on either a very small sample over a very short time period or Islamic equity indexes rather than the funds themselves (Abderrezak, 2008; Abdullah et al., 2007; Elfakhani and Hassan, 2005; Hayat, 2006; Muhammad and Mokhtar, 2008; Wilson, 2002). Not surprising, these studies produce largely mixed results on the performance of IEFs relative to conventional funds.

precisely calibrate ethical screening intensity of funds and relate it to fund performance. Research into IEFs is expected to yield more robust results on the impact of an ethical overlay on financial performance compared to the broader class of SRIs because the screens employed by IEFs are predominantly exclusionary in nature, employing both business activity and accounting screens, and are therefore more easily calibrated. In comparison, there is wide heterogeneity in the motivations and attitudes of the various SRIs, employing a wide range of often very vague screening standards and ranking criteria to include/exclude firms (Derwall et al., 2011; Sandberg et al., 2008). Our paper is also the first to examine the impact of purification fees, unique to our sample of ethical funds, on fund performance.

Our contribution also lies in the methodology. We compare the relative performance of IEFs to non-IEFs (conventional, SRI, and religious funds) by constructing difference portfolios. This is defined as the difference in the returns between IEFs and non-IEFs of similar characteristics. This method provides us with a more reliable measure of the incremental difference in performance between IEFs and other funds.

The remainder of this paper is organized as follows. Section 2 outlines the investment philosophy of Islamic funds. Research hypotheses are provided in Section 3. Data and research methods are outlined in Section 4, and Section 5 provides the empirical results. A summary of the major findings and conclusions are given in Section 6.

## 2. Islamic principles of investing

The core principles of Islamic investing are bound by the ethical and moral framework of Sharīʿah law.[6] Islamic financial transactions are based on a concern for ethically and socially responsible activities and at the same time prohibit involvement in activities which are detrimental to social and environmental well-being. All forms of business exploitation are

[6] We use the terms Sharīʿah and Islamic interchangeably in this paper to mean the moral code and religious law of Islam.

prohibited in Islamic finance, where profits and risk are shared equally between parties to a transaction.

Equity investment is permissible under the Sharīʿah law because investors and firms share not only the profits but also the risk. However, equity is permissible only if the firm engages strictly in the permissible (*halal*) and abstains from the prohibited (*haram*), as commanded by God; the latter comprises (i) *riba* (payment over and above what has been lent, translated by Islamic scholars today as being equivalent to interest);[7] (ii) *maysir* (gambling);[8] (iii) *gharar* (excessive uncertainty);[9] and (iv) non-*halal* (socially detrimental) businesses including alcohol, tobacco, pork-related products, conventional financial services, defense and weapons, gambling and casino, music, hotels, cinemas, and adult entertainment.

Although IEFs are not known to employ inclusionary screens where certain businesses are explicitly sought out, one exception is Islamic Financial Institutions (IFIs) which are strictly run according to Sharīʿah principles. Because of the ban on interest payments, Islamic funds employ the following financial ratios to screen out firms that carry high amounts of debt or reap significant income from interest payments: (i) total debt to total assets/equity; and (ii) cash and short term investments to total assets/equity. Firms are also screened on liquid assets (accounts receivable) to total assets/equity ratio to ensure that they are not in majority composed of liquid assets.[10] The threshold value used in the financial ratios, while not stated explicitly in Islamic law,

[7] The charging or receiving of interest gives rise to an unequal distribution of risk between the lender and the borrower; the fact that the lender charges an interest but does not share the loss with the borrower is viewed as exploiting the borrower. In Islamic finance, any return on money invested should be linked to the profits of an enterprise.

[8] *Maysir* includes financial transactions that are based on dishonesty/ambiguity/ignorance regarding materials or price, such as betting using futures.

[9] *Gharar* (uncertainty) is deception which involves putting one's assets or self in excessive risk. Islam prohibits all kinds of speculative behavior that is embedded in most conventional funds. Hence, short selling stocks by selling borrowed shares to bet their price will drop are not allowed as these represent an unacceptable form of speculation.

[10] In Islam, liquid assets can only be traded at par. Therefore the value of the company can only be negotiable if it has illiquid (real) assets.

varies between 30% and 45%.[11] The denominator of the financial ratios, which is meant to represent the total value of the firm, is either total assets or market capitalization.

While Islamic funds may engage in leverage through the use of Islamic financing instruments (*Sukuk*), they may not obtain or provide conventional loans or otherwise invest in conventional interest-bearing instruments, including convertible debt securities. Cash held by a fund may only be invested in Sharī'ah-compliant short-term investment products such as Islamic money market instruments. As Sharī'ah prohibits the payment of any predetermined guaranteed rate of return, investments in preferred shares or fixed income securities are also restricted. Islamic funds should not involve in excessive risk through speculative transactions such as short selling[12] and market timing.

Unlike other ethical investments, the Islamic investment process includes "purification", which is a donation of impure (*haram*) profits to the poor (Derigs and Marzban, 2008; Wilson, 1997). The purification fee is in response to the absence of fully Sharī'ah-compliant[13] firms in the world. The collective opinion of Islamic scholars is to allow investments in stocks with a tolerable proportion of revenues from prohibited activities, usually set at 5% to 10% of total revenue (Ayub, 2007; Derigs and Marzban, 2008; Securities Commission Malaysia, 2007). Any excess impure income is subject to purification.

Finally, to ensure that fund managers comply with the screening rules, most IEFs establish/appoint a Sharī'ah Advisory Board (SAB). The board consists of qualified and experienced Islamic scholars who direct, monitor, and supervise the fund's activities to ensure

[11] This is the direct result of the various interpretations by Sharī'ah scholars: *"Judgement is based on majority, not on minority,"* and *"the dividing line between a majority and minority is one third, and the third as a portion is considered to be much"* (*Hadith*).

[12] Selling short appears to run contrary to the *Qu'ran*, which prohibits the sale of what you do not own. Mohamad Toufic Kanafani, chief executive of Noriba, the Islamic banking arm of UBS Warburg and project adviser, says the team developed ways around this by imposing a down payment (*Salam* transaction) towards each transaction, which must be stated clearly in writing (http://www.ft.com/cms/s/0/16a71f48-1b21-11d9-9fe400000e2511c8.html#axzz2B9oHIvBn).

[13] By "Sharī'ah-compliant", we mean that the investment passes the ethical screens of the fund and not that the firm is operating according to Islamic law.

that management follows the provisions and principles of Sharīʿah in the fund's operation and transactions.

## 3. Hypotheses

The extant SRI performance literature examines three hypotheses: (1) the *underperformance hypothesis*; (2) the *outperformance hypothesis*; and (3) the *no difference hypothesis*.

The *underperformance hypothesis* is premised on modern portfolio theory and argues that ethical screens shrink the investment universe, thus producing a mean-variance efficient frontier that is significantly less optimal than if the screens were absent. In the case of IEFs, the extensive business and accounting screens have been shown to reduce the eligible investment universe by up to 50% on average (Nainggolan et al., 2012), far more than for SRI funds which tend to focus on only environmental, social, and governance (ESG) principles. Given a level of total risk, this would limit the ability of IEFs to match the return on funds that are not constrained by similar screens. Hong and Kacperczyk (2009) also argue there is a societal norm against funding operations that promote vice and that some investors, particularly institutions subject to these norms, pay a financial cost in abstaining from these stocks. It follows that ethical factors affect stock prices, with sin stocks offering higher expected returns than other comparable stocks, consistent with them being neglected.

There are several other compelling arguments for the underperformance hypothesis in the case of IEFs. First, the number of securities eliminated through the integration of Islamic considerations is large – as investment strategies become more restrictive, opportunities to profit become even fewer. For one, IEFs must sit on the sideline when the market sentiment shifts to an industry they have excluded, unable to profit from the industry. For conventional funds, as there is no reason to do the same, they do not miss out on the opportunity afforded by the cyclical nature of financial markets. Sharīʿah law also prohibits short selling, margin trading, and excessive speculation – assuming investment managers are skilled, all these limit the

opportunities for IEFs to match the returns of funds that do not operate under such constraints.

Another argument is based on differences in the cost structure between IEFs and other funds. For example, while conventional fund managers have only one overall goal – to achieve the highest possible return for a specific level of risk – ethical fund managers must also ensure that the businesses they invest in comply with the fund's chosen ethical values. To cover the costs associated with stock screening and monitoring, including the cost incurred in setting up and financing a SAB, IEFs are expected to charge higher management costs.[14] The net return to IEF investors are further reduced since IEFs are compelled to sell stocks that exceed certain threshold of financial ratios irrespective of performance. Unlike other ethical funds, including religious ones, IEFs are also required to pay purification fees on any impure income received. Since the negative impact of ethical screening on fund performance is expected to be exacerbated in funds that employ more demanding ethical screens (Derigs and Marzban, 2009), we expect IEFs to exhibit the worst performance of all equity funds. It therefore follows that the relationship between the intensity of ethical screening and fund performance is a negative one. All the above arguments lead to the following hypotheses:

H1a: Islamic equity funds on average perform worse than other equity funds.

H1b: There is a negative relationship between ethical screening intensity and fund performance.

Conversely, the *outperformance hypothesis* predicts that ethical funds outperform conventional funds in the long run because financial markets undervalue corporate social responsibility in the short run (Renneboog et al., 2008b). The first rationale is that there is always a consequence for every action. Short-sighted, profit-above-all-else-focused businesses create avoidable risks and ignore vital risk indicators that a socially responsible firm would otherwise embrace. Such firms

[14] These costs can be as high as 2% of the net asset value.

are likely to perform worse during corporate social crises or environmental disasters as they run the risk of incurring levies and legal costs to compensate or make good any damages caused by their (socially irresponsible) actions. Second, ethical principles provide a source of competitive advantage in situations where consumers favor firms with high ethical standards (Porter and Kramer, 2006). Also, sound social and environmental performance may signal high managerial quality and reputation which will affect the profit of such firms (Renneboog et al., 2008b). As per the "error-in-expectations hypothesis", it is possible that mainstream investors have systematically overlooked this ethical factor (Derwall et al., 2011). Insofar as investors in ethical funds are expected to be more loyal, there may also be cost efficiencies arising from reduced fund turnover and associated transaction costs. Therefore, according to the outperformance hypothesis, IEFs, with their highest screening intensity, exhibit the best performance relative to conventional and all other ethical funds:

H2a: Islamic equity funds on average perform better than other equity funds.

H2b: There is a positive relationship between ethical screening intensity and fund performance.

The ethical screening process unique only to Islamic funds suggests that the outperformance hypothesis is expected to be more strongly supported during crisis periods. First, the prohibition of investments in firms with large amounts of conventional debt on their balance sheet should keep IEFs relatively safe from the credit crunch that rocked many mainstream mutual funds (Ahmed, 2010). To exemplify this, prior to their bankruptcy, WorldCom, Enron, Tyco, and other distressed US firms were excluded from *DJ Islamic World* index because they did not pass the Sharī'ah accounting screens (Hussein and Omran, 2005). High leverage makes companies' earnings and therefore stock price more volatile (known as the "leverage effect'), thus increasing their susceptibility to market downturns. Second, IEFs are prohibited from short selling, trading in conventional debt instruments, and complex financial

instruments such as collaterized debt obligations (CDOs) and credit default swaps (CDS). All these activities are thought to have contributed to the sub-prime crisis. Hence, Islamic screening factors are prime candidates for fundamental factors that provide protection against market downturns. Finally, Islamic finance is built on profit and risk sharing of economic transactions. This feature requires the Islamic financial system to have a high level of disclosure and transparency to allow financial markets to price firms appropriately (Ahmed, 2010). The built-in checks and balances improve the market discipline to take effect to promote the Islamic finance system financial stability (Ahmed, 2010). Since IEFs invest mostly in IFIs which have a stronger governance system than conventional financial institutions, they may well be less affected by the crisis.

H2c: Islamic equity funds on average perform better than other equity funds, particularly during financial crises.

The *no difference* (or convergence) hypothesis predicts that ethical funds perform similarly to conventional funds (e.g. Kreander et al., 2005; Mallin et al., 1995; Renneboog et al., 2008a). Under this view, the extra screens imposed on funds are not expected to affect performance for a number of reasons. First, it may be the case that all funds invest in highly ethical firms with positive net present value (Renneboog et al., 2008a). In other words, conventional funds have become more ethical and are practically indistinguishable from ethical funds. Second, if ethical investors are unwilling to sacrifice returns for their moral philosophy, ethical funds may become more lax on (or steer away from) their screening making them more like conventional funds. Third, in efficient markets, funds cannot outperform their benchmarks based on public information, such as ethical criteria, because conventional fund managers can replicate the screens. This results in no difference in performance between these fund types (Renneboog et al., 2008a). Additionally, ethical screening may not affect fund performance if the screens do not

contain superior information. Any superior return to ethical factors may vanish once additional screening costs are taken into account. Therefore:

H3a: Islamic equity funds on average perform no differently from other equity funds.

H3b: There is no relationship between ethical screening intensity and fund performance.

## 4. Data and research methods

### *4.1 Data*

We construct a comprehensive database of IEFs using data extracted from various sources including *Morningstar Direct*, *Eurekahedge Global Islamic Funds, Bloomberg*, the fund's website, and annual reports. We collect data on fund name, type, inception date, country of domicile, regional orientation (investment universe), monthly returns, total assets under management (in USD million), management fees, benchmark returns, and holdings as at March 2010. Data on purification fees (the fund's non-compliant income over net assets), type and number of accounting screens employed, and whether the fund is managed by an Islamic investment company, are all extracted from fund prospectuses and annual reports. All monthly returns are expressed in local currency and percentage terms, and adjusted for capital gain distributions, management fees, and purification fees but before dividend distributions and sales charges. This is because not all databases provide data on total returns after dividend distributions and we want to have a consistent measure of returns across the sample funds irrespective of the data source.

Our initial sample consists of 496 IEFs, of which 277 are obtained from *Morningstar Direct*, 188 from *Eurekahedge Global Islamic Funds*, and 31 from *Bloomberg*. Excluding funds with no historical return data results in a final sample of 387 IEFs domiciled in 32 countries with investments in 11 regions from January 1984 to March 2010. The data are free of survivorship-bias since *Morningstar Direct* and *Eurekahedge Global Islamic Funds* provide coverage of both live and

dead funds. There are 330 live and 57 dead IEFs in the final sample. To our knowledge, this makes our study the first large scale survivorship free analysis of Islamic funds around the world.

We match each of the 387 IEFs with 59,286 conventional equity funds (CEFs), 1,744 SRI equity funds, and 49 religious (Christian/Catholic) equity funds (REFs) by country of domicile, regional orientation (investment universe), size, and age. This matching procedure is similar to that in Kreander et al. (2005) and Mallin et al. (1995). Because of our matching procedure, each control fund can be selected repeatedly. There are 220 CEFs, 201 SRIs, and 28 REFs that are uniquely matched with our sample IEFs.

Table 1 provides the frequency distribution and profile of our sample IEFs by country of domicile and regional orientation. Muslim countries contribute about half (220) of the sample, mostly Malaysia (83), followed by Saudi Arabia (36) and United Arab Emirates (33). Luxemburg (54) has the second largest number of Islamic funds due mainly to their tax waiver policy for profits on ethical funds. About a quarter (98) of our sample funds invest globally. Twenty two percent (85) have an orientation towards the Muslim region, i.e., Gulf Cooperation Council and Middle East North Africa (GCC&MENA),[15] and 21% (83) have a domestic orientation, predominantly Malaysia.

The mean (median) fund size is relatively small at USD70 million (USD17 million). IEFs domiciled in the United States are the largest (USD409 million), followed by the United Arab Emirates (USD206 million) and Saudi Arabia (USD72 million). The largest fund is *Saudi British Bank (SABB) Amanah Saudi Equity Fund* with AUM of USD2453 million, domiciled in United Arab Emirates, invests in GCC and MENA region, and has been in operation for only about 6 years. Funds invest in GCC&MENA are significantly (at the 5% level) larger than those invest in other regions. The average (median) age of our sample Islamic funds is 67 months (47 months), with the older ones mostly domiciled in Muslim countries (significant at the 1% level). However, funds invest in Muslim region are younger than those invest in non-Muslim regions. The oldest

[15] More than 50% of the world population of Muslims lives in this region (Pew Research Center, 2009).

fund at 41 years is *Amanah Saham Mara (ASM) Dana Al-Aiman*, which is domiciled in Malaysia, invests only domestically, and has AUM of USD22 million.

The average (median) fund management fee is 1.61% (1.50%). Funds domiciled in the United States charge the lowest fees, with funds domiciled in non-Muslim countries charging significantly lower fees by 0.19% than those domiciled in Muslim countries. The average reported fund purification fee is 0.04%, which is rather small, implying that funds have low exposure to prohibited income. Funds domiciled in Ireland and invest globally charge the highest purification fee (0.67% and 0.13% respectively). However, there is no significant difference in purification fees between funds domiciled (invest) in Muslim and non-Muslim countries (regions). A large majority of Islamic funds are managed by diversified investment companies with only 18% managed by pure Islamic investment companies. On average funds domiciled in Muslim countries are more likely to be managed by pure Islamic investment companies than those in non-Muslim countries.

### *4.2 Fund performance measurement*

To examine the investment performance of IEFs relative to other types of equity funds, we form difference (*d*) portfolios and compute their equally-weighted returns ($R_{EW}^{d}$) as follows:

$$R_{EW}^{d} = w_i \sum_{i=1}^{N} \left(R_{IEF,i} - R_{Match,i}\right), \quad (1)$$

where $R_{IEF}$ and $R_{Match}$ are the returns on the IEF and its matched non-IEF fund respectively, and $w=1/N$. We do this for the full sample as well for each domicile and regional orientation. The returns are net of management[16] and purification fees. The fund's monthly raw return ($R_t$) is computed as:

$$R_t = Ln\left[NAV_t / NAV_{t-1}\right], \quad (2)$$

[16] Although not reported in details in this paper, using the fund returns before-management fee does not change our conclusion.

where $NAV_t$ is the fund's net asset value at time *t*.

Since differences in performance may (to a large degree) be explained by differences in systematic risk, we compute the risk-adjusted returns using commonly used single- and multi-factor asset pricing models. Our first performance measure is Jensen's alpha (Jensen, 1968), obtained by regressing the series of portfolio returns in excess of the risk-free rate ($R_f$) against market returns in excess of the risk-free rate (Sharpe, 1964):

$$R_t^{(d)e} = \alpha_1 + \beta_M R_{M,t}^e + \varepsilon_{1,t}, \quad (3)$$

where $R_t^{(d)e}$ is the excess return on the (difference) portfolio; $\alpha_1$ is Jensen's alpha; $R_M^e$ denotes the excess return on the market portfolio; $\beta_M$ denotes the systematic risk of the portfolio; and $\varepsilon$ is that part of the portfolio's excess return that is not captured by the first two terms. The variance of $\varepsilon$ is the unsystematic risk of the portfolio. Assuming the world is fully integrated and examining fund performance from an international perspective, we use the *MSCI AC (All Countries) World* as our global market benchmark portfolio. Our choice is motivated by several studies which find the *MSCI AC World* index is a mean-variance efficient benchmark (Chou and Lin, 2002; Cumby and Glen, 1990). The excess return on the benchmark portfolio is computed using the 3-month US Treasury Bill rate as our proxy for the risk-free rate.[17]

To alleviate concerns about the market portfolio as the only systematic risk factor, we also employ Fama and French's (1996) three-factor model where both size and value factors affect the risk-return relationship:

$$R_t^{(d)e} = \alpha_2 + \beta_M R_{M,t}^e + \beta_V HML_t + \beta_S SMB_t + \varepsilon_{2,t}, \quad (4)$$

where $HML$ is the excess return on the mimicking portfolio for the high minus low value (book-to-market) factor and $SMB$ is the excess return on the mimicking portfolio for the small minus big size (market capitalization) factor. Following Faff (2003), we compute these factors using combinations of portfolios composed of four of the *MSCI AC World* style indexes: *MSCI AC*

[17] We consider alternatives proxies for the non-interest bearing risk-free rate of return within the Islamic context, such as a 2.5% annual *Zakat* rate. Our results are robust to these.

*World Value, Growth, Small Cap,* and *Large Cap*. In addition, we employ Carhart's (1997) four-factor model by adding a momentum factor to Fama and French's three-factor model to test the robustness of our alpha estimates:

$$R_t^{(d)e} = \alpha_3 + \beta_M R_{M,t}^e + \beta_V HML_t + \beta_S SMB_t + \beta_U UMD_t + \varepsilon_{3,t}, \quad (5)$$

where $UMD$ is the excess return on the mimicking portfolio for the previous 12-month winners minus the previous 12-month losers factor (the momentum factor). Time series data for $HML$, $SMB$, and $UMD$ factors are obtained from the Kenneth French Data Library.

To test whether IEFs are a safer investment and provide a better return than non-IEFs during financial crises, we run the following pooled time series regression:

$$R_t^{(d)e} = \alpha_4 + \beta_M R_{M,t}^e + \gamma Crisis_t + \varepsilon_{4,t}, \quad (6)$$

where *Crisis* is a dummy variable that takes the value of one during a period of financial crisis, and zero otherwise. If IEFs perform significantly better than their matched funds in crisis periods, we should see a positive $\gamma$ coefficient in the regression where the dependent variable is the difference portfolio return. We identify three major crisis periods during our sample period: the Asian Financial Crisis (April 1996 to September 1998); the 2000 dot.com Crisis (March 2000 to September 2002); and the Global Financial Crisis (GFC) (October 2007 to February 2009) (Economic Cycle Research Institute, 2010; Yeyati et al., 2008).

### *4.3 Fund performance and ethical screening intensity*

Finally, we test whether there is a relationship between ethical screening intensity and fund performance by running the following panel regression:

$$y_{i,t} = c_0 + c_1 Screening\ Intensity_i + c_2 Fund\ Characteristics_{i,t} + c_3 CountryFixed\ Effects_{i,t} + u_{i,t}, \quad (7)$$

where $y_{i,t}$ is the risk-adjusted return of the Islamic fund or the difference portfolio, obtained by subtracting the expected return obtained from Fama and French's three-factor model from the raw return (i.e. $y_{i,t} = \alpha_2 + \varepsilon_{2,t}$ in Equation (4)).[18] Our panel regressions control for fund characteristics such as *Size*, *Age*, management fees *(Mgt Fees)*, *Purification Fees*, and whether the fund is managed by an *Islamic Investment Company*. We expect a positive coefficient for *Size* and *Islamic Investment Company*, and a negative coefficient for *Age*, *Mgt Fees*, and *Purification Fees* since larger and younger funds, and funds that are managed by an Islamic investment company and charge lower management and purification fees are expected to perform better (Golec, 1996; Renneboog et al., 2008b).

We employ several measures of *Screening Intensity*.[19] The first is based on screening information disclosed in the fund's prospectus: the number of accounting screens, whether the fund employs the stricter total assets in the denominator of the accounting ratios, and the one-third threshold ratio. Funds that enforce more and stricter accounting ratios are considered to have more intensive ethical screening. Accounting screens that employ total assets instead of market capitalization[20] as the denominator or use the minimum one-third threshold value are considered to be stricter.

Our second measure of screening intensity (*Full Compliance*) is based on fund holdings data which we screen using the methodology of *MSCI World Islamic*, widely regarded as having the most rigorous Sharī'ah screens under the supervision of the prominent SAB, Dar Al Istithmar. First, we screen the investee firms with prohibited business activities by employing a variety of business activity codes. Based on the 4-digit SIC sub-industry codes, about 100 (or about 10%) sub-industries are prohibited Islamic investments. Second, with the exception of Islamic banks, firms that pass the business screens are then screened on their financial ratios. We use the

[18] Using other benchmark models does not change our conclusion.
[19] Since we have no historical information about the screens applied by the funds, we backfill the screening information through time. This implicitly assumes that the screening intensity remains constant over time.
[20] Using total assets as the denominator is more rigorous since all transactions in Islamic finance must be asset-backed. Further, market value is more volatile and often does not reflect the fundamental value of the firm.

following four accounting screens, just like *MSCI World Islamic*: (i) total debt to total assets less than one-third; (ii) sum of cash and short term investments to total assets less than one-third; (iii) accounts receivable to total assets less than one-third; and (iv) interest income to total revenues (or sales) less than 5%. Fund holdings that pass each accounting screen are scored one, and zero otherwise. For each fund, we sum up the scores across their holdings and convert it to a percentage value. Firms that pass both the business and accounting screens of *MSCI World Islamic* are considered to be fully-compliant. We are able to calibrate this screening intensity measure for a reduced sample of 126 funds for which fund holdings data are available.

Free of this (fund holdings) data constraint, our third screening intensity measure is based on the returns-based style methodology of Sharpe (1992). We use the following three indexes to construct two (uncorrelated) ethical style factors: *MSCI World Islamic (MSCI Islamic); MSCI AC World* (*MSCI AC*); and *Dow Jones Islamic World (DJ Islamic)*.[21] The two ethical style factors are *(MSCI Islamic – MSCI AC)* and *(MSCI Islamic – DJ Islamic)*; the latter is long on the more stringent Islamic index and short on the more liberal Islamic index.[22] Including all the above style factors and adjusting for Fama and French's three factor gives the following five-factor model:

$$R_t^e = \alpha_5 + \beta_1 R_{M,t}^e + \beta_2\, HML_t + \beta_3\, SMB_t + \beta_4 \left[R_{MSCI\ Islamic,t} - R_{DJ\ Islamic,t}\right] + \beta_5 \left[R_{MSCI\ Islamic,t} - R_{M,t}\right] + \varepsilon_{5,t}. \quad (8)$$

The $\beta_4$ and $\beta_5$ coefficients represent the exposure of Islamic funds to the different set of ethical factors. We interpret higher loadings on the ethical factors as more intensive ethical screening by the fund.

[21] The data series for *MSCI World Islamic* and *DJ Islam World* began in June 2002 and February 2004 respectively. These indexes are price return indexes in USD currency.

[22] *MSCI Islamic* is more stringent than *DJ Islamic* as it employs total assets as the denominator in the accounting screens and applies the dividend purification ratio; the latter is formulated as [total earnings – (income from prohibited activities and interest income)]/total earnings. This proportion would be deducted from all reinvested dividends and donated to charity (*MSCI Islamic* Index Series Methodology, May 2007).

To allow for a possible curvilinear relationship between screening intensity and fund performance, we add a squared term of screening intensity to our panel regression model, following Barnett and Salomon (2006) and Capelle-Blancard and Monjon (2010). Barnett and Salomon (2006) find that, as the number of ethical screens increases, fund performance declines at first and then increases again.

## 5. Empirical results

### *5.1 Risk-adjusted performance*

Table 2 reports Jensen's alphas obtained from the capital asset pricing model (equation (3)), Fama & French's three-factor model (equation (4)), and Carhart's four-factor model (equation (5)). For the full sample, IEFs underperform conventional funds by 40 basis points per month on average, as shown in Panel A.[23] These results are robust across the various benchmark models and is consistent with the *underperformance hypothesis* (H1a). Yet, the evidence varies by domicile, as Panel B shows. Funds domiciled in Malaysia, Kuwait, and Indonesia perform significantly worse than conventional funds by 40 to 190 basis points per month. However, they do not perform differently from conventional funds for the rest of the 32 countries. Islamic equity funds on average perform worse than other SRI funds by 30 basis points per month. This may be driven by the high underperformance of IEFs domiciled in Indonesia (about -200 basis points per month).

Looking at the results for the factor loadings, we find that overall IEFs have a significantly lower exposure to the market index (*MKT*) relative to other funds, and to the value (*HML*) and small cap (*SMB*) factors relative to conventional and religious funds. There is no significant difference in exposure to the momentum factor between Islamic equity funds and other funds.

[23] Since IEFs have smaller investment universe than other funds, it is arguable that they may have higher total risk due to higher non-systematic risk. Therefore, it may be more proper to test IEF performance using Sharpe Ratio (excess return/total risk) rather than Jensen's alpha where non-systematic risk is not rewarded. However, we find similar results using Sharpe Ratio that on average IEFs perform worse than conventional, ethical, and religious funds. Results are available upon request.

The investment style of IEFs varies across countries, as Panels B and C show. While IEFs in the United Arab Emirates, South Africa, and the United States have significantly greater exposure to the value factor than conventional funds, those in Malaysia, Saudi Arabia, Luxemburg, Ireland, and Cayman Islands have significantly lower exposure. IEFs in Ireland have greater exposure to the small-capitalization factor than conventional funds, but the reverse is observed for those in the United Arab Emirates, Luxemburg, and the United States. We also see that IEFs in Malaysia and South Africa invest relatively more in small-capitalization stocks than SRI funds, unlike those in Indonesia, Luxemburg, Cayman Islands, Jersey, and the United States.

Table 3 shows the results for portfolios sorted by investment universe (regional orientation). On average, IEFs with Global, Domestic, and Asia Pacific investment universe underperform conventional peers by 30 to 60 basis points per month. Islamic funds underperform SRI funds in the Asia Pacific, China & Hong Kong, and domestic regions by a monthly average of 30 to 250 basis points. Although Islamic equity funds perform better than other religious funds in Muslim investment regions, we find no evidence of significant differences in performance across the non-Muslim investment regions.[24]

For most investment regions, IEFs have significantly lower exposure to value stocks but greater exposure to large-capitalization stocks relative to other funds. Specifically, relative to SRI funds, IEFs investing in Asia Pacific and North America have greater exposure to small-capitalization stocks but those investing globally, Asia Pacific excluding Japan, and BRIC (Brazil, Russia, India, and China) have lower exposure. We also find IEFs that invest in North America, Europe, and their own domicile have greater exposure to high momentum stocks compared to

[24] Using alternative benchmarks does not change our conclusion. For example, we use the fund's regional benchmark portfolios because the fund's investment universe benchmark may be more appropriate from an investor's perspective. The home bias argument suggests that the domestic benchmark portfolio of the fund's country of domicile is more appropriate. Finally, we use the US market benchmark which allows us to examine fund performance from an US investor's perspective. This approach is similar to Bauer et al. (2005) for a sample of SRIs in Germany, the United Kingdom, and the United States, and Renneboog et al. (2008b) for a global sample of SRIs.

SRI funds. Relative to other religious funds, IEFs investing in emerging markets and North America have greater exposure to high momentum stocks.

### *5.2 Fund performance in market downturns*

Next, we examine IEF performance during market downturns. Table 4 presents the results from regressing EW portfolio returns on the single-factor model (specifications 1 and 2) and Fama and French's three-factor model (specifications 3 and 4). The coefficient on the dummy variable *Crisis* is significantly negative when IEF performance is benchmarked against SRI and religious funds (specifications 1 and 3) but significantly positive when benchmarked against conventional funds (specification 3 only). Therefore, Islamic equity funds underperform both SRI (80 basis points) and religious (90 basis points) funds but outperform conventional funds (30 basis points) in crisis periods.

We also test each crisis separately. The results confirm the popular media claim that IEFs provided some protection during the GFC (by 60 basis points per month in specification 2 when performance is measured against conventional funds) but not other crises. Hence, whether IEFs can provide a safe haven to investors during crisis periods depends very much on the nature of the crisis. Our results confirm the findings of Abdullah et al. (2007) that Malaysian Islamic equity funds did not outperform conventional funds during the 1997-1998 Asian financial crisis, and of Hussein and Omran (2005) that *DJ Islamic* did not outperform conventional benchmarks during the 2000 bearish market period (April 2000 to July 2003).

### *5.3 Fund performance and ethical screening intensity*

In this section, we test the relationship between ethical screening intensity and fund performance. Finding empirical support for a negative relationship would indicate that there is a financial cost to being more "ethical".

We first show the summary statistics of our ethical screening intensity measures and Fama & French's risk adjusted return of Islamic equity funds which we will employ in our panel regression. The two ethical style factor loadings are the difference between the stringent *MSCI Islamic* and each of the following benchmarks: *MSCI AC* and *DJ Islamic*. For the full sample, Table 5 shows that Islamic funds have a positive loading on *MSCI Islamic*. However, funds domiciled (invest) in Muslim countries (regions) have a significantly lower exposure to (*MSCI Islamic* - *MSCI AC*) than those in non-Muslim countries (regions). Only funds domiciled in the United States and invest in BRIC have a positive loading on the less stringent *DJ Islamic*.

For funds that disclose information about the accounting screenings employed (N=235), on average, three accounting screens, i.e. the debt ratio, the interest income ratio, and the cash & short term investments ratio, are used. Funds that invest in GCC&MENA (Muslim investment regions) employ one accounting screen more than those invest in other regions (*p*-value is 0.001). Funds domiciled in Saudi Arabia, United Arab Emirates, and United Kingdom employ the three accounting screens in addition to the accounts receivable ratio. Funds domiciled in Malaysia employ just one accounting screen (interest income ratio), reflecting the more moderate interpretation of Shari'ah in that country.[25] Only 13% of funds employ the stringent total assets in the denominator and 34% use the one-third threshold in the accounting screens. Therefore, most funds employ a moderate accounting screening policy. While funds domiciled and invest in Muslim countries (regions) tend to not employ the one-third rule in their accounting screens, funds invest in the Muslim region tend to employ total assets in the denominator.

For the reduced sample which we could compute our holdings-based measure of ethical screening intensity, we find only 42% of the fund holdings pass the total debt/total assets<33%

[25] Effective from November 2013, the Sharīʿah Advisory Council of Securities Commission Malaysia will substantially intensify the Sharīʿah screening of companies listed on Bursa Malaysia. A two-tier approach focusing on business activity and the newly-introduced financial ratio benchmark, including the one-third rule for financial leverage, will be applied (http://210.48.155.251/main.asp?pageid=1170&menuid=1049&newsid=&linkid=&type=).

screen (*Debt Ratio Compliance*).[26] The percentage of fund holdings that pass all the business activity and accounting ratio screens of *MSCI Islamic* (*Full Compliance*) is even lower, at 25%. As expected, funds domiciled in Muslim countries or invest in Muslim regions have a significantly higher proportion of fund holdings passing all screens. The average Fama & French's risk adjusted return of Islamic equity funds is relatively small at about -0.05% per month, and is smaller by 0.46% per month for funds with a GCC&MENA regional orientation.

Table 6 presents the univariate tests of differences in fund characteristics between funds with "high" and "low" Fama & French's risk adjusted return, using the mean value of -0.05% as the cutoff. It can be seen that larger funds with lower *Full Compliance* and *Debt Ratio Compliance* have a significantly higher Fama & French's risk adjusted return.

Controlling for other variables, Table 7 presents the panel regression results where the intensity of ethical screening is proxied by the style factor loadings on ethical benchmarks and the number and type of accounting screens employed. Results for the relationship between the factor loadings and IEF performance depend on how we benchmark performance. The relationship is significantly negative for the (*MSCI Islamic – MSCI AC*) factor when IEF performance is measured relative to other religious funds – for every one unit increase in the ethical loading factor, the performance reduces by 13 basis points per month (specification 7). In contrast, we find a positive relationship between the (*MSCI Islamic – DJ Islamic*) factor and the performance of IEF relative to other conventional funds – for every one unit increase in the ethical loading factor, the performance raises by 5.5 basis points per month (specification 3).

The relationship between our second measure of ethical screening intensity, the number of accounting screens employed, and IEF performance is also mixed and depends on how we benchmark performance. When we benchmark IEF performance against conventional and SRI funds, the number of accounting screens is insignificant in explaining performance similar with the results in Table 7 using the (*MSCI Islamic – MSCI AC*) ethical loading factor. Renneboog et

[26] We do not use business and the other accounting ratio screen compliance measures since most funds (of about 90%) comply with them (Nainggolan et al., 2012).

al. (2008b) also find the number of ethical screens employed by SRI funds is unrelated to performance. However, we find a positive (curvilinear) relationship when Islamic fund performance is measured relative to religious funds. That is, Islamic fund performance first increases as the number of screens increases, reaching a maximum at three accounting screens, and decreases thereafter. This result is in contrast to Barnett and Salomon (2006) who report a negative non-linear relationship between SRI fund performance and the number of ethical screens employed.

Our third measure of screening intensity is the strictness of the accounting screens employed, i.e. whether the fund employs total assets as the denominator in the accounting ratios or the one-third threshold value. Results show that neither is significantly related to fund performance, irrespective of the performance benchmark we use supporting H3b.

Echoing the findings in Table 4, we see that IEFs outperform conventional funds during the GFC by approximately 40 basis points per month (specifications 3 and 4), controlling for other variables. As expected, there is a positive relationship between fund *Size* and fund performance, suggesting that larger funds perform better. Consistent with Capelle-Blancard and Monjon (2010), Golec (1996), and Renneboog et al. (2008b), younger funds (*Age*) perform better than older funds when performance is benchmarked against SRI and religious funds. While management fee does not appear to drive cross-sectional differences in fund performance, we note that funds that charge higher *Purification Fees* significantly underperform religious funds. Hence, non-compliance cost that applies only to IEFs and not other religious funds affect fund performance more than management fees. Finally, having an Islamic equity fund managed by a pure Islamic *Investment Company* improves fund performance.

Table 8 presents the panel regression results for the reduced sample for which we could compute our holdings-based measure of ethical screening intensity, i.e., *Full Compliance* and *Debt Ratio Compliance*. For this reduced sample, we find a negative relationship between *Full Compliance* and fund performance, supporting *the underperformance hypothesis* H1b. Similar results are obtained

when we use the percentage of fund holdings that pass the total debt to assets ratio screen (*Debt Ratio Compliance*). The remaining results are as before.

### *5.4 Additional robustness tests*

In this section, we check the robustness of our results by comparing the performance of Islamic indexes with matched (on region) conventional, SRI, and religious indexes. There are several benefits to using Islamic indexes rather than the funds themselves in performance measurement. First, because an index is the market itself, it shows the performance of the most efficient portfolio given the screens employed. Second, indexes are passive portfolios, free of management fees, manager skills, and other fund characteristics which may obscure the relationship between ethical screening and performance. Third, we can be certain that Islamic indexes comply with their ethical screens because they have to protect their credibility in order to attract the market to use their ethical screens as the investment benchmarks. In short, using indexes allows us to test more accurately whether ethical screening intensity alone affects performance.

We select the indexes based on the investment orientation of our sample of Islamic funds. Therefore, we employ nine regional and nine country (domestic) Islamic indexes.[27] Due to data limitation,[28] we select Islamic indexes issued by MSCI Islamic, Dow Jones Islamic, FTSE Shariah, and FTSE Bursa Malaysia EMAS Shariah. All are price return indexes in USD. Next, we match the selected Islamic indexes with conventional, SRI, and religious indexes. Since there are only very few religious indexes in the world, we use FTSE Catholic as the only religious index.

As before, we measure portfolio performance by subtracting monthly realized returns from the expected return from the Fama and French's three-factor model. Table 9 presents the panel

[27] The regions are Asia Pacific; Asia Pacific ex Japan; Brazil, Russia, India, and China; China and Hong Kong; Europe; GCC&MENA; Global; Emerging Markets; and North America. The domiciles are Malaysia, the United States, Canada, Indonesia, Thailand, South Africa, India, the United Kingdom, and Japan.
[28] The number of ethical index providers is small and few indexes have extensive performance histories.

regression results. Islamic indexes underperformed the conventional, SRI, and religious benchmarks during the 2000.dotcom crisis but outperformed them during GFC. The latter substantiates our earlier result when IEF performance is benchmarked relative to conventional funds. However, unlike the fund-level results, the outperformance of Islamic indexes is economically much smaller, about 23 basis points per month or 2.8% per year.

In contrast to the fund-level results, there is evidence of a curvilinear relationship between the aggregate Islamic fund performance and the number of accounting screens, consistent with Barnett and Salomon (2006). In specifications 1, 5, and 7, the relationship is negative at first but becomes less negative (or even positive) when the number of accounting screens employed exceeds three. The opposite is however found when performance is measured relative to conventional indexes. We also find employing the stricter accounting screen of the one-third threshold reduces portfolio performance by 50 basis points per month. This result remains intact when performance is measured relative to matched SRI and other religious indexes but not relative to conventional indexes. Finally, consistent with our earlier findings for IEFs, employing purification fees reduces portfolio performance.

## 6. Summary and conclusion

Ever since ethical funds were first launched more than a century ago, academics and practitioners have been mauling over the question of whether investors sacrifice financial returns in pursuit of ethical objectives. This line of enquiry is important to an ever increasing number of investors who are keen to align their ethical beliefs with their investment decision making process so as to benefit the society.

In this paper, we examine the *over-performance*, *underperformance*, and the *no-difference* in performance hypotheses for a homogenous group of ethical funds – Islamic equity funds. Our tests of 387 IEFs domiciled in 32 countries with investments in 11 regions from 1984 to 2010 show that, consistent with the underperformance hypothesis, IEFs underperform conventional

and SRI funds by 30 to 40 basis points per month, on average. These results suggest that investors pay a financial cost for being ethical. We find little evidence that Islamic funds perform differently from other religious funds, corroborating the view that Islamic investment is another class of faith-based ethical investments with similar returns. However, fund performance varies by domicile and regional orientation, suggesting that location may be an important determinant of differences in fund performance. Our results are robust to the various returns generating models used.

Employing Fama & French's three-factor model, we find that on average IEFs have a lower exposure to the market, value, and size factors than conventional and religious funds. Using Carhart's model, we find no difference in exposure to the momentum factor relative to other funds. Consistent with media claims that Islamic funds are a safer investment, we find that they outperformed (by 60 basis points) conventional funds during the recent sub-prime crisis. However, we do not find this for other crisis periods.

The final enquiry we pursue in this paper is whether the intensity of ethical screening is related to fund performance. Employing the fund's ethical factor loadings and the number of accounting screens employed as proxies for ethical screening intensity, our findings depend on how we benchmark performance. The relationship is insignificant when we benchmark IEF performance against SRI funds. When we measure IEF performance relative to other religious funds, we find it is negatively related to the (*MSCI Islamic – MSCI AC*) factor, and its relationship with the number of accounting screens employed is curvilinear. However, relationship is positive when IEF performance is benchmarked relative to conventional funds. Our holdings-based measure of ethical screening intensity is negatively related to performance, but this finding is applicable only to the reduced sample with holdings data.

We check the robustness of our results by replicating the tests using Islamic indexes instead. As with the fund-level results, there is a negative (curvilinear) relationship between the aggregate Islamic fund performance and the number of accounting screens employed. Further,

employing the stricter accounting screen (one-third threshold) and purification fees reduces portfolio performance. Finally, while the relationship between ethical screening intensity and fund performance relative to other conventional funds is mixed, the relationship between ethical screening intensity and the performance of Islamic funds relative to other SRI and religious funds is negative.

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**References**


Abderrezak, F., 2008. The performance of Islamic equity funds. Thesis paper. University of Maastricht, available at www.failaka.com/downloads/AbderrezakF_Perf_IslamicEquityFunds.pdf accessed 05/20/2009.

Abdullah, F., Hassan, T., Mohamad, S., 2007. Investigation of performance of Malaysian Islamic unit trust funds. Manag. Financ. 33, 142-153.

Ahmed, A., 2010. Global financial crisis: an Islamic finance perspective. Int. J. Islam. Middle East. Financ. Manag. 3, 306-320.

Al-Salem, F., 2008. The size and scope of the Islamic finance industry: An analysis. Int. J. Manag. 25, 124-130.

Ayub, M., 2007. Understanding Islamic Finance, John Wiley & Sons, Hoboken, NJ.

Barnett, M., Salomon, M., 2006. Beyond dichotomy: The curvilinear relationship between social responsibility and financial performance. Strateg. Manag. J. 27, 1101-1122.

Bauer, R., Koedijk, K., Otten, R., 2005. International evidence on ethical mutual fund performance and investment style. J. Bank. Financ. 29, 1751-1767.

Capelle-Blancard, G., Monjon, S., 2010. The performance of socially responsible funds: Does the screening process matter? Finance and Corporate Governance Conference 2011, Melbourne, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1734764 accessed 05/29/2011.

Carhart, M.M., 1997. On persistence in mutual fund performance. J. Financ. 52, 57-82.

Chou, P., Lin, M., 2002. Test of international asset pricing model with and without a riskless asset. Appl. Financ. Econ. 12, 873-883.

Cumby, R.E., Glen, J.D., 1990. Evaluating the performance of international mutual funds. J. Financ. 45, 497-521.

Derigs, U., Marzban, S., 2008. Review and analysis of current Sharīʿah-compliant equity screening practices. Int. J. Islam. Middle East. Financ. Manag. 1, 285-303.

Derigs, U., Marzban, S., 2009. New strategies and a new paradigm for Sharīʿah-compliant portfolio optimization. J. Bank. Financ. 33, 1166-1176.

Derwall, J., Koedijk, K., Ter Horst, J., 2011. A tale of values-driven and profit-seeking social investors. J. Bank. Financ. 35, 2137-2147.

Economic Cycle Research Institute, 2010. Business cycle peak and through dates, available at http://ecri-prod.s3.amazonaws.com/reports/samples/1/BC_1009.pdf accessed 10/15/2010.

Elfakhani, S., Hassan, M.K., 2005. Performance of Islamic mutual funds. Economic Research Forum: 12th Annual Conference, Cairo, available at http://www.failaka.com/downloads/KHassan_PerfIsamicFunds_Dec05.pdf accessed 05/26/2009.

Faff, R.W., 2003. Creating Fama and French factors with style. Financ. Rev. 38, 311-322.

Fama, E., French, K., 1996. Multifactor explanations of asset pricing anomalies. J. Financ. 51, 55-84.

Golec, J.H., 1996. The effects of mutual fund managers' characteristics on their portfolio performance, risk, and fees. Financ. Serv. Rev. 5, 133-148.

Hayat, R., 2006. An empirical assessment of Islamic equity fund returns. Thesis paper. Free University, Amsterdam, available at http://www.failaka.com/downloads/RHayat_IEFReturns_Paper.pdf accessed 05/26/2009.

Hong, H., Kacpercyzk, M., 2009. The price of sin: the effects of social norms on markets. J. Financ. Econ. 93, 15-36.

Hussein, K., Omran, M., 2005. Ethical investment revisited: Evidence from Dow Jones Islamic Indices. J. Invest. 14, 105-124.

Jensen, M., 1968. The performance of mutual funds in the period 1945-1964. J. Financ. 23, 389-416.

Kreander, N., Gray, R.H., Power, D.M., Sinclair, C.D., 2005. Evaluating the performance of ethical and non-ethical funds: A matched pair analysis. J. Bus. Financ. Account. 32, 1465-1493.

Lee, D.D., Humphrey, J.E., Benson, K.L., Ahn, J.Y.K., 2010. Socially responsible investment fund performance: the impact of screening intensity. Account. Financ. 50, 351-370.

Mallin, C.A., Saadouni, B., Briston, R.J., 1995. The financial performance of ethical investment funds. J. Bus. Financ. Account. 22, 483–496.

Margolis, J., Elfenbein, H., Walsh, J., 2007. Does it pay to be good? A meta-analysis and redirection of research on the relationship between corporate social and financial performance. Working Paper. Harvard Business School, available at http://mpra.ub.uni-muenchen.de/14235/ accessed 06/30/2011.

Muhammad, N.M., Mokhtar, M., 2008. Islamic equity mutual fund performance in Malaysia: Risk and return analysis. Proceedings of the Malaysian Finance Association (MFA) 11th International Conference, Malaysia, 211-219, available at http://www.unimas.my/2008mfac/parelelsessionspapers/SESSIONIIC.pdf accessed 05/26/2009.

Nainggolan, Y., How, J., Verhoeven, P., 2012, submitted for publication. The ethical compliance of Islamic equity funds. J. Bus. Ethics.

Pew Research Centre, 2009. Mapping the global Muslim population: A report on the size and distribution of the world's Muslim population, available at http://pewforum.org/docs/?DocID=450 accessed 01/20/2010.

Porter, M.E., Kramer, M.R., 2006. Strategy and society: The link between competitive advantage and corporate social responsibility. Harv. Bus. Rev. available at http://www.salesforcefoundation.org/files/HBR-CompetiveAdvAndCSR.pdf accessed 20/06/2011.

Renneboog, L., Ter Horst, J., Zhang, C., 2008a. Socially responsible investments: Institutional aspects, performance, and investor behavior. J. Bank. Financ. 32, 1723-1742.

Renneboog, L., Ter Horst, J., Zhang, C., 2008b. The price of ethics and stakeholder governance: The performance of socially responsible mutual funds. J. Corp. Financ. 14, 302-322.

Sandberg, J., Juravle, C., Hedesström, T.M., Hamilton, I., 2008. The heterogeneity of socially responsible investment. J. Bus. Ethics 87, 519-533.

Securities Commission Malaysia, 2007. Resolutions of the Securities Commission Shariah Advisory Council. 2nd edition (Securities Commission, Kuala Lumpur, Malaysia), 162-163.

Sharpe, W.F., 1964. Capital asset prices: A theory of market equilibrium under conditions of risk. J. Financ. 19, 425-442.

Sharpe, W.F., 1992. Asset allocation, management style, and performance measurement. J. Portf. Manag. 18, 7–19.

Wilson, R., 1997. Islamic finance and ethical investment. Int. J. Soc. Econ. 24, 1325-1342.

Wilson, R., 2002. The economics of mutual funds: An Islamic approach. The IOSCO Annual Conference, Malaysia, available at www.sc.com.my/ENG/html/iaffairs/ioscoIslamicpdf/IDBMUT.pdf accessed 05/20/2009.

Yeyati, E.L., Schmukler, S.L., Horen, N.V., 2008. Crises, capital controls, and financial integration. ADB Institute Working Paper. 121, available at http://www.adbi.org/files/2008.11.12.wp121.crises.capital.controls.financial.integration.pdf accessed 03/05/2010.

# Table 1
## Summary statistics of Islamic equity funds by country of domicile and regional orientation

*Size* is the fund's total assets under management (in USD million); *Age* is measured from the inception date to the test date (in months); *Mgt Fees* is management fees (%); *Purification Fees* (%) is the fund's non-compliant income over net assets as reported in the annual report; and *Islamic Investment Company* equals one if the fund is managed by an Islamic investment company and zero otherwise. Included in "Others" are the four Muslim domiciles (Egypt, Morocco, Pakistan, and Qatar) and 15 non-Muslim domiciles (Australia, British Virgins Islands, Canada, Channel Islands, Guernsey, India, Israel, Japan, Liechtenstein, Mauritius, Singapore, Sri Lanka, Switzerland, Thailand, and unidentified cases). GCC denotes Gulf Coast Countries; MENA denotes Middle East North Africa; and BRIC denotes Brazil, Russia, India and China. P-values are in parentheses. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

| | No. Funds | *Size* ($mil) | *Age* (Months) | *Mgt Fees* (%) | *Purification Fees* (%) | *Islamic Investment Company* |
|---|---|---|---|---|---|---|
| **Panel A. Full Sample (N=387)** | | | | | | |
| Mean | | 70.15 | 66.93 | 1.61 | 0.04 | 0.18 |
| Median | | 17.00 | 46.80 | 1.50 | 0.00 | 0.00 |
| **Panel B. Muslim Domiciles (N=220)** | | | | | | |
| Malaysia | 83 | 62.24 | 91.59 | 1.53 | 0.02 | 0.08 |
| Saudi Arabia | 36 | 71.76 | 67.98 | 1.83 | 0.00 | 0.58 |
| United Arab Emirates | 33 | 206.28 | 88.54 | 1.71 | 0.00 | 0.39 |
| Kuwait | 25 | 61.95 | 60.46 | 1.68 | 0.00 | 0.20 |
| Indonesia | 16 | 15.07 | 48.88 | 1.89 | 0.00 | 0.06 |
| Bahrain | 9 | 17.08 | 47.69 | 1.64 | 0.00 | 0.33 |
| Others (4 domiciles) | 18 | 20.51 | 56.78 | 1.91 | 0.04 | 0.17 |
| Mean | | 76.68 | 75.98 | 1.68 | 0.01 | 0.24 |
| Median | | 17.00 | 57.05 | 1.50 | 0.00 | 0.00 |
| **Panel C. Non-Muslim Domiciles (N=167)** | | | | | | |
| Luxemburg | 54 | 19.59 | 41.42 | 1.52 | 0.03 | 0.09 |
| Ireland | 17 | 22.30 | 46.48 | 1.65 | 0.67 | 0.06 |
| South Africa | 15 | 70.46 | 57.23 | 1.44 | 0.06 | 0.00 |
| Cayman Islands | 12 | 19.88 | 64.64 | 1.26 | 0.00 | 0.08 |
| Jersey | 12 | 64.58 | 32.41 | 1.47 | 0.00 | 0.08 |
| United States | 7 | 409.09 | 129.48 | 0.87 | 0.00 | 0.86 |
| United Kingdom | 5 | 18.15 | 38.60 | 1.30 | 0.00 | 0.00 |
| Others (15 domiciles) | 45 | 24.57 | 67.46 | 1.63 | 0.01 | 0.04 |
| Mean | | 45.31 | 55.00 | 1.50 | 0.09 | 0.10 |
| Median | | 18.81 | 37.33 | 1.50 | 0.00 | 0.00 |
| **Panel D. Muslim Vs. Non-Muslim Domiciles** | | | | | | |
| Mean difference | | 31.36 | 20.98 *** | 0.19 *** | -0.08 | 0.15 *** |
| | | (0.123) | (0.001) | (0.006) | (0.143) | (0.000) |
| **Panel E. Muslim Investment Regions (N=85)** | | | | | | |
| GCC and MENA | | | | | | |
| Mean | | 101.78 | 54.00 | 1.66 | 0.01 | 0.22 |
| Median | | 29.48 | 45.00 | 1.50 | 0.00 | 0.00 |
| **Panel F. Non-Muslim Investment Regions (N=302)** | | | | | | |
| Global | 98 | 27.41 | 62.43 | 1.51 | 0.13 | 0.16 |
| Domestic | 83 | 108.00 | 92.53 | 1.51 | 0.01 | 0.18 |
| Asia Pacific | 61 | 32.19 | 71.49 | 1.71 | 0.02 | 0.16 |
| Asia Pacific ex Japan | 15 | 27.91 | 27.99 | 1.62 | 0.04 | 0.00 |
| Emerging Markets | 13 | 39.81 | 36.03 | 1.99 | 0.00 | 0.31 |
| North America | 11 | 20.41 | 96.27 | 1.68 | 0.00 | 0.09 |
| Europe | 8 | 14.52 | 101.15 | 1.84 | 0.00 | 0.38 |
| China and Hong Kong | 5 | 78.22 | 32.69 | 1.55 | 0.04 | 0.20 |
| BRIC | 3 | 6.60 | 15.53 | 1.63 | 0.03 | 0.00 |
| Mean | | 52.27 | 70.57 | 1.59 | 0.05 | 0.17 |
| Median | | 16.50 | 47.17 | 1.50 | 0.00 | 0.00 |
| **Panel G. Muslim Vs. Non-Muslim Investment Regions** | | | | | | |
| Mean difference | | 49.52 ** | -16.57 ** | 0.07 | -0.04 | 0.06 |
| | | (0.042) | (0.030) | (0.385) | (0.569) | (0.219) |

## Table 2
## Jensen's alphas of equity funds sorted by country of domicile, 1984 – 2010

Jensen's alpha is estimated by regressing monthly excess returns of equally-weighted portfolios on excess market returns by country of domicile (CAPM). The risk-free rate is the 90-day US Treasury Bill rate and the market benchmark is the *MSCI AC World* index. *MKT* is the excess market return factor. Fama & French's model (F&F) adds the *HML (MSCI Value–MSCI Growth)* and *SMB (MSCI Small Cap–MSCI Large Cap)* factors to the Jensen's alpha model. Carhart's model adds the value, size, and momentum (MOM) factors to the Jensen's alpha model. IEF is Islamic equity fund, CEF is conventional equity fund, SRI is socially responsible investment fund, and REF is religious equity fund. (IEF-CEF), (IEF-SRI), and (IEF-REF) are the return difference portfolios. Included in "Others" are the four Muslim domiciles (Egypt, Morocco, Pakistan, and Qatar) and 15 non-Muslim domiciles (Australia, British Virgins Islands, Canada, Channel Islands, Guernsey, India, Israel, Japan, Liechtenstein, Mauritius, Singapore, Sri Lanka, Switzerland, Thailand, and unidentified cases). T-ratios (not reported) are computed using the robust Newey-West HAC standard errors. The symbols ***, **, * denote significance at the 1%, 5%, and 10% level, respectively.

| | | Jensen's alpha | | | Factor Loadings | | | |
|---|---|---|---|---|---|---|---|---|
| | | **CAPM** | **F&F** | **Carhart** | **MKT** | **HML** | **SMB** | **MOM** |
| **Panel A. Full Sample (N=387)** | | | | | | | | |
| | IEF | 0.001 | 0.000 | -0.004 ** | 0.639 *** | -0.272 *** | 0.333 *** | 0.035 |
| | IEF-CEF | -0.004 *** | -0.003 *** | -0.004 *** | -0.089 *** | -0.128 *** | -0.106 *** | -0.021 |
| | IEF-SRI | -0.003 * | -0.003 ** | -0.004 ** | -0.239 *** | -0.080 | 0.089 | 0.047 |
| | IEF-REF | -0.001 | 0.000 | 0.001 | -0.222 *** | -0.233 *** | -0.262 *** | 0.028 |
| **Panel B. Muslim Domiciles (N=220)** | | | | | | | | |
| Malaysia | IEF | -0.001 | -0.005 | -0.005 * | 0.441 *** | -0.229 * | 0.599 *** | 0.032 |
| | IEF-CEF | -0.004 *** | -0.004 *** | -0.004 ** | -0.058 * | -0.194 *** | 0.043 | -0.032 |
| | IEF-SRI | -0.005 * | -0.008 ** | -0.004 | -0.386 *** | 0.024 | 0.364 ** | 0.029 |
| | IEF-REF | -0.005 | -0.005 | -0.002 | -0.437 *** | -0.185 | -0.072 | -0.030 |
| Saudi Arabia | IEF | 0.002 | 0.002 | 0.001 | 0.776 *** | -0.332 *** | 0.348 *** | -0.005 |
| | IEF-CEF | -0.002 | -0.001 | -0.001 | -0.031 | -0.236 *** | -0.015 | -0.028 |
| | IEF-SRI | -0.001 | 0.000 | 0.000 | -0.108 ** | -0.082 | 0.084 | -0.005 |
| | IEF-REF | 0.003 | 0.003 | 0.004 | -0.106 * | -0.347 *** | -0.228 * | 0.047 |
| United Arab Emirates | IEF | -0.003 | -0.001 | -0.004 | 0.411 *** | -0.229 * | 0.399 *** | 0.037 |
| | IEF-CEF | -0.006 | -0.002 | -0.009 * | -0.202 ** | 0.544 *** | -0.372 * | -0.024 |
| | IEF-SRI | -0.006 ** | -0.003 | -0.004 | -0.386 *** | -0.160 | -0.200 | 0.026 |
| | IEF-REF | -0.004 | -0.002 | -0.001 | -0.428 *** | -0.367 ** | -0.225 | 0.068 |
| Kuwait | IEF | 0.004 | 0.001 | 0.002 | 0.407 *** | 0.517 ** | 0.291 | 0.004 |
| | IEF-CEF | -0.012 *** | -0.011 *** | -0.011 *** | 0.017 | 0.016 | -0.127 | 0.003 |
| | IEF-SRI | 0.002 | 0.002 | 0.002 | -0.410 *** | 0.634 *** | -0.138 | -0.051 |
| | IEF-REF | 0.002 | 0.001 | 0.001 | -0.541 *** | 0.732 *** | -0.117 | -0.078 |
| Indonesia | IEF | 0.005 | 0.004 | 0.007 | 0.840 *** | -0.540 * | 0.409 | -0.264 ** |
| | IEF-CEF | -0.017 *** | -0.017 *** | -0.019 *** | -0.453 *** | 0.217 | -0.149 | -0.128 |
| | IEF-SRI | -0.020 *** | -0.019 *** | -0.021 *** | -0.159 | -0.535 * | -0.604 ** | 0.118 |
| | IEF-REF | 0.005 | 0.005 | 0.007 | -0.039 | -0.288 | 0.019 | -0.283 *** |
| Bahrain | IEF | 0.006 * | 0.004 | 0.005 | 0.432 *** | -0.256 | 0.321 * | 0.064 |
| | IEF-CEF | -0.001 | 0.000 | -0.001 | -0.370 *** | 0.070 | -0.223 | -0.051 |
| | IEF-SRI | 0.002 | 0.004 | 0.003 | -0.515 *** | 0.012 | -0.459 | 0.106 |
| | IEF-REF | 0.001 | 0.002 | 0.003 | -0.419 *** | -0.223 | -0.193 | -0.003 |
| Others (4 domiciles) | IEF | 0.004 | 0.003 | 0.006 | 0.611 *** | -0.023 | 0.023 | 0.089 |
| | IEF-CEF | 0.000 | 0.002 | 0.002 | -0.055 | 0.264 | -0.212 | 0.059 |
| | IEF-SRI | 0.004 | 0.005 | 0.008 | -0.229 ** | 0.129 | -0.424 | 0.092 |
| | IEF-REF | 0.001 | 0.003 | 0.006 | -0.228 * | -0.027 | -0.600 * | 0.108 |

**Table 2**
**Jensen's alphas of equity funds sorted by country of domicile, 1984 – 2010 (Continued)**

| | | Jensen's alpha | | | Factor Loadings | | | |
|---|---|---|---|---|---|---|---|---|
| | | CAPM | F&F | Carhart | MKT | HML | SMB | MOM |
| **Panel C. Non-Muslim Domiciles (N=167)** | | | | | | | | |
| Luxemburg | IEF | 0.001 | 0.000 | 0.000 | 0.894 *** | -0.541 *** | 0.102 ** | 0.053 ** |
| | IEF-CEF | -0.002 | -0.001 | -0.001 | -0.025 | -0.435 *** | -0.305 *** | 0.050 * |
| | IEF-SRI | -0.002 | -0.002 | -0.001 | 0.059 | -0.466 *** | -0.174 * | 0.016 |
| | IEF-REF | 0.000 | 0.001 | 0.001 | 0.115 ** | -0.457 *** | -0.321 *** | 0.082 ** |
| Ireland | IEF | 0.003 * | 0.003 | 0.002 | 0.853 *** | 0.056 | 0.121 | 0.062 * |
| | IEF-CEF | -0.001 | -0.002 | -0.001 | -0.187 *** | -0.221 *** | 0.305 *** | 0.110 *** |
| | IEF-SRI | 0.001 | 0.001 | 0.000 | -0.121 *** | 0.089 | -0.124 | 0.162 *** |
| | IEF-REF | 0.005 * | 0.003 | 0.003 | -0.203 *** | 0.487 *** | 0.111 | -0.004 |
| South Africa | IEF | 0.009 *** | 0.007 ** | 0.008 *** | 0.547 *** | 0.188 | 0.558 *** | 0.010 |
| | IEF-CEF | 0.005 | 0.003 | 0.005 | -0.199 *** | 0.274 ** | 0.066 | -0.065 |
| | IEF-SRI | 0.006 ** | 0.004 | 0.007 ** | -0.238 *** | 0.373 *** | 0.441 *** | 0.002 |
| | IEF-REF | 0.006 * | 0.007 * | 0.009 *** | -0.297 *** | 0.211 | -0.260 | 0.026 |
| Cayman Islands | IEF | 0.001 | 0.000 | 0.000 | 0.852 *** | -0.424 *** | -0.006 | 0.021 |
| | IEF-CEF | -0.004 | -0.004 | -0.002 | -0.006 | -0.389 *** | -0.009 | -0.021 |
| | IEF-SRI | -0.001 | 0.000 | 0.001 | -0.058 | -0.132 | -0.330 *** | -0.045 |
| | IEF-REF | 0.000 | 0.002 | 0.003 | -0.049 | -0.274 *** | -0.791 *** | -0.022 |
| Jersey | IEF | 0.001 | 0.001 | 0.001 | 0.384 *** | 0.005 | -0.075 | -0.014 |
| | IEF-CEF | 0.003 | 0.004 | 0.003 | -0.143 *** | 0.056 | -0.262 * | -0.055 |
| | IEF-SRI | 0.001 | 0.003 | 0.002 | -0.475 *** | 0.073 | -0.916 *** | 0.066 |
| | IEF-REF | -0.004 | -0.002 | -0.003 | -0.250 *** | -0.086 | -0.538 *** | 0.074 |
| United Kingdom | IEF | 0.004 | 0.002 | 0.003 | 0.728 *** | -0.464 ** | 0.188 | 0.089 |
| | IEF-CEF | -0.003 | -0.003 | -0.003 | 0.005 | -0.126 | -0.086 | -0.078 |
| | IEF-SRI | -0.001 | -0.002 | -0.001 | 0.038 | -0.541 *** | -0.177 | -0.010 |
| | IEF-REF | -0.002 | -0.009 * | -0.005 | 0.198 | -1.294 *** | -0.070 | 0.184 |
| United States | IEF | 0.001 | 0.001 | -0.003 *** | 0.872 *** | -0.382 *** | 0.173 *** | 0.042 ** |
| | IEF-CEF | -0.002 | 0.003 | -0.003 | -0.302 *** | 0.374 *** | -0.695 *** | -0.035 |
| | IEF-SRI | -0.002 | 0.001 | -0.003 | -0.192 *** | -0.175 * | -0.249 ** | 0.127 *** |
| | IEF-REF | 0.002 | 0.004 * | 0.003 * | -0.045 | -0.177 ** | -0.539 *** | 0.039 |
| Others (15 domiciles) | IEF | 0.002 | 0.000 | 0.002 | 0.840 *** | -0.593 ** | 0.288 | 0.002 |
| | IEF-CEF | 0.003 | 0.003 | 0.006 | -0.081 | -0.205 | 0.025 | 0.033 |
| | IEF-SRI | 0.002 | 0.004 | 0.004 | -0.191 | -0.634 | -0.076 | -0.082 |
| | IEF-REF | 0.002 | 0.001 | 0.005 | -0.116 ** | -0.437 | 0.076 | -0.005 |

## Table 3
## Jensen's alphas of equity funds sorted by regional orientation, 1984 – 2010

Jensen's alpha is estimated by regressing monthly excess returns of equally-weighted portfolios on excess market returns by regional orientation (CAPM). The risk-free rate is the 90-day US Treasury Bill rate and the market benchmark is the *MSCI AC World* index. *MKT* is the excess market return factor. Fama & French's model (F&F) adds the *HML (MSCI Value–MSCI Growth)* and *SMB (MSCI Small Cap–MSCI Large Cap)* factors to the Jensen's alpha model. Carhart's model adds the value, size, and momentum (MOM) factors to the Jensen's alpha model. IEF is Islamic equity fund, CEF is conventional equity fund, SRI is socially responsible investment fund, and REF is religious equity fund. (IEF-CEF), (IEF-SRI), and (IEF-REF) are the return difference portfolios. GCC denotes Gulf Coast Countries, MENA denotes Middle East North Africa; and BRIC denotes Brazil, Russia, India and China. T-ratios (not reported) are computed using the robust Newey-West HAC standard errors. The symbols ***, **, * denote significance at the 1%, 5%, and 10% level, respectively.

| | | Jensen's alpha | | | Factor Loadings | | | |
|---|---|---|---|---|---|---|---|---|
| | | CAPM | F&F | Carhart | MKT | HML | SMB | MOM |
| **Panel A. Muslim Investment Regions (N=85)** | | | | | | | | |
| GCC and MENA | IEF | 0.008 *** | 0.006 ** | 0.006 ** | 0.460 *** | 0.058 | 0.414 *** | -0.006 |
| | IEF-CEF | 0.001 | 0.000 | 0.001 | -0.160 *** | 0.035 | -0.060 | -0.006 |
| | IEF-SRI | 0.006 ** | 0.005 | 0.008 ** | -0.345 *** | 0.248 * | -0.155 | -0.025 |
| | IEF-REF | 0.006 * | 0.005 | 0.008 ** | -0.400 *** | -0.001 | -0.240 | 0.023 |
| **Panel B. Non-Muslim Investment Regions (N=302)** | | | | | | | | |
| Global | IEF | 0.000 | -0.001 | -0.002 | 0.788 *** | -0.409 *** | 0.156 *** | 0.017 |
| | IEF-CEF | -0.004 *** | -0.004 *** | -0.003 ** | -0.022 | -0.264 *** | -0.119 ** | -0.011 |
| | IEF-SRI | -0.001 | -0.002 * | 0.000 | -0.074 ** | -0.221 *** | -0.103 * | 0.022 |
| | IEF-REF | -0.001 | 0.000 | 0.001 | -0.056 | -0.332 *** | -0.426 *** | 0.030 |
| Domestic | IEF | 0.001 | 0.000 | -0.002 | 0.577 *** | -0.208 *** | 0.403 *** | 0.039 |
| | IEF-CEF | -0.004 *** | -0.002 | -0.005 *** | -0.114 *** | 0.194 *** | -0.275 *** | -0.047 |
| | IEF-SRI | -0.003 * | -0.001 | -0.004 ** | -0.231 *** | -0.109 | 0.045 | 0.058 * |
| | IEF-REF | 0.000 | 0.000 | 0.001 | -0.296 *** | -0.220 ** | -0.224 ** | 0.053 |
| Asia Pacific | IEF | -0.002 | -0.005 * | -0.005 * | 0.508 *** | -0.280 ** | 0.601 *** | 0.032 |
| | IEF-CEF | -0.006 *** | -0.006 *** | -0.005 *** | -0.090 *** | -0.157 ** | -0.015 | -0.038 |
| | IEF-SRI | -0.006 ** | -0.010 *** | -0.006 ** | -0.407 *** | -0.077 | 0.299 ** | 0.050 |
| | IEF-REF | -0.005 | -0.004 | -0.002 | -0.375 *** | -0.182 | -0.102 | -0.028 |
| Asia Pacific ex Japan | IEF | 0.004 | 0.004 | 0.005 | 0.777 *** | -0.577 ** | -0.173 | -0.020 |
| | IEF-CEF | -0.005 * | -0.005 | -0.006 * | -0.363 *** | -0.037 | -0.115 | -0.017 |
| | IEF-SRI | -0.001 | 0.001 | 0.000 | -0.099 | -0.102 | -0.747 *** | 0.075 |
| | IEF-REF | 0.001 | 0.001 | 0.003 | 0.091 | -0.500 * | -0.061 | 0.013 |
| Emerging Markets | IEF | 0.004 | 0.003 | 0.001 | 0.970 *** | -0.310 *** | 0.280 ** | 0.066 |
| | IEF-CEF | -0.004 | -0.002 | -0.005 | -0.243 *** | -0.092 | -0.691 *** | 0.028 |
| | IEF-SRI | -0.001 | -0.002 | -0.001 | -0.107 * | -0.178 | 0.126 | 0.076 |
| | IEF-REF | 0.004 | 0.002 | 0.003 | 0.180 ** | -0.163 | 0.451 ** | 0.190 *** |
| North America | IEF | 0.001 | 0.001 | -0.001 | 0.782 *** | -0.188 *** | 0.083 * | 0.023 |
| | IEF-CEF | -0.002 | -0.002 | -0.002 | 0.130 *** | -0.046 | -0.265 *** | 0.007 |
| | IEF-SRI | 0.001 | 0.002 | -0.001 | 0.046 | 0.085 | 0.531 *** | 0.114 ** |
| | IEF-REF | 0.003 | 0.003 | 0.003 * | -0.115 *** | -0.190 ** | -0.267 *** | 0.101 *** |
| Europe | IEF | 0.001 | 0.001 | -0.002 | 0.859 *** | -0.344 *** | 0.192 ** | 0.067 * |
| | IEF-CEF | -0.001 | -0.001 | -0.001 | -0.021 | -0.475 *** | 0.103 | 0.093 ** |
| | IEF-SRI | -0.004 | -0.003 | -0.004 | -0.031 | -0.282 ** | 0.192 | 0.081 * |
| | IEF-REF | 0.000 | 0.001 | 0.002 | -0.019 | -0.263 ** | -0.416 *** | 0.053 |
| China & Hong Kong | IEF | 0.006 | 0.003 | 0.005 | 1.025 *** | -1.094 *** | -0.264 | -0.013 |
| | IEF-CEF | -0.005 | -0.006 | -0.006 | -0.093 | 0.177 | 0.429 | -0.087 |
| | IEF-SRI | -0.022 ** | -0.024 ** | -0.025 *** | -0.471 *** | 0.002 | 0.402 | 0.151 |
| | IEF-REF | 0.004 | 0.002 | 0.001 | -0.059 | -0.455 | 0.018 | -0.085 |
| BRIC | IEF | 0.025 * | 0.009 | 0.003 | 1.696 *** | -1.574 * | 0.289 | -0.331 ** |
| | IEF-CEF | 0.023 | 0.005 | 0.002 | 1.702 *** | -1.598 | 0.541 | -0.354 ** |
| | IEF-SRI | 0.031 * | 0.045 ** | 0.025 | 0.810 ** | -0.220 | -1.529 * | -0.177 |
| | IEF-REF | na | na | na | na | na | na | na |

## Table 4
## Performance of Islamic equity funds during crisis periods

Regressions are performed on equally-weighted portfolios. *Crisis* is a dummy variable that takes the value of 1 for a crisis period (the 1997 Asian financial crisis, the 2000.dotcom crisis, or the 2008 Global Financial Crisis) and zero otherwise. *Asian Financial Crisis*, *The 2000.dotcom Crisis*, and *Global Financial Crisis* take the value of 1 for each of the economic crises and zero otherwise. The risk-free rate is the 90-day US Treasury Bill rate and the market benchmark is the *MSCI AC World* index. *MKT* is the excess market return factor; *HML* is the (*MSCI Value–MSCI Growth*) factor; and *SMB* is the (*MSCI Small Cap–MSCI Large Cap*) factor. IEF is Islamic equity fund, CEF is conventional equity fund, SRI is socially responsible investment fund, and REF is religious equity fund. (IEF-CEF), (IEF-SRI), and (IEF-REF) are the return difference portfolios. T-ratios (not reported) are computed using the robust Newey-West HAC standard errors. The symbol ***, **, * denote significance at the 1%, 5%, and 10% level, respectively. Number of funds = 387.

| | **Difference Portfolios** | | | |
|---|---|---|---|---|
| | **IEF** | **IEF-CEF** | **IEF-SRI** | **IEF-REF** |
| ***Specification (1)*** | | | | |
| *Alpha* | 0.004 * | -0.004 *** | -0.001 | 0.002 |
| *MKT* | 0.504 *** | -0.081 ** | -0.107 * | -0.211 *** |
| *Crisis* | -0.008 ** | 0.002 | -0.008 * | -0.009 * |
| *Adj R-Sqr* | 0.566 | 0.055 | 0.124 | 0.114 |
| ***Specification (2)*** | | | | |
| *Alpha* | 0.004 * | -0.004 *** | -0.001 | 0.003 |
| *MKT* | 0.575 *** | -0.085 *** | -0.183 *** | -0.242 *** |
| *Asian Financial Crisis* | -0.012 ** | 0.003 | -0.015 *** | -0.006 |
| *The 2000.dotcom Crisis* | -0.007 | -0.001 | -0.002 | -0.014 ** |
| *Global Financial Crisis* | -0.006 | 0.006 ** | 0.000 | -0.005 |
| *Adj R-Sqr* | 0.559 | 0.059 | 0.113 | 0.116 |
| ***Specification (3)*** | | | | |
| *Alpha* | 0.002 | -0.005 *** | -0.001 | 0.005 * |
| *MKT* | 0.615 *** | -0.029 | -0.199 *** | -0.261 *** |
| *HML* | -0.268 *** | -0.140 *** | -0.089 | -0.239 *** |
| *SMB* | 0.317 *** | -0.093 ** | 0.070 | -0.299 *** |
| *Crisis* | -0.006 * | 0.003 * | -0.009 * | -0.012 ** |
| *Adj R-Sqr* | 0.836 | 0.263 | 0.297 | 0.220 |
| ***Specification (4)*** | | | | |
| *Alpha* | 0.002 | -0.004 *** | 0.001 | 0.005 ** |
| *MKT* | 0.624 *** | -0.075 *** | -0.255 *** | -0.263 *** |
| *HML* | -0.276 *** | -0.125 *** | -0.097 * | -0.237 *** |
| *SMB* | 0.297 *** | -0.095 * | 0.020 | -0.300 *** |
| *Asian Financial Crisis* | -0.011 * | 0.003 | -0.019 *** | -0.012 |
| *The 2000.dotcom Crisis* | -0.003 | 0.002 | -0.004 | -0.012 ** |
| *Global Financial Crisis* | -0.004 | 0.005 ** | -0.006 | -0.011 |
| *Adj R-Sqr* | 0.838 | 0.247 | 0.319 | 0.215 |

## Table 5
## Ethical screening intensity and Fama&French's risk adjusted return of Islamic equity funds by country of domicile and regional orientation

Ethical screening intensity is proxied by ethical factor loadings which are estimated by running the Fama-French's three-factor model that adds (*MSCI Islamic - MSCI AC*) and (*MSCI Islamic - DJ Islamic*) benchmarks; *No Accounting Screens*, the number of accounting screens employed by IEFs; *D_Employ Total Assets*, which equals one if the fund discloses using total assets in the denominator of accounting screens and zero otherwise; *D_Employ One-Third Threshold*, which equals one if the fund discloses using one-third as the minimum threshold in the accounting screens and zero otherwise; *Full Compliance* is the fraction of fund holdings passing both the business and accounting screens of *MSCI Islamic*; and *Debt Ratio Compliance* is the fraction of fund holdings passing the total debt/total assets<1/3 screen. Fama & French's model (F&F) adds the *HML (MSCI Value–MSCI Growth)* and *SMB (MSCI Small Cap–MSCI Large Cap)* factors to the Jensen's alpha model. The risk-free rate is the 90-day US Treasury Bill rate and the market benchmark is the *MSCI AC World* index. Included in "Others" are the four Muslim domiciles (Egypt, Morocco, Pakistan, and Qatar) and 15 non-Muslim domiciles (Australia, British Virgins Islands, Canada, Channel Islands, Guernsey, India, Israel, Japan, Liechtenstein, Mauritius, Singapore, Sri Lanka, Switzerland, Thailand, and unidentified cases). GCC denotes Gulf Coast Countries; MENA denotes Middle East North Africa; and BRIC denotes Brazil, Russia, India and China. P-values are in parentheses. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

| | No. Funds | *(MSCI Islamic - MSCI AC)* | *(MSCI Islamic - DJ Islamic)* | *Number of Accounting Screens* | *D_Employ Total Assets* | *D_Employ One-Third Threshold* | *Debt Ratio Compliance* | *Full Compliance* | *Fama & French's Risk Adjusted Return* |
|---|---|---|---|---|---|---|---|---|---|
| **Panel A. Full Sample** | | | | | | | | | |
| Mean | | 0.72 | 1.29 | 2.65 | 0.13 | 0.34 | 0.42 | 0.25 | -0.00051 |
| Median | | 0.60 | 0.98 | 3.00 | 0.00 | 0.00 | 0.40 | 0.25 | -0.00005 |
| Number of obs | | 372 | 372 | 235 | 233 | 232 | 125 | 125 | 380 |
| **Panel B. Muslim Domiciles (N=220)** | | | | | | | | | |
| Malaysia | 81 | 0.32 | 1.30 | 1.51 | 0.07 | 0.01 | 0.39 | 0.27 | 0.00055 |
| Saudi Arabia | 36 | 0.85 | 1.18 | 3.93 | 0.04 | 0.04 | 0.48 | 0.31 | -0.00134 |
| United Arab Emirates | 33 | 0.86 | 0.51 | 3.79 | 0.14 | 0.14 | 0.25 | 0.13 | -0.00270 |
| Kuwait | 25 | 0.13 | 0.30 | 3.00 | 0.36 | 0.45 | na | na | -0.00676 |
| Indonesia | 15 | 1.10 | 4.29 | 2.25 | 0.00 | 0.00 | 0.74 | 0.28 | 0.00455 |
| Bahrain | 9 | 0.00 | 2.10 | 3.00 | 0.25 | 0.00 | 1.00 | 0.25 | -0.01001 |
| Others (4 domiciles) | 18 | 0.02 | 2.49 | 3.88 | 1.00 | 0.00 | na | na | 0.00729 |
| Mean | | 0.48 | 1.37 | 2.55 | 0.16 | 0.07 | 0.44 | 0.27 | -0.00070 |
| Median | | 0.45 | 1.15 | 3.00 | 0.00 | 0.00 | 0.42 | 0.28 | 0.00006 |
| **Panel C. Non-Muslim Domiciles (N=167)** | | | | | | | | | |
| Luxemburg | 50 | 1.22 | 0.80 | 2.60 | 0.15 | 0.80 | 0.38 | 0.22 | -0.00038 |
| Ireland | 17 | 1.28 | 1.43 | 3.00 | 0.07 | 0.93 | 0.16 | 0.14 | -0.00195 |
| South Africa | 15 | 0.56 | 2.89 | 2.00 | 0.00 | 0.70 | 0.34 | 0.26 | 0.00399 |
| Cayman Islands | 12 | 1.47 | 1.09 | 2.50 | 0.25 | 0.75 | na | na | -0.00137 |
| Jersey | 12 | 0.17 | 0.37 | na | na | na | na | na | -0.00438 |
| United States | 7 | 0.24 | -1.73 | 3.00 | 0.00 | 0.00 | 0.28 | 0.12 | 0.00201 |
| United Kingdom | 5 | 1.07 | 0.17 | 4.60 | 0.00 | 0.80 | na | na | 0.00398 |
| Others (15 domiciles) | 45 | 1.06 | 1.98 | 2.90 | 0.10 | 0.50 | 0.58 | 0.24 | -0.00248 |
| Mean | | 1.06 | 1.19 | 2.79 | 0.09 | 0.71 | 0.37 | 0.21 | -0.00026 |
| Median | | 0.86 | 0.70 | 3.00 | 0.00 | 1.00 | 0.34 | 0.20 | -0.00021 |
| **Panel D. Muslim Vs. Non-Muslim Domiciles** | | | | | | | | | |
| Mean difference | | -0.57 *** | 0.18 | -0.24 | 0.06 | -0.65 *** | 0.07 | 0.06 * | -0.00044 |
| | | (0.000) | (0.488) | (0.142) | (0.153) | (0.000) | (0.105) | (0.053) | (0.640) |
| **Panel E. Muslim Investment Regions (N=85)** | | | | | | | | | |
| GCC and MENA | | | | | | | | | |
| Mean | | 0.48 | 1.17 | 3.29 | 0.24 | 0.21 | 0.69 | 0.37 | -0.00411 |
| Median | | 0.53 | 0.87 | 3.00 | 0.00 | 0.00 | 0.60 | 0.36 | -0.00385 |
| **Panel F. Non-Muslim Investment Regions (N=302)** | | | | | | | | | |
| Global | 93 | 0.86 | 0.66 | 3.11 | 0.05 | 0.61 | 0.25 | 0.18 | -0.00057 |
| Domestic | 83 | 0.68 | 1.69 | 1.74 | 0.06 | 0.12 | 0.40 | 0.24 | 0.00088 |
| Asia Pacific | 60 | 0.56 | 1.89 | 2.55 | 0.26 | 0.15 | 0.46 | 0.30 | 0.00084 |
| Asia Pacific ex Japan | 14 | 1.09 | 2.15 | 2.43 | 0.29 | 0.64 | 0.50 | 0.29 | 0.00289 |
| Emerging Markets | 13 | 1.29 | 2.68 | 2.60 | 0.00 | 0.20 | 0.40 | 0.21 | 0.00386 |
| North America | 11 | 0.91 | -0.66 | 3.11 | 0.00 | 0.56 | 0.11 | 0.00 | -0.00204 |
| Europe | 8 | 0.51 | 3.17 | 3.25 | 0.00 | 0.50 | 0.36 | 0.32 | 0.00191 |
| China and Hong Kong | 5 | 2.34 | 1.46 | 2.25 | 0.25 | 0.50 | 0.78 | 0.43 | -0.00037 |
| BRIC | 3 | 3.01 | -2.10 | 3.00 | 0.00 | 1.00 | 0.46 | 0.18 | 0.00714 |
| Mean | | 0.80 | 1.33 | 2.54 | 0.11 | 0.36 | 0.39 | 0.24 | 0.00052 |
| Median | | 0.64 | 1.01 | 3.00 | 0.00 | 0.00 | 0.40 | 0.25 | 0.00043 |
| **Panel G. Muslim Vs. Non-Muslim Investment Regions** | | | | | | | | | |
| Mean difference | | -0.32 ** | -0.17 | 0.75 *** | 0.12 ** | -0.16 * | 0.30 *** | 0.13 *** | -0.00463 *** |
| | | (0.038) | (0.595) | (0.001) | (0.045) | (0.074) | (0.000) | (0.004) | (0.000) |

## Table 6
## Univariate tests of differences in fund characteristics between Islamic equity funds with high and low Fama&French's risk adjusted return

"High" and "Low" are based on the mean value (-0.05%) of Fama&French's (F&F) risk adjusted return. F&F three-factor model adds the *HML (MSCI Value–MSCI Growth)* and *SMB (MSCI Small Cap–MSCI Large Cap)* factors to the Jensen's alpha model. The risk-free rate is the 90-day US Treasury Bill rate and the market benchmark is the *MSCI AC World* index. Ethical screening intensity is proxied by ethical factor loadings which are estimated by running the Fama-French's three-factor model that adds (*MSCI Islamic - MSCI AC*) and (*MSCI Islamic - DJ Islamic*) benchmarks; *No Accounting Screens*, the number of accounting screens employed by IEFs; *D_Employ Total Assets*, which equals one if the fund discloses using total assets in the denominator of accounting screens and zero otherwise; *D_Employ One-Third Threshold*, which equals one if the fund discloses using one-third as the minimum threshold in the accounting screens and zero otherwise; *Full Compliance* which is the fraction of fund holdings passing both the business and accounting screens of *MSCI Islamic*; and *Debt Ratio Compliance* which is the fraction of fund holdings passing the total debt/total assets<1/3 screen. *Size* is the fund's total assets under management (in USD million); *Age* is measured from the inception date to the test date (in months); *Purification Fees* (%) is the fund's non-compliant income over net assets as reported in the fund's annual report; and *Islamic Investment Company* equals one if the fund is managed by an Islamic investment company and zero otherwise. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

| | *Fama&French's Risk Adjusted Return* | | High-Low | p-value | N |
|---|---|---|---|---|---|
| | High | Low | | | |
| *(MSCI Islamic - MSCI AC)* | 0.742 | 0.704 | 0.038 | (0.769) | 372 |
| *(MSCI Islamic - DJ Islamic)* | 1.349 | 1.232 | 0.117 | (0.656) | 372 |
| *No Accounting Screens* | 2.649 | 2.643 | 0.006 | (0.971) | 229 |
| *D_Employ Total Assets* | 0.124 | 0.143 | -0.019 | (0.680) | 227 |
| *D_Employ One-Third Threshold* | 0.313 | 0.357 | -0.045 | (0.482) | 226 |
| *Full Compliance* | 0.238 | 0.291 | -0.053 * | (0.070) | 123 |
| *Debt Ratio Compliance* | 0.384 | 0.497 | -0.113 *** | (0.007) | 123 |
| *Size* ($mil) | 87.591 | 37.174 | 50.417 ** | (0.014) | 380 |
| *Age* (Months) | 65.999 | 70.008 | -4.009 | (0.533) | 380 |
| *Mgt Fees* (%) | 1.589 | 1.622 | -0.033 | (0.632) | 371 |
| *Purification Fees* (%) | 0.024 | 0.067 | -0.043 | (0.427) | 380 |
| *Islamic Investment Company* | 0.163 | 0.203 | -0.041 | (0.304) | 380 |

## Table 7
## Panel regressions of IEF performance and ethical screening intensity

Portfolio performance is measured by subtracting monthly realized return from the expected return as per Fama and French's three-factor model. Ethical screening intensity is proxied by ethical factor loadings (*MSCI Islamic - MSCI AC*) and (*MSCI Islamic - DJ Islamic*); *No Accounting Screens*, the number of accounting screens employed by IEFs; *D_Employ Total Assets*, which equals one if the fund discloses using total assets in the denominator of accounting screens and zero otherwise; and *D_Employ One-Third Threshold*, which equals one if the fund discloses using one-third as the minimum threshold in the accounting screens and zero otherwise. *Asian Financial Crisis*, *The 2000.dotcom Crisis*, and *Global Financial Crisis* take the value of 1 for each of the economic crises and zero otherwise. *Size* is the fund's total assets under management (in USD million); *Age* is measured from the inception date to the test date (in months); *Purification Fees* (%) is the fund's non-compliant income over net assets as reported in the fund's annual report; and *Islamic Investment Company* equals one if the fund is managed by an Islamic investment company and zero otherwise. Country domicile fixed effects are included. IEF is Islamic equity fund, CEF is conventional equity fund, SRI is socially responsible investment fund, and REF is religious equity fund. (IEF-CEF), (IEF-SRI), and (IEF-REF) are the return difference portfolios. P-values are in parentheses using clustered standard errors by fund regional orientation. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. Number of funds = 372 for specifications (1), (3), (5), and (7); Number of funds = 232 for specifications (2), (4), (6), and (8).

| | **IEF** | | **IEF-CEF** | | **IEF-SRI** | | **IEF-REF** | |
|---|---|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** | **(7)** | **(8)** |
| *(MSCI Islamic - MSCI AC)* | -0.00078 | | 0.00006 | | -0.00125 | | -0.00130 * | |
| | (0.306) | | (0.957) | | (0.432) | | (0.064) | |
| *(MSCI Islamic - DJ Islamic)* | 0.00031 | | 0.00055 ** | | 0.00066 | | 0.00077 | |
| | (0.196) | | (0.023) | | (0.182) | | (0.112) | |
| *No Accounting Screens* | | -0.00127 | | 0.00212 | | -0.00078 | | 0.00836 *** |
| | | (0.772) | | (0.544) | | (0.883) | | (0.009) |
| *(No Accounting Screens)*$^2$ | | 0.00020 | | -0.00035 | | 0.00011 | | -0.00148 ** |
| | | (0.749) | | (0.604) | | (0.894) | | (0.018) |
| *D_Employ Total Assets* | | -0.00090 | | -0.00124 | | -0.00354 | | -0.00499 |
| | | (0.752) | | (0.729) | | (0.432) | | (0.103) |
| *D_Employ One-Third Threshold* | | -0.00410 | | 0.00106 | | -0.00201 | | -0.00427 |
| | | (0.188) | | (0.769) | | (0.552) | | (0.257) |
| *Asian Financial Crisis* | -0.08683 *** | -0.11024 *** | 0.01450 | -0.00875 | -0.06481 *** | -0.11486 *** | 0.09626 *** | 0.09972 *** |
| | (0.000) | (0.001) | (0.387) | (0.603) | (0.005) | (0.000) | (0.000) | (0.005) |
| *The 2000.dotcom Crisis* | -0.00204 | -0.00182 | 0.00227 | 0.00507 | -0.00231 ** | 0.00054 | -0.01082 *** | -0.00755 *** |
| | (0.342) | (0.516) | (0.345) | (0.104) | (0.026) | (0.836) | (0.000) | (0.001) |
| *Global Financial Crisis* | -0.00192 ** | -0.00154 | 0.00339 *** | 0.00409 *** | -0.00004 | -0.00022 | -0.00187 * | -0.00263 * |
| | (0.012) | (0.299) | (0.006) | (0.008) | (0.965) | (0.852) | (0.093) | (0.089) |
| *Log(Size)* | 0.00076 * | 0.00090 ** | 0.00068 | 0.00036 | 0.00034 | 0.00095 ** | 0.00082 * | 0.00033 |
| | (0.092) | (0.024) | (0.260) | (0.219) | (0.645) | (0.035) | (0.058) | (0.394) |
| *Log(Age)* | -0.00154 *** | -0.00120 *** | 0.00075 ** | 0.00005 | -0.00165 * | -0.00148 * | -0.00248 ** | -0.00097 |
| | (0.000) | (0.001) | (0.031) | (0.893) | (0.063) | (0.089) | (0.043) | (0.290) |
| *Management Fees* | -0.00037 | -0.00022 | 0.00006 | -0.00006 | -0.00044 | -0.00101 | 0.00080 | 0.00132 |
| | (0.475) | (0.838) | (0.939) | (0.963) | (0.629) | (0.499) | (0.104) | (0.272) |
| *Purification Fees* | -0.00166 ** | -0.00136 *** | 0.00003 | 0.00005 | 0.00001 | -0.00020 | -0.00111 ** | -0.00146 *** |
| | (0.035) | (0.002) | (0.965) | (0.957) | (0.990) | (0.783) | (0.016) | (0.000) |
| *Islamic Investment Company* | 0.00073 | -0.00237 | 0.00251 *** | 0.00044 | 0.00051 | 0.00083 | 0.00527 *** | 0.00287 |
| | (0.694) | (0.424) | (0.001) | (0.800) | (0.476) | (0.480) | (0.001) | (0.206) |
| *Constant* | 0.01057 *** | 0.01433 | 0.00743 *** | 0.00520 | 0.01186 *** | 0.01290 | 0.00904 *** | -0.00407 |
| | (0.000) | (0.133) | (0.000) | (0.357) | (0.001) | (0.290) | (0.010) | (0.559) |
| *Number of obs* | 21700 | 12559 | 20925 | 12076 | 20764 | 12059 | 20149 | 11462 |
| *R-Sqr* | 0.064 | 0.090 | 0.014 | 0.008 | 0.035 | 0.082 | 0.066 | 0.063 |

## Table 8
## Panel regressions of IEF performance and holdings-based ethical screening intensity

Portfolio performance is measured by subtracting monthly realized return from the expected return as per Fama and French's three-factor model. *Full Compliance* is the fraction of fund holdings passing both the business and accounting screens of *MSCI Islamic*. *Debt Ratio Compliance* is the fraction of fund holdings passing the total debt/total assets<1/3 screen. *Asian Financial Crisis*, *The 2000.dotcom Crisis*, and *Global Financial Crisis* take the value of 1 for each of the economic crises and zero otherwise. *Size* is the fund's total assets under management (in USD million); *Age* is measured from the inception date to the test date (in months); *Purification Fees* (%) is the fund's non-compliant income over net assets as reported in the annual report; and *Islamic Investment Company* equals one if the fund is managed by an Islamic investment company and zero otherwise. Country domicile fixed effects are included. IEF is Islamic equity fund, CEF is conventional equity fund, SRI is socially responsible investment fund, and REF is religious equity fund. (IEF-CEF), (IEF-SRI), and (IEF-REF) are the return difference portfolios. P-values are in parentheses using clustered standard errors by fund regional orientation. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. Number of funds = 125.

| | **IEF** | | **IEF-CEF** | | **IEF-SRI** | | **IEF-REF** | |
|---|---|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** | **(7)** | **(8)** |
| *Full Compliance* | -0.01368 | | -0.03015 * | | -0.01278 | | -0.03549 ** | |
| | (0.405) | | (0.063) | | (0.115) | | (0.030) | |
| *Full Compliance*$^2$ | 0.00817 | | 0.04736 | | 0.01681 | | 0.02443 | |
| | (0.636) | | (0.117) | | (0.151) | | (0.223) | |
| *Debt Ratio Compliance* | | -0.01097 | | -0.04027 | | -0.02060 * | | -0.02789 ** |
| | | (0.528) | | (0.165) | | (0.087) | | (0.029) |
| *Debt Ratio Compliance*$^2$ | | 0.00354 | | 0.04476 | | 0.01874 | | 0.00958 |
| | | (0.881) | | (0.248) | | (0.312) | | (0.665) |
| *Asian Financial Crisis* | -0.10036 *** | -0.10051 *** | 0.02018 | 0.02036 | -0.08970 *** | -0.08979 *** | 0.12255 *** | 0.12217 *** |
| | (0.000) | (0.000) | (0.296) | (0.298) | (0.000) | (0.000) | (0.000) | (0.000) |
| *The 2000.dotcom Crisis* | -0.00494 *** | -0.00488 *** | -0.00005 | 0.00017 | -0.00494 * | -0.00482 * | -0.01321 *** | -0.01307 *** |
| | (0.001) | (0.000) | (0.980) | (0.914) | (0.073) | (0.064) | (0.000) | (0.000) |
| *Global Financial Crisis* | -0.00046 | -0.00047 | 0.00363 ** | 0.00353 * | 0.00321 *** | 0.00320 ** | -0.00107 | -0.00104 |
| | (0.679) | (0.698) | (0.039) | (0.061) | (0.009) | (0.014) | (0.325) | (0.395) |
| *Log(Size)* | 0.00061 | 0.00066 * | 0.00129 ** | 0.00114 *** | 0.00094 | 0.00088 * | 0.00030 | 0.00046 |
| | (0.237) | (0.087) | (0.032) | (0.005) | (0.129) | (0.073) | (0.550) | (0.201) |
| *Log(Age)* | -0.00085 *** | -0.00088 *** | 0.00037 | 0.00046 | -0.00117 | -0.00119 | -0.00159 | -0.00166 |
| | (0.000) | (0.000) | (0.547) | (0.467) | (0.217) | (0.189) | (0.113) | (0.137) |
| *Management Fees* | 0.00006 | 0.00025 | -0.00192 | -0.00142 | -0.00240 ** | -0.00200 | 0.00364 *** | 0.00396 *** |
| | (0.973) | (0.895) | (0.454) | (0.606) | (0.049) | (0.127) | (0.000) | (0.000) |
| *Purification Fees* | -0.00474 | -0.00440 | 0.01393 *** | 0.01460 *** | 0.00994 ** | 0.01035 ** | 0.00331 | 0.00422 |
| | (0.601) | (0.632) | (0.001) | (0.001) | (0.040) | (0.041) | (0.589) | (0.520) |
| *Islamic Investment Company* | 0.01192 ** | 0.01194 ** | 0.01182 ** | 0.01150 ** | 0.00964 *** | 0.00922 *** | 0.01671 *** | 0.01647 *** |
| | (0.027) | (0.016) | (0.048) | (0.029) | (0.002) | (0.003) | (0.005) | (0.001) |
| *Constant* | -0.00074 | 0.00628 | -0.00446 | -0.00929 | -0.00365 | -0.00206 | -0.00434 | 0.01299 |
| | (0.847) | (0.589) | (0.329) | (0.535) | (0.267) | (0.835) | (0.294) | (0.367) |
| *Number of obs* | 8689 | 8689 | 8404 | 8404 | 8462 | 8462 | 8174 | 8174 |
| *R-Sqr* | 0.109 | 0.109 | 0.025 | 0.026 | 0.073 | 0.073 | 0.111 | 0.111 |

## Table 9
## Panel regressions of Islamic index performance and ethical screening intensity

The sample of Islamic indexes is selected based on Islamic fund regional orientation. There are nine regional and nine country (domestic) Islamic indexes which follow the screening methodology of MSCI Islamic, Dow Jones Islamic, FTSE Shariah, and FTSE Bursa Malaysia EMAS Shariah. Portfolio performance is measured by subtracting monthly realized return from the expected return from the Fama and French's three-factor model. Ethical screening intensity is proxied by *No Accounting Screens*, the number of accounting screens employed by Islamic indexes; *D_Employ Total Assets*, which equals one if the index discloses using total assets in the denominator of accounting screens and zero otherwise; *D_Employ One-Third Threshold*, which equals one if the index discloses using one-third as the minimum threshold in the accounting screens and zero otherwise; and *D_ Purification Fees* which equals one if the index discloses using dividend purification ratio. *Asian Financial Crisis*, *The 2000.dotcom Crisis*, and *Global Financial Crisis* take the value of 1 for each of the economic crises and zero otherwise. *Asian Financial Crisis* and *D_Employ Total Assets* are omitted because of collinearity. Islamic is Islamic equity index, Conventional is conventional equity index, SRI is socially responsible investment equity index, and Religious is religious equity index. (Islamic-Conventional), (Islamic-SRI), and (Islamic-Religious) are the return difference portfolios. P-values are in parentheses using clustered standard errors by fund regional orientation. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

| | **Islamic** | | **Islamic - Conventional** | | **Islamic - SRI** | | **Islamic - Religious** | |
|---|---|---|---|---|---|---|---|---|
| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** | **(7)** | **(8)** |
| *No Accounting Screens* | -0.00389 *** | | 0.00738 *** | | -0.01352 *** | | -0.00247 ** | |
| | (0.002) | | (0.000) | | (0.000) | | (0.024) | |
| *(No Accounting Screens)*$^2$ | 0.00137 *** | | -0.00161 *** | | 0.00240 *** | | 0.00090 *** | |
| | (0.005) | | (0.000) | | (0.000) | | (0.005) | |
| *D_Employ One-Third Threshold* | | -0.00523 *** | | 0.00376 *** | | -0.00349 *** | | -0.00352 *** |
| | | (0.000) | | (0.001) | | (0.000) | | (0.000) |
| *D_Purification Fees* | -0.00295 *** | -0.00236 ** | 0.00130 *** | 0.00113 *** | 0.00021 | -0.00010 | 0.00010 | 0.00051 |
| | (0.003) | (0.014) | (0.003) | (0.000) | (0.769) | (0.877) | (0.867) | (0.311) |
| *The 2000.dotcom Crisis* | -0.00625 *** | -0.00660 *** | -0.00809 *** | -0.00801 *** | -0.00878 ** | -0.00860 *** | -0.00431 | -0.00455 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.011) | (0.009) | (0.217) | (0.214) |
| *Global Financial Crisis* | -0.00393 | -0.00384 | 0.00237 *** | 0.00235 *** | 0.00684 *** | 0.00679 *** | 0.00700 *** | 0.00707 *** |
| | (0.108) | (0.113) | (0.003) | (0.002) | (0.007) | (0.006) | (0.001) | (0.001) |
| *Constant* | 0.00219 | 0.00781 *** | -0.00931 *** | -0.00533 *** | 0.01723 *** | 0.00185 | -0.00293 *** | 0.00111 |
| | (0.234) | (0.000) | (0.000) | (0.000) | (0.000) | (0.132) | (0.009) | (0.298) |
| *Number of obs* | 1269 | 1269 | 1269 | 1269 | 1269 | 1269 | 1269 | 1269 |
| *R-Sqr* | 0.234 | 0.082 | 0.391 | 0.365 | 0.239 | 0.163 | 0.307 | 0.202 |