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Risk and return characteristics of Islamic equity funds

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ABSTRACT

Islamic equity funds (IEFs) differ fundamentally from conventional equity funds since Muslims are prohibited to invest in certain companies/sectors and pay or receive interest. This paper analyzes the risk and return characteristics of a sample of 145 IEFs over the period 2000 to 2009. Our results show that IEFs are underperformers compared to Islamic as well as to conventional equity benchmarks. This underperformance seems to have increased during the recent financial crisis. We also find that IEF managers are bad market timers. They try to time the market, but in doing so, reduce the return rather than increasing it. An important implication of our results is that Muslim investors might improve their performance by investing in index tracking funds or ETFs rather than to invest in individual IEFs.

1. Introduction

Islamic investing differs from conventional investing because Muslims are prohibited to receive and to pay interest, to invest in unethical companies such as alcohol producers, and to speculate. Muslims can however invest in the stock market via so-called Islamic equity funds (IEFs). These are the Islamic counterpart to conventional mutual funds, which are investments vehicles that allow people who lack the knowledge, skill, or time to manage their own wealth to prosper from the returns of international equity markets. IEFs were almost non-existent before 1990 when Muslim scholars reached consensus regarding the permissibility of equity investing. Since then, IEFs have gained considerable interest among Muslim investors along with the increased wealth in the Middle-East. The attention given to ethical investing by non-Muslim investors who see Islamic investing as a close substitute of social responsible investing (SRI) further added to the attractiveness of IEFs. Despite its popularity, research on the risk and return characteristics of IEFs is very scarce.

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Annuar et al. (1997) examine the performance of 31 Malaysian mutual funds over the period 1990 to 1995. Many of these funds are Islamic and thus provide a proxy for Islamic fund performance. They find empirical evidence that these Malaysian funds did outperform the Kuala Lumpur Composite Index (KLCI) benchmark, but that the fund managers were rather poor at timing the market. Ahmad (2001) presents a very rough guide to IEF performance by evaluating 13 IEFs individually. Although the author states that some Islamic funds outperform benchmarks like the MSCI, his analysis lacks a thorough statistical analysis. Zaher and Hassan (2001) provide an overview of the returns of 37 IEFs for the period 1997–1999 and infer that ethical investments offer a good return compared to conventional mutual funds. However, they also do not back up their claims with thorough statistical analysis.

The paper closest to our work is the research by Abdullah et al. (2007). They analyze 65 Malaysian unit trusts including 14 Islamic and 51 conventional funds and conclude that both types of funds slightly underperformed the KLCI benchmark. When taking risk into account, they find that their sample of IEFs performs better than conventional funds during bear markets, while during bull markets it is the other way around. However, the major shortcoming of all previous research on the performance of IEFs is that it either entails only Malaysian funds or is not analyzing the risk-return characteristics in a rigorous manner. As it is an emerging market, the focus on Malaysia is understandable. Emerging markets still continue to provide return enhancement as well as risk-reduction to developed market portfolios (Buchanan et al., 2011). However, we go beyond the focus on Malaysia and analyze almost all existing IEFs.

In addition, this paper contributes to the literature on Islamic finance in numerous ways. First, we give a concise overview on the nature of Islamic investing by discussing the main opportunities and challenges. Second, we analyze in a thorough empirical study the performance and risk-return characteristics of 145 IEFs over the period January 2000 to February 2009. As such, we are also able to investigate the impact of the recent financial crisis of 2008/09 on the systematic risk of IEFs during down markets. We hypothesize that loss-averse investors prefer stocks that entail lower systematic risk during downswings and thus require less return. As such, we follow the seminal work by Ang et al. (2006) and explicitly specify a downside risk component.

We divide our sample of IEFs into five categories based on their geographical focus, namely funds invested (i) globally, (ii) only in the Malaysian market, (iii) Asia-Pacific, (iv) Europe and the Middle-East,[1] and (v) North America. To analyze the risk and return characteristics of IEFs we use different benchmarks per region (Bauer et al., 2005) and evaluate their performance against Islamic as well as conventional equity indices.

We estimate the risk-adjusted performance (alpha) and systematic risk (beta) for each IEF using Jensen's (1968) version of the capital asset pricing model (CAPM). We find that IEFs on average have underperformed their Islamic and conventional benchmarks over the sample period of 2000–2009. After controlling for fund size and HAC standard errors our findings remain robust. In order to analyze the market timing ability of IEF's fund managers we employ the Treynor and Mazuy (1966) standard regression approach as well as the non-parametric method by Jiang (2003). We find that IEFs do engage in market timing and that IEF managers significantly miss-time the market.

IEFs have been characterized in the Islamic finance literature as outperformers during bear market conditions (e.g., Abdullah et al., 2007). We test this proposition during the recent financial market crash of 2008–2009 and find that, on the contrary, IEFs significantly underperformed both their Islamic and conventional benchmarks during these turbulent times. Moreover, the underperformance is larger during this bear market than during the whole sample period. In a final step, we investigate the downside risk characteristics of IEFs (Ang et al., 2006). As such, we estimate the sensitivity of IEFs to the market, while conditioning for negative market excess returns. Our results indicate that IEFs have a slightly larger exposure to the market during downswings although not significantly so.

The remainder of this paper is organized as follows. Section 2 describes the basic principles of Islamic finance and provides a short overview on the IEF industry. Section 3 presents our sample of IEFs and some descriptive statistics. Section 4 discusses our empirical findings. We first present the CAPM regression results; then we analyze the market timing ability of IEF managers, before we explicitly investigate the performance during financial market turmoil and the role downside risk might play in explaining the overall weak performance of IEFs. Section 5 provides our conclusions.

[1] We group the regions Europe and Middle-East together because they separately had too few observations.

2. Islamic equity funds

Islamic finance[2] is a closed financial system with the aim of fulfilling the teachings of the *Quran* as opposed to earning maximum returns on financial assets (Zaher and Hassan, 2001). It is based on five main principles, which include the prohibition of interest (*riba*), excessive uncertainty (*gharar*), speculation (*maysir*), risk and return sharing, and the prohibition of investing in 'unethical' industries (Shanmugam and Zahari, 2009). These principles have far reaching consequences for Muslim investors. For example, they imply that Muslims are not allowed to invest in futures, options and other speculation based derivatives and that Muslims do not have access to conventional credit. These principles also limit the scope for many other structured financial products.

Notwithstanding the restrictions of Islamic finance, taking entrepreneurial risk and profiting from it is permitted. This means that investing in mutual funds is allowed, provided that they adhere to the five main Islamic finance principles. Since the principle of not receiving or paying any interest is too restrictive for most otherwise eligible companies, some leniency has been applied here. According to Visser (2009, p. 114), the criteria set up by the Dow Jones's *Sharia* Supervisory Board seems to be the standard in the investment industry.[3] It entails the following financial criteria firms must adhere in order to be classified as *halal* (permissible according to Islamic law):

- total debt divided by the trailing 12-month average market capitalization has to be less than 33%;
- cash plus interest-bearing securities divided by the trailing 12-month average market capitalization has to be less than 33%; and
- accounts receivable divided by the 12-month average market capitalization has to be less than 33%.

This 1/3 rule seems to be somewhat arbitrary. Derigs and Marzban (2008) argue that it is most probably based on the *hadith* (sayings of the Prophet Mohammed) that one should not donate more than a third of his wealth to charity. The authors however do not explain the connection between this rule and the existing financial screening criteria. It is very likely that the *hadith* has been used out of context to justify a ratio when none was available in the sacred texts.

IEFs are a relatively new phenomenon: there were just 9 of them before 1994. After the Islamic *Fiqh* Academy (the leading authority on Islamic belongings) issued a decree stating that Muslims are allowed to invest in equities within certain parameters, the number grew rapidly to around 280 IEFs in 2008. Assets under management grew from USD 800 million to approximately USD 20 billion during the same period (Shanmugam and Zahari, 2009). During the 1990s many IEFs had investments in information technology stocks since it was both an attractive sector to be invested in and included companies that passed the Islamic screening criteria easily. The bursting of the Internet bubble in 2000, however, shifted the focus in recent years to more defensive sectors like non-cyclical consumer goods such as healthcare.

Nowadays most IEFs are standard open-ended mutual funds, offering medium to long-term growth based on capital appreciation rather than dividend income. IEFs are mainly offered by local players but also by some large investment banks like UBS, Citigroup, and Merrill Lynch. HSBC even has a daughter company, HSBC Amanah Finance, which specifically targets a Muslim clientele. The potential market for IEFs is substantial since there are approximately 1.3 billion Muslims, which also have a growing middle class and *ceteris paribus* more liquid assets to invest in international equity markets. Another potential clientele consists of high net worth individuals (HNWIs) in the Middle-East. These HNWIs are already targeted by some IEFs, which have a minimum investment threshold ranging from USD 1 to USD 5 million. Even non-Muslims are an interesting customer base as Islamic investing is in many ways comparable to SRI.

Nonetheless, IEFs are still not at their full potential as numerous severe caveats obstruct further growth. For instance, the lack of standardization and limited risk management instruments (Jobst et al., 2008), the lack of liquidity and slow innovation (Zaher and Hassan, 2001), and the poor awareness among potential

[2] We restrict ourselves here to provide a concise overview on Islamic finance. For a more elaborate introduction we refer to Zaher and Hassan (2001), Shanmugam and Zahari (2009), and Visser (2009).

[3] There is no real consensus regarding the exact criteria that are used to classify equities. Derigs and Marzban (2008) find major differences between the different criteria used by various Islamic indices such as that the devisor can be either total assets or market capitalization. The Dow Jones has recently modified its criteria using market capitalization for its Islamic indices while the FTSE Islamic indices still apply total assets.

clients (Rammal and Zurbruegg, 2007) all hinder the growth prospects of Islamic finance, particularly IEFs. Moreover, IEFs are exposed to specific risks that are normally not borne by conventional funds. Since IEFs face a restricted investment universe, they are also limited in their diversification potential.

Another obstacle IEFs face is that there is no real consensus regarding the financial criteria used to screen *halal* stocks. Changes to these criteria would have major implications for the equities included in Islamic portfolios, which implies a substantial investor's risk. There is no guarantee that Muslim scholars would not condemn a debt to total asset ratio of 33% in the near future to adapt a ratio of 45%. For example, Derigs and Marzban (2008) find that the *Sharia* Board of Standard & Poor's allows a receivables to market cap ratio of 49%, which is more than the 1/3 rule of the Dow Jones.

Since IEFs are not allowed to invest in companies with high debt to total asset ratios, they are prone to investing in sub-optimally leveraged companies. Investing in low debt companies may also mean a high exposure to companies that have difficulty in debt financing such as start-up companies. Since start-ups are typically small, IEFs might have a high exposure to small growth stocks. Moreover, during financial market crises some stocks will have debt ratios that will increase beyond what is permissible so that IEFs are forced to sell stocks with a loss and are less able to rely on a buy-and-hold strategy. The prohibition to invest in companies that have receivables of more than 33% of their market capitalization let IEFs run the risk of investing in companies with liquidity issues since low receivables might imply insufficient working capital.

3. Sample

For our performance analysis of IEFs we obtain pricing data at weekly frequency from Bloomberg. Each IEF with less than 30 weekly observations and/or more than 15 missing data points is excluded from our final sample. In addition, funds with missing data for a continuous period of 10 weeks are omitted from our sample. We mitigate missing data points within the sample period by replacing the missing data point with the average price of the previous and next period. We adjust the pricing data for dividends, convert the local currencies into USD, and calculate continuously compounded returns. Our final sample consists of 145 IEFs over the period from January 2000 to February 2009, leaving us with a maximum of 475 weekly returns per IEF.

Our extensive sample has a number of unique advantages. First, our data set covers a large time period (2000 to 2009), including the bear market of 2002 and the recent financial crisis of 2008/09. Second, our sample contains almost all existing IEFs and not as in previous studies just a sub-sample such as solely Malaysian funds. Third, our sample does not suffer from survivorship bias as we also include liquidated funds.[4]

Table 1 displays the summary statistics of our final sample. Panel A indicates that the majority of IEFs have their geographic focus on Asia, particularly on Malaysia. This comes as no surprise since Malaysia has a very well developed Islamic financial market. There are also some IEFs with a global asset allocation and some focusing specifically on Europe and the U.S. For our empirical analysis, we divide our sample into five categories based on their regional focus, i.e. IEFs investing (i) globally, (ii) only in the Malaysian market, (iii) Asia-Pacific, (iv) Europe and the Middle-East, and (v) North America.

We evaluate each IEF's performance against both an Islamic and a conventional benchmark. IEFs investing globally are benchmarked against the Dow Jones Islamic Index (DJII) and the Dow Jones World Stock Index (DJWSI). For geographic focused funds we follow Bauer et al. (2005) by using a specific benchmark for each different region. The authors argue that using a global index to proxy the market when evaluating regionally focused funds results in biased outcomes and leads to misinterpretations. For instance, for our sample of 51 IEFs invested solely in Malaysia we use the Kuala Lumpur Composite Index (KLCI) as the conventional benchmark and the Kuala Lumpur Syariah Index (KLSI) as the Islamic benchmark. Panel A of Table 1 indicates the specific conventional and Islamic benchmarks used for each region. Panel B shows that IEFs are relatively young investment vehicles with just 24 being incepted before

[4] Survivorship bias is a severe problem for most empirical asset pricing research. It is the upward bias in fund performance studies due to the exclusion of dead funds. Since funds that are no longer existent are likely to have had inferior returns (otherwise, they would most likely have survived), their exclusions leads to an upward bias in returns (Brown and Goetzmann, 1995).

Table 1
Summary statistics. This table shows the descriptive statistics of our sample of 145 Islamic equity funds (IEFs) over the period 2000 to 2009. Panel A indicates the regional focus of the IEFs and the Islamic and conventional benchmarks used in our empirical analysis. Panel B shows the age distribution of the IEFs for the whole sample and for the liquidated funds.

Panel A: Regional focus and benchmarks

	Number of funds		Benchmarks	
Region	Whole sample	Liquidated funds	Islamic	Conventional
Malaysia	51	4	Kuala Lumpur Syariah Index	Kuala Lumpur Composite Index
Global	50	2	DJ Islamic Market Index	DJ World Stock Index
Asia-Pacific	14	2	DJ Islamic Markets Asia Pacific Index	DJ Asian Titans Index
Indonesia	11	2	Jakarta Stock Exchange Islamic Index	Jakarta Composite Index
U.S.	6	–	DJ Islamic US Index	S&P 500 Index
Europe	4	2	DJ Islamic Europe Index	FTSE 100 Index
China	3	–	MSCI Islamic China Index	Hang Seng Index
Middle-East	3	–	DJ Islamic Market Index	Tadawul All Share Index
Canada	2	1	DJ Islamic Market Canada Index	DJ Canada USD Stock Index
Thailand	1	–	MSCI Islamic Thailand Index	Bangkok SET Index
Total	145	13		

Panel B: Age distribution

Inception year	Number of funds	
	Whole sample	Liquidated funds
Inception year <1990	3	–
1990–1994	4	1
1995–1999	17	–
2000–2004	40	3
2005–2009	45	7
NA	36	2
Total	145	13

2000. In total, 13 funds of our sample of 145 IEFs have been liquidated over the sample period 2000 to 2009. Panel A displays the regional focus of these liquidated IEFs while Panel B shows the year of inception.

4. Discussion of results

4.1. CAPM performance analysis

We investigate the risk and return characteristics and evaluate the performance of our final sample of 145 IEFs via standard CAPM regressions of weekly excess returns over the period January 2000 to February 2009:

$$R_{pt} - R_{ft} = \alpha_p + \beta_p \left[R_{mt} - R_{ft} \right] + \mu_{pt}, \tag{1}$$

where $R_{pt} - R_{ft}$ is the excess return of fund p at time t over the USD ten-year swap rate, $R_{mt} - R_{ft}$ is the excess return of the market portfolio at time t, and α_p and β_p are coefficients indicating outperformance (alpha) and systematic risk (beta), respectively and μ_{pt} is an error term. We follow the suggested procedure by Abdullah et al. (2007) and run 145 individual regressions with Newey–West heteroscedasticity and autocorrelation robust standard errors (HAC standard errors) and obtain estimated alpha and beta coefficients. From this cross-section of alphas and betas we then infer whether they are significantly different from zero using a simple t-test by dividing the mean of the cross-sectional regression coefficients by their standard errors.

Table 2 displays the CAPM regression results separately for our five regions both against their Islamic and conventional benchmarks. For the overall sample of 145 IEFs we find a significant negative alpha,

Table 2
CAPM analysis. This table shows the CAPM regression results for 145 IEFs over the period January 2000 to February 2009. We divide the IEFs into five categories based on their regional focus, i.e. IEFs investing globally and those investing solely in Malaysia, Asia-Pacific, North America, and Europe and the Middle-East. To proxy the market portfolio we use representative Islamic and conventional benchmarks separately for each regional category. The alpha and beta coefficients are equally weighted averages. Standard errors (in parentheses) are based on the cross-section of the estimated coefficients; asterisks *** indicate significance at the 1% level.

	Islamic benchmark				Conventional benchmark			
	Alpha	Beta	R^2	Observations	Alpha	Beta	R^2	Observations
Overall	−0.0328***	0.7700***	0.7102	145	−0.0054	0.7651***	0.7010	145
	(0.0124)	(0.0188)			(0.0131)	(0.0182)		
Global	−0.0717***	0.7850***	0.6595	50	−0.0022	0.7741***	0.6533	50
	(0.0263)	(0.0367)			(0.0276)	(0.0348)		
Local: Malaysian	−0.0137	0.7470***	0.7422	51	−0.0138	0.7280***	0.7143	51
	(0.0146)	(0.0238)			(0.0145)	(0.0233)		
Local: Asia-Pacific	−0.0180	0.7883***	0.7574	29	0.0065	0.8241***	0.7768	29
	(0.0275)	(0.0465)			(0.0272)	(0.0485)		
Local: North America	−0.0199	0.7743***	0.7592	8	0.0402	0.8042***	0.7577	8
	(0.0589)	(0.0933)			(0.0581)	(0.0692)		
Local: Europe and Middle-East	0.0294	0.7493***	0.5882	7	−0.0690	0.6827***	0.5647	7
	(0.0365)	(0.0897)			(0.0929)	(0.0584)		

which indicates that on average the IEFs underperformed their Islamic benchmark by 1.71% p.a. over the period 2000–2009. Looking separately at the five IEF categories we see that this underperformance is mainly due to the low performance of the 50 globally invested IEFs, which significantly underperform the Dow Jones Islamic Market Index by 3.73% p.a. The four other regional categories, Malaysia, Asia-Pacific, North America, and Europe and Middle-East, do not generate any significant results and perform a bit better, though with an annual performance of −0.71%, −0.94%, −1.04%, and 1.53% respectively, most of the groups generate lower returns than their Islamic benchmark. When evaluating systematic risk, we note that the average beta of the 145 IEFs is 0.77, which implies that the funds in our sample are on average significantly less risky than their corresponding Islamic benchmarks.

IEFs may as well be an interesting investment for non-Muslims, especially for those who see IEFs as a type of SRI. The columns on the right of Table 2 display the results of the CAPM analysis with respect to their conventional benchmarks. The average alpha for all 145 funds equals −0.28% p.a., which implies that IEF managers also underperform their conventional benchmarks, although this result is statistically not significant. Our finding that IEF managers do not outperform their conventional benchmarks holds for most of the five subcategories as well. In sum, our initial results indicate that during the period 2000–2009, IEFs on average have underperformed both their Islamic and conventional benchmarks. Moreover, IEFs seem to be low beta funds, with average betas just below 0.8. These empirical findings hold for the whole sample of 145 IEFs as well as for most of the 5 regional subcategories.

As a robustness check we investigate in the following whether our initial results are biased by insignificant coefficients or small funds. Therefore, we weight the estimated alphas and betas of Table 2 using (1) the heteroscedasticity and autocorrelation robust (HAC) standard errors of the estimated coefficients and (2) the market capitalization of the funds. With regard to the standard errors, we use the inverse of the HAC standard errors of each IEF regression to weight the accompanying alpha and beta. Thus, we overweight (underweight) funds with low (high) standard errors (Jiang, 2003). Panel A in Table 3 presents the outcome of this first robustness analysis. We find that after correcting for standard errors, the results are quite similar to the original, unweighted ones presented in Table 2. We still find that our sample of 145 IEFs on average significantly underperforms their Islamic benchmarks (−0.68% p.a.). This underperformance is mainly due to the subsample of 50 globally invested funds, while the 51 Malaysian IEFs on average slightly but insignificantly outperform their KLSI benchmark. Considering the conventional benchmarks we see that, after correcting for standard errors, our sample of 145 IEFs still slightly but insignificantly underperforms. The globally invested IEFs being once again significantly the worst

Table 3
CAPM analysis with weighted coefficients. This table presents the weighted CAPM regression results over the period 2000 to 2009. Panel A weights the alpha and beta coefficients by using the inverse of their Newey–West autocorrelation and heteroscedasticity robust standard errors (HAC standard errors) from the regressions. Panel B weights the coefficients by the IEF's market capitalization in USD as of February 2009. Standard errors of the cross-sectional alphas and betas are reported in parentheses; asterisks ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Islamic benchmark				Conventional benchmark			
	Alpha	Beta	R^2	Observations	Alpha	Beta	R^2	Observations
Panel A: SE weighted								
Overall	−0.0132**	0.7609***	0.7102	145	−0.0034	0.7461***	0.7010	145
	(0.0064)	(0.0602)			(0.0056)	(0.0317)		
Global	−0.0511***	0.7599***	0.6595	50	−0.0265*	0.7487***	0.6533	50
	(0.0105)	(0.0933)			(0.0148)	(0.0631)		
Local: Malaysian	0.0140	0.7496***	0.7422	51	0.0110	0.7221***	0.7143	51
	(0.0105)	(0.0440)			(0.0107)	(0.0376)		
Local: Asia-Pacific	−0.0082	0.7525***	0.7574	29	−0.0050	0.7878***	0.7768	29
	(0.0194)	(0.0787)			(0.0211)	(0.0718)		
Local: North America	−0.0105	0.8438	0.7592	8	0.0228	0.7585***	0.7577	8
	(0.0361)	(0.4871)			(0.0404)	(0.1236)		
Local: Europe and Middle-East	−0.0171	0.7090***	0.5882	7	−0.0289	0.7159***	0.5647	7
	(0.0331)	(0.0849)			(0.0423)	(0.1748)		
Panel B: Size weighted								
Overall	−0.0072	0.7265***	0.7102	79	0.0274	0.7113***	0.7010	79
	(0.0128)	(0.1155)			(0.0274)	(0.1164)		
Global	−0.0965	0.8132***	0.6595	30	0.0213	0.7839***	0.6533	30
	(0.0784)	(0.1789)			(0.0663)	(0.1718)		
Local: Malaysian	0.0244	0.6955***	0.7422	29	0.0298	0.6847***	0.7143	29
	(0.0273)	(0.2064)			(0.0299)	(0.2043)		
Local: Asia-Pacific	0.0100	0.6301**	0.7574	12	0.0188	0.6515*	0.7768	12
	(0.0287)	(0.3014)			(0.0276)	(0.3193)		
Local: North America	0.0458	1.0141	0.7592	4	0.1769	0.9436	0.7577	4
	(0.0903)	(0.4554)			(0.1311)	(0.4034)		
Local: Europe and Middle-East	0.0701	0.7358***	0.5882	4	−0.0862	0.6473***	0.5647	4
	(0.0444)	(0.0662)			(0.1340)	(0.0517)		

performers, while the Malaysian IEFs slightly but insignificantly outperform the KLCI. Our first robustness check lets us conclude that IEFs indeed underperformed both their Islamic and conventional benchmarks over the period 2000–2009.

Panel B in Table 3 presents the results of our second robustness check, where we weight the IEFs based on market capitalization in USD as of February 2009. We have data on market capitalization available for 79 IEFs. Summary statistics (not presented here) indicate that this subsample is very similar with respect to size, geographic focus, and year of inception to the overall sample of 145 IEFs. For the Islamic benchmark, we see that size weighting leads to similar alpha and beta coefficients as we estimated for the original (Table 2) and for the standard error weighting (Panel A of Table 3) regressions. Our overall sample of 79 IEFs still underperforms its Islamic benchmarks although no longer significantly so, while the 30 globally invested IEFs perform worse with an average alpha of approximately −5% per annum. When looking at the conventional benchmark results, we see that almost all alphas are positive though not significant. More careful scrutiny shows that the average alpha of the subsample of 79 IEFs for which we have size data available is higher than the average alpha of the whole sample of 145 IEFs, which is likely to be the reason for the relatively higher observed alphas in Panel B. In sum, we can conclude that also our second robustness checks confirms our initial results: in general IEFs underperform their Islamic benchmarks and do not significantly outperform their conventional benchmarks, while Malaysian IEFs slightly but insignificantly outperform both their benchmarks. We should note here that this proven underperformance is even before taking any kind of management fees into account. In almost all specifications we find a significant beta that is substantially lower than the market beta of 1.

Table 4
Market timing ability of IEF managers. This table shows the regression results of estimating the market timing ability of IEF managers over the period 2000 to 2009. We use two different market timing models and benchmark against Islamic equity indices. Panel A displays the results of the Treynor and Mazuy (1966) model, where alpha, beta, and gamma are indicating outperformance, systematic risk, and market timing ability, respectively. The shown coefficients are equally weighted averages. Standard errors (in parentheses) are based on the cross-section of the estimated coefficients. Panel B presents the results of the non-parametric procedure for testing market timing as proposed by Jiang (2003). Theta indicates the probability that a fund manager takes on relatively more risk in a higher than in a lower return period. The standard error of each individual theta is used to weight the originally estimated thetas. The standard error of the cross-section of IEF thetas is calculated by dividing the cross-sectional average of thetas by their cross-sectional standard error and is given in parentheses. Column 3 shows the weighted average of the thetas using the inverse of their standard errors. Then we repeat the same procedure as with the unweighted thetas by performing a *t*-ratio test on the cross-sectional thetas. Column 5 shows the weighted average of the thetas using the IEFs' market capitalization in USD as of February 2009. Here we follow again the procedure as with the unweighted thetas to calculate the standard errors. Asterisks *** and ** indicate significance at the 1% and 5% level, respectively.

Panel A: Treynor–Mazuy model

	Alpha	Beta	Gamma	R^2	Observations
Overall	−0.0158	0.7676***	−0.0005	0.7151	145
	(0.0150)	(0.0200)	(0.0010)		
Global	−0.0861***	0.7951***	0.0009	0.6668	50
	(0.0238)	(0.0406)	(0.0019)		
Local: Malaysian	−0.0172	0.7476***	0.0006	0.7421	51
	(0.0159)	(0.0232)	(0.0013)		
Local: Asia-Pacific	0.0752	0.7690***	−0.0038	0.7667	29
	(0.0468)	(0.0458)	(0.0024)		
Local: North America	0.0525	0.7540***	−0.0037	0.7633	8
	(0.0543)	(0.0885)	(0.0019)		
Local: Europe and Middle-East	0.0400	0.7277***	−0.0006	0.5950	7
	(0.0625)	(0.1281)	(0.0032)		

Panel B: Non-parametric model

	Theta	Observations	SE Weighted theta	Observations	Size Weighted theta	Observations
Overall	−0.0088***	145	−0.0220***	145	−0.0085	79
	(0.0031)		(0.0064)		(0.0159)	
Global	−0.0149***	50	−0.0100**	50	−0.0097	30
	(0.0051)		(0.0042)		(0.0126)	
Local: Malaysian	−0.0014	51	−0.0003	51	0.0011	29
	(0.0051)		(0.0029)		(0.0073)	
Local: Asia-Pacific	−0.0053	29	−0.0064	29	0.0092	12
	(0.0084)		(0.0051)		(0.0077)	
Local: North America	−0.0169**	8	−0.0173**	8	−0.0224	4
	(0.0056)		(0.0062)		(0.0118)	
Local: Europe and Middle-East	−0.0232**	7	−0.0216**	7	−0.0265	4
	(0.0069)		(0.0066)		(0.0161)	

4.2. Market timing ability

By testing the market timing ability of IEFs, we test whether our previous conclusions drawn regarding performance (alpha) and systematic risk (beta) still hold when allowing for varying systematic risk. We apply the multivariate regression model of Treynor and Mazuy (1966) and run the following regression for each fund:

$$R_{pt} - R_{ft} = \alpha_p + \beta_p \left[R_{mt} - R_{ft}\right] + \gamma_p \left[R_{mt} - R_{ft}\right]^2 + \mu_{pt}, \tag{2}$$

where $R_{pt} - R_{ft}$ is the excess return of fund p at time t over the USD ten-year swap rate, $R_{mt} - R_{ft}$ is the excess return of the market portfolio at time t, α_p, β_p, and γ_p are coefficients indicating outperformance, systematic risk, and market timing ability, respectively and μ_{pt} is an error term.

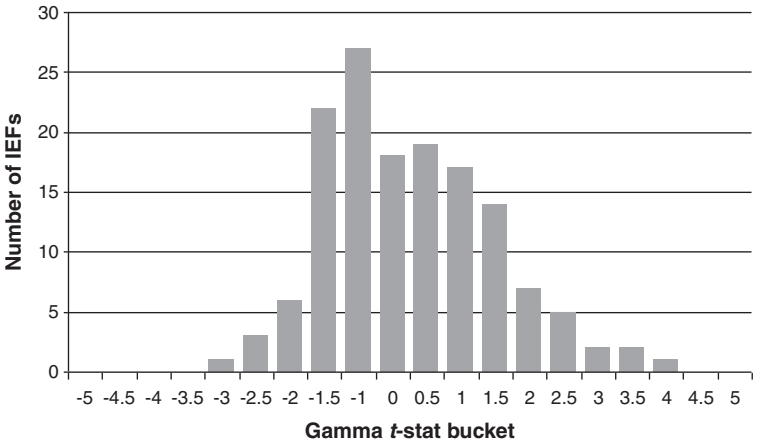

Fig. 1. Distribution of gamma *t*-statistics. This figure shows the overall distribution of the *t*-statistics of the market timing coefficient gamma, obtained from estimating the Treynor and Mazuy (1966) model as presented in Panel A of Table 4. It indicates in which range the *t*-stats of gamma for each of the 145 IEFs over the sample period 2000–2009 fall.

Panel A of Table 4 presents the results of our sample of 145 IEFs over the period 2000 to 2009 using Islamic benchmarks.[5]

Panel A shows that the average annualized alpha for globally invested IEFs is −4.48%, which is comparable to the originally estimated CAPM model in Table 2 (−3.37% p.a.). The average market timing ability equals −0.0005, indicating that IEF managers on average are not able to outguess the Islamic equity market. Individually though, IEF managers do seem to engage in market timing activities. Fig. 1 shows the distribution of *t*-statistics on the market timing ability coefficient γ_p (gamma) as indicated in Panel A.

Fig. 1 indicates a clear skew to the left, which implies that many IEF managers try to beat the market, but are unsuccessful in doing so. In fact, the skew being negative indicates that the fund managers' attempts to beat the market, negatively affect their returns since they overweight exposure to the market when the market goes down and vice versa when the market goes up. These results are in line with the findings of Annuar et al. (1997), who also find negative market timing for Malaysian funds but differ in terms of alpha, which they report to be positive and significant.

The Treynor and Mazuy (1966) model has been criticized for a number of shortcomings. First, it does not separate between the quality of a fund manager's timing information and the aggressiveness of his response (Cuthbertson et al., 2010). Second, it does not separate fund performance in its market timing and security selection components (Admati et al., 1986; Grinblatt and Titman, 1989). Finally, it has been found to have low power when actual fund timing frequencies differ from data sampling frequencies (Goetzmann et al., 2000; Bollen and Busse, 2001). To address these issues we follow Jiang (2003) and run a second test for the market timing ability of IEF managers by using a non-parametric procedure, which is not affected by a fund manager's risk aversion, different timing frequencies, or the underlying distribution of the data.

For each IEF benchmark (representing the excess market return) we form all possible combinations of three returns (triplets)[6] under the constraint that the first part of the triplet ($r_{m,t1}$) is smaller than the second part ($r_{m,t2}$) which is smaller than the third part ($r_{m,t3}$), i.e. $r_{m,t1}<r_{m,t2}<r_{m,t3}$ holds. We match each

[5] We only present here the performance results against Islamic benchmarks, as IEF managers trying to time the market are most likely to focus on the Islamic indices.

[6] The returns are treated as independent and identically distributed. This implies that a fund with, for instance, 100 return observations will have a maximum of 100*99*98 = 970,200 possible triplets.

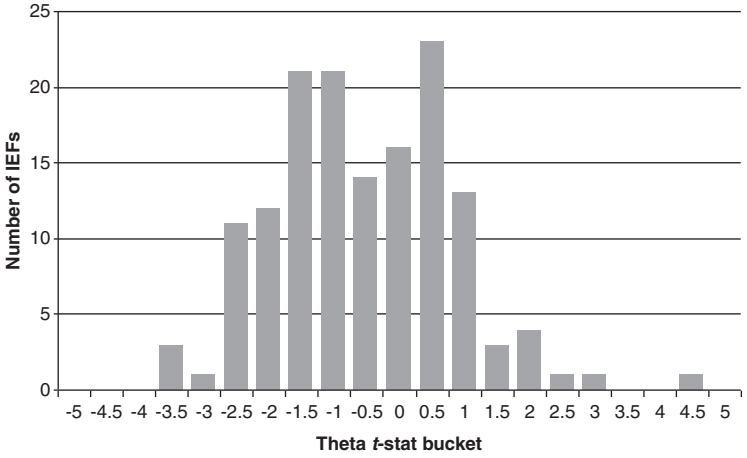

Fig. 2. Distribution of theta *t*-statistics. This figure shows the overall distribution of the *t*-statistics of the non-parametric market statistic proposed by Jiang (2003). For each of the 145 IEFs, we calculated the theta as described in Eq. (3) and calculated its *t*-statistic as described in Eq. (6). The table indicates, in which range the *t*-stats of theta for each of the 145 IEFs falls.

triplet of the market return with the accompanying return of the relevant IEF ($r_{i,t1}$, $r_{i,t2}$, and $r_{i,t3}$) and calculate the following statistic:

$$\hat{\theta}_n = \binom{n}{3}^{-1} \sum_{r_{m,t1} < r_{m,t2} < r_{m,t3}} sign\left(\frac{r_{i,t3} - r_{i,t2}}{r_{m,t3} - r_{m,t2}} > \frac{r_{i,t2} - r_{i,t1}}{r_{m,t2} - r_{m,t1}}\right), \tag{3}$$

where n is the sample size (number of return observations), $r_{m,t1}$, $r_{m,t2}$, and $r_{m,t3}$ are the returns of the market at t_1, t_2, and t_3, $r_{i,t1}$, $r_{i,t2}$ and $r_{i,t3}$ are the accompanying fund returns, and $sign(\cdot)$ assumes 1 (-1) if the argument is positive (negative) and otherwise zero. This statistic gives the average sign of all market return triplets and their accompanying fund returns and can be interpreted as the probability that a fund manager takes on relatively more risk in a higher than in a lower return period, i.e. that he correctly times the market. In case he exhibits superior (inferior) skills in timing the market his *sign* function becomes positive (negative), while it is zero if he is as often wrong as he is right.[7]

The null hypothesis here is that fund managers exhibit no market timing ability, i.e. θ is zero. Abrevaya and Jiang (2001) show that $\hat{\theta}_n$ is a $\sqrt{n}$-consistent and asymptotically normal estimator of θ_n with variance

$$\hat{\sigma}^2_{\hat{\theta}_n} = \frac{9}{n} \sum_{t=1}^{n} \left(\binom{n}{2}^{-1} \sum_{t_2 < t_3} h(z_{t1}, z_{t2}, z_{t3}) - \hat{\theta}_n\right)^2, \tag{4}$$

where h is defined as

$$h(z_{t1}, z_{t2}, z_{t3}) = sign\left(\frac{r_{i,t3} - r_{i,t2}}{r_{m,t3} - r_{m,t2}} > \frac{r_{i,t2} - r_{i,t1}}{r_{m,t2} - r_{m,t1}} \,\middle|\, r_{m,t1} < r_{m,t2} < r_{m,t3}\right), \tag{5}$$

[7] One should note that as the *sign* function only takes values of 1, −1, and 0, it disregards the aggressiveness of the fund manager's market timing and only takes into account how often the manager is right or wrong.

Table 5
IEF returns during the recent financial crisis (2008/09). This table shows the CAPM regression results for 139 IEFs over the period January 2008 to February 2009. Similar to Table 2, we divide the IEFs into five regional categories based on their geographic investment focus. The alpha and beta coefficients are equally weighted averages. Standard errors (in parentheses) are based on the cross-section of the estimated coefficients; asterisks ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Islamic benchmark				Conventional benchmark			
	Alpha	Beta	R^2	Observations	Alpha	Beta	R^2	Observations
Overall	−0.1394***	0.7737***	0.7609	139	−0.0818***	0.7659***	0.7513	139
	(0.0171)	(0.0202)			(0.0176)	(0.0198)		
Global	−0.1825***	0.7857***	0.6990	50	−0.0616	0.7558***	0.6922	50
	(0.0354)	(0.0397)			(0.0378)	(0.0376)		
Local: Malaysian	−0.1170***	0.7405***	0.7944	49	−0.1170***	0.7405***	0.7944	49
	(0.0172)	(0.0254)			(0.0172)	(0.0254)		
Local: Asia-Pacific	−0.1066**	0.8078***	0.8212	26	−0.0848*	0.8484***	0.7947	26
	(0.0448)	(0.0485)			(0.0433)	(0.0520)		
Local: North America	−0.0919	0.8232***	0.8466	8	0.0357	0.7892***	0.8302	8
	(0.0645)	(0.0923)			(0.0608)	(0.0767)		
Local: Europe and Middle-East	−0.1686*	0.7316***	0.6287	6	−0.1070	0.6683***	0.5985	6
	(0.0768)	(0.1058)			(0.0669)	(0.0742)		

and where z_{tj} is the triplet of market returns and their accompanying fund returns. The null hypothesis for each individual IEF is evaluated with the t-statistic of $\hat{\theta}_n$ given as:

$$t_\theta = \frac{\hat{\theta}_n}{\sigma_{\hat{\theta}_n} / \sqrt{n}}. \tag{6}$$

The null hypothesis for the cross-section of IEF thetas is evaluated by dividing the average theta of the IEFs by its standard error.[8] In a second step we again weight the thetas using the inverse of their standard errors and their market caps and redo the cross-sectional t-test.

Panel B of Table 4 presents the results of this non-parametric procedure. The first column shows a surprising result: IEFs in all categories miss-time their Islamic benchmarks as indicated by the negative average thetas. The overall average theta is −0.88% (significant at 1%), which means that the probability that IEF managers wrongly time the market is almost 1% higher than the probability of correctly timing it. This negative market timing ability is similar to the findings of Jiang (2003), who finds an average theta of –1.33% for still existing funds and –2.62% for dead funds. We note that the globally invested IEFs perform worst at market timing (theta of −1.5%, significant at 1%), while the Treynor–Mazuy model estimates showed a positive (albeit insignificant) timing ability.[9] The non-parametric results for the Malaysian funds are still insignificant but indicate that they seem to be the least bad at market timing. The third column shows the weighted average thetas of the IEFs using the inverse of their standard errors as a weight. The results are similar to the results of the first column. Overall, IEF managers have significantly miss-timed the market; this also holds for all regional categories except for IEFs invested in Malaysia and the Asia-Pacific region. The fifth column presents our estimates of the size-weighted thetas. The size and sign of the overall theta is still roughly the same, although no longer significant. However, the disappearing of significance is not necessarily an indication that the previous conclusions do not hold. First, we find an overall theta that is approximately the same as in the previous estimates. Second, there are a number of large funds in the sub-sample of 79 IEFs, which have an obvious effect on the results.

Fig. 2 presents the distribution of the t-values as defined in Eq. (6) for the individual IEFs. It corroborates the findings of Table 4. Most t-values lay between −1.5 and 1. A handful of IEFs have significant positive t-values, but they are overcompensated by the number of adverse market timers. We observe a substantial

[8] We assume here that the thetas are approximately normally distributed.
[9] Higher market timing coefficients in the Treynor–Mazuy model have also been found by Cuthbertson et al. (2010), who attribute this higher prevalence to the fact that this model also incorporates response aggressiveness.

negative skew in Fig. 2, indicating that once again IEF managers on average miss-time the market as proxied by the Islamic equity benchmarks.

4.3. IEF performance during the recent financial market turmoil

Our empirical analyses so far have shown that IEFs are low risk investments (betas significantly smaller than 1) and substantially underperform both Islamic and conventional benchmarks (indicated by significant negative alphas). These results however might not be robust for different market conditions, for example during downswings. To test for this, we run the standard CAPM regression (1) for the period January 2008 to February 2009, so that we can analyze the effect of the recent financial crisis on the performance of our sample of 139 IEFs. The results are presented in Table 5.

We find that the systematic risk component of our IEF sample is stable against different market conditions. The overall beta of IEFs for the Islamic market as well as for the conventional market equals 0.77. This means that, on average, the low sensitivity of IEFs is also maintained during bear markets. The alphas of the IEFs indicate that underperformance has increased sharply during the recent financial market turmoil. Compared to Islamic benchmarks, IEFs significantly underperform on average by 7% p.a., while they do slightly better against their conventional benchmarks with an average annual performance of −4%. We find this substantial underperformance as well for all regional subcategories and for both Islamic and conventional benchmarks, aside from IEFs focusing on North America that slightly outperform their conventional benchmarks.

As in the previous section, we also check for the robustness of our results and redo this analysis by using both weighted coefficients with standard errors and fund size as weights. The CAPM regression results presented in Table 6 indicate that our findings are overall very robust. Panel A shows that IEFs remain significant underperformers with betas that do not change much. For our sample of 139 IEFs, average alphas indicate over the period January 2008 to February 2009 significant underperformance of −6% p.a. and –4% p.a. compared to Islamic and conventional benchmarks, respectively. The results in Panel B further prove the robustness of our results with an overall negative alpha for both Islamic and conventional benchmarks of roughly the same size as in Panel A.

We suspect that the heavy underperformance of IEFs during the financial crisis of 2008/09 has several reasons. First, IEF managers seem to be overall poor stock pickers but they especially chose the wrong securities during the financial market turmoil. The reason for these poor security selection skills might lie in the relatively young age of the funds. Previous research has found some evidence that that stock picking abilities increase with fund manager's experience (e.g., Mikhail et al., 1997). Second, IEF managers might be forced to sell stocks at a loss. Since the financial criteria to screen stocks are based on market capitalization, the debt to market cap ratio will increase precisely when the stock value goes down, pushing the stock out of the eligible investment universe. Third, IEF managers seem to be bad market timers as our results have shown.

4.4. Downside risk

We have found so far that IEFs underperform both their Islamic and conventional benchmarks and even more so during financial market turbulences. However, these results are inconsistent with the findings of Abdullah et al. (2007) who conclude that Malaysian IEFs are overall not showing superior returns but perform significantly better during bear than bull markets. We note that it might well be the case that the lower returns are due to IEFs investing in stocks that are perceived as having less downside risk and thus having lower required returns for the period as a whole. To test this notion, we apply the approach of Ang et al. (2006) and define downside risk as the covariance of a security's excess return to that of the market in cases the market excess return is negative, formally:

$$\beta_p^- = \frac{cov(r_p, r_m)\big|r_m<0}{var(r_m)\big|r_m<0}, \tag{7}$$

where r_m and r_p represent the excess returns of the Islamic market and fund p, respectively, and β_p^- is the sensitivity of a fund's excess return to the market's excess return conditioned that the latter is negative.

Table 6
IEF returns during the recent financial crisis with weighted coefficients. This table shows the weighted outcome of the CAPM regressions as described in Table 5. Here the alphas and betas are weighted using the inverse of their standard error (Panel A) and their market capitalization as of February 2009. The standard errors used to weight the alphas are Newey–West autocorrelation and heteroscedasticity robust standard errors (HAC standard errors) from the original CAPM regressions. The market caps are a proxy for size and measured in USD. Standard errors of the cross-sectional alphas and betas are reported in parentheses; asterisks ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Islamic benchmark				Conventional benchmark			
	Alpha	Beta	R^2	Observations	Alpha	Beta	R^2	Observations
Panel A: SE weighted								
Overall	−0.1120***	0.7491***	0.7609	139	−0.0783***	0.7329***	0.7513	139
	(0.0124)	(0.0603)			(0.0164)	(0.0315)		
Global	−0.1517***	0.7362***	0.6990	50	−0.0603*	0.6972***	0.6922	50
	(0.0243)	(0.0863)			(0.0305)	(0.0528)		
Local: Malaysian	−0.1042***	0.7261***	0.7944	49	−0.1042***	0.7261***	0.7944	49
	(0.0131)	(0.0414)			(0.0131)	(0.0414)		
Local: Asia-Pacific	−0.0811**	0.7491***	0.8212	26	−0.0720*	0.8099***	0.7947	26
	(0.0342)	(0.0586)			(0.0372)	(0.0702)		
Local: North America	−0.0546	0.8668	0.8466	8	0.0362	0.7525***	0.8302	8
	(0.0400)	(0.4563)			(0.0562)	(0.1399)		
Local: Europe and Middle-East	−0.1452	0.7343**	0.6287	6	−0.0860	0.7060**	0.5985	6
	(0.0703)	(0.1578)			(0.0596)	(0.2147)		
Panel B: Size weighted								
Overall	−0.1228*	0.7298***	0.7609	79	−0.0829	0.7208***	0.7513	79
	(0.0669)	(0.1113)			(0.0704)	(0.1128)		
Global	−0. 2237	0.7833***	0.6990	30	−0.1019	0.7522***	0.6922	30
	(0.1548)	(0.1640)			(0.1408)	(0.1576)		
Local: Malaysian	−0.0638***	0.7171***	0.7944	29	−0.0638***	0.7171***	0.7944	29
	(0.0185)	(0.2178)			(0.0185)	(0.2178)		
Local: Asia-Paci!c	−0.0008	0.5850**	0.8212	12	−0.0007	0.6028*	0.7947	12
	(0.0006)	(0.2554)			(0.0004)	(0.2710)		
Local: North America	0.0016	1.0321	0.8466	4	0.0044	0.9503	0.8302	4
	(0.0025)	(0.4463)			(0.0032)	(0.3991)		
Local: Europe and Middle-East	−0.0042	0.7464***	0.6287	4	−0.0018	0.6689***	0.5985	4
	(0.0019)	(0.0565)			(0.0013)	(0.0309)		

To calculate this downside risk measure, the benchmark returns are sorted in descending order and all negative returns of the benchmarks are identified. All positive excess returns of the benchmarks are removed, leaving only the negative returns. Then, for each fund, the excess returns of that fund corresponding with the negative returns of the benchmark are identified. These excess returns are then regressed against the negative excess returns of the benchmark giving the estimated β^- of the fund. This β^- is however contaminated with the effect of the normal unconditional beta. For instance, if one finds that a certain fund has a low sensitivity to the market return in bear markets, this could be just because the fund has a low unconditional beta. To extract this effect, the standard betas (estimated in the previous section as in Eq. (1)) are subtracted from the β^-, leaving the relative beta. We follow Ang et al. (2006) and formally define the relative beta as:

$$\beta_p^r = \beta_p^- - \beta_p. \tag{8}$$

The relative beta thus gives the pure downside risk of a fund, controlling for its unconditional beta. If the average relative beta is found to be significant, this implies that the systematic risk of the IEFs is different in bear markets, which would be a good characteristic if the average relative beta is negative and a bad attribute if it is positive. The former would imply that the systematic risk of IEFs is lower during bear markets while the latter implies the opposite. Table 7 displays the results of the downside risk analysis of our sample of 145 IEFs over the period 2000 to 2009.

Table 7
Downside risk. This table presents the results of the CAPM regressions of IEF excess returns on Islamic benchmark excess returns over the period 2000–2009, conditioning for negative movements of the latter. We estimate the downside betas (beta minus), i.e. the sensitivities of IEFs to the Islamic benchmark during down movements of the market. The unconditional beta is subtracted from the downside beta, giving the pure downside risk measure controlling for unconditional sensitivity to the market (relative beta). Standard errors are based on the cross-section of the coefficients and are given in parentheses; asterisks *** indicate significance at the 1% level.

	Beta minus	Relative beta	R^2	Observations
Overall	0.7761***	0.0061	0.6392	145
	(0.0207)	(0.0072)		
Global	0.7877***	0.0027	0.5979	50
	(0.0378)	(0.0128)		
Local: Malaysian	0.7511***	0.0041	0.6473	51
	(0.0275)	(0.0087)		
Local: Asia-Pacific	0.8019***	0.0136	0.7033	29
	(0.0564)	(0.0230)		
Local: North America	0.7944***	0.0201	0.6814	8
	(0.1129)	(0.0252)		
Local: Europe and Middle-East	0.7476***	−0.0017	0.5616	7
	(0.0765)	(0.0223)		

Table 7 shows that the average relative beta of IEFs is 0.0061, which means that IEFs on average co-vary more with the market when it declines, though this result is not statistically significant. When looking separately at the relative betas of the five regional categories, we find that none has a beta that is significantly different during down movements of the market. The relative betas in almost all groups are positive though, which might reflect some adverse market timing as indicated earlier. It seems like IEF managers increase their exposure to the market in times they actually should not. By doing so, they slightly raise the betas of the funds and generate even lower returns during bear markets.

5. Conclusions

Islamic equity funds (IEFs) are a rather special type of investment vehicles. They have to pass a number of ethical and financial criteria before being *halal* (eligible according to Islam law). The IEF industry has shown stellar growth in the past decade but up to now has not been adequately analyzed in the academic literature. In this paper, we answer the critical question how well IEFs have performed over the last couple of years. We use a variety of techniques to attain a cross-section of estimated coefficients for systematic risk (beta), risk-adjusted return (alpha), market timing (gamma and theta), and downside risk (relative beta) using excess returns of 145 open-ended IEFs over the period 2000 to 2009.

Our results indicate that on average IEFs substantially underperform both their Islamic and conventional benchmarks. This is even before considering management fees. We find that globally invested IEFs have the worst performance, while IEFs invested locally do slightly better. During the recent financial crisis of 2008/09, this underperformance has further increased. This finding is in sharp contrast with previous research indicating that IEFs perform better during bear than bull markets (Abdullah et al., 2007). We also use a parametric as well as a non-parametric approach to test for market timing and find that IEFs are poor market timers. We subject our results to numerous robustness tests and find that our conclusions hold when weighting our coefficients with standard errors and fund size. We also explicitly analyze downside risk as a potential explanation for the inferior performance but find that IEFs do not possess any significant downside risk.

Moreover, one should note that next to being relative underperformers, IEFs possess some specific risks that are usually not present in conventional investments. These risks include: changing *sharia* (Islamic law) rules, the lack of a sufficient track record, high exposure to companies that might be sub-optimally leveraged, and companies with low working capital. These risks should be taken into account when assessing IEFs as an investment alternative.

Overall, it seems that IEF managers have a long way to go, before offering Muslims an investment proposition that is attractive in terms of risk and return. Even though previous research indicates that Islamic indices do not significantly underperform conventional indices (e.g. Albaity and Ahmad, 2008), we

find that IEFs in fact do so in many cases. A major implication here is that Muslim investors might be better off buying Islamic index trackers or Islamic exchange traded funds (ETFs) rather than invest through IEFs.

References

Abdullah, F., Mohamed, S., Hassan, T., 2007. Investigation of performance of Malaysian Islamic unit fund trusts, comparison with conventional unit fund trusts. Managerial Finance 33, 142–153.

Abrevaya, J., Jiang, W., 2001. Pairwise-slopes statistics for testing curvature. Working Paper, University of Chicago Graduate School of Business and Columbia Business School.

Admati, A., Bhattacharya, S., Pfleiderer, P., 1986. On timing and selectivity. The Journal of Finance 41, 715–730.

Ahmad, O., 2001. Islamic Equity Funds: the Mode of Resource Mobilization and Placement. Islamic Research and Training Institute, Islamic Development Bank, Jeddah.

Albaity, M., Ahmad, R., 2008. Performance of Syariah & composite indices: evidence from Bursa Malaysia. Asian Academy of Management: Journal of Accounting and Finance 4, 23–43.

Ang, A., Chen, J., Xing, Y., 2006. Downside risk. Review of Financial Studies 19, 1191–1239.

Annuar, M., Mohamed, S., Ngu, M., 1997. Selectivity and timing: evidence from the performance of Malaysian unit trusts. Journal of Social Sciences and Humanities 5, 45–57.

Bauer, R., Koedijk, K., Otten, R., 2005. International evidence on ethical mutual fund performance and investment style. Journal of Banking & Finance 29, 1751–1767.

Bollen, N., Busse, J., 2001. On the timing ability of mutual fund managers. The Journal of Finance 56, 1075–1094.

Brown, S.J., Goetzmann, W.N., 1995. Performance persistence. The Journal of Finance 50, 679–698.

Buchanan, B.G., English II, P.C., Gordon, R., 2011. Emerging market benefits, investability and the rule of law. Emerging Markets Review 12, 47–60.

Cuthbertson, K., Nitzsche, D., O'Sullivan, N., 2010. The market timing ability of UK mutual funds. Journal of Business Finance and Accounting 37, 270–289.

Derigs, U., Marzban, S., 2008. Review and analysis of current Shariah-compliant equity screening practices. International Journal of Islamic and Middle Eastern Finance and Management 1, 285–303.

Goetzmann, W., Ingersoll Jr., J., Ivkovich, Z., 2000. Monthly measurement of daily timers. Journal of Financial and Quantitative Analysis 35, 257–290.

Grinblatt, M., Titman, S., 1989. Portfolio performance evaluation: old issues and new insights. Review of Financial Studies 2, 393–421.

Jensen, M., 1968. The performance of mutual funds in the period 1945–1964. The Journal of Finance 23, 389–416.

Jiang, W., 2003. A nonparametric test of market timing. Journal of Empirical Finance 10, 399–425.

Jobst, A., Kunzel, P., Mills, P., Sy, A., 2008. Islamic bond issuance: what sovereign debt managers need to know. International Journal of Islamic and Middle Eastern Finance and Management 1, 330–344.

Mikhail, M., Walther, B., Willis, R., 1997. Do security analysts improve their performance with experience? Journal of Accounting Research 35, 131–157.

Rammal, H.G., Zurbruegg, R., 2007. Awareness of Islamic banking products among Muslims: the case of Australia. Journal of Financial Services Marketing 12, 65–74.

Shanmugam, B., Zahari, Z.R., 2009. A primer on Islamic finance. Research Foundation Publications of CFA Institute, Charlottesville.

Treynor, J., Mazuy, K., 1966. Can mutual funds outguess the market? Harvard Business Review 44, 131–136.

Visser, H., 2009. Islamic Finance. Edward Elgar Publishing, Northampton.

Zaher, T.S., Hassan, M.K., 2001. A comparative literature survey of Islamic finance and banking. Financial Markets, Institutions and Instruments 10, 155–199.