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Fund Family Selectivity Skills and Market Timing Ability: Comparison Study

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Abstract: This study aims to examine fund family performance, in terms of selectivity skills and marketing timing ability, in Saudi Arabia, Malaysia, Indonesia, and Pakistan in 2007–2021. The sample is divided into three levels. First, analysis of the whole sample. Second, analysis by country. Third, analysis of Islamic- and conventional-focused families. The main results are: First, the fund family provides numerous advantages and facilities to managers, for instance diversification opportunities and market research, allowing them to select stocks well. However, their timing ability is still poor. Second, Saudi Arabia has the best performance while Pakistan has the worst performance. Third, as a novel contribution, there are difference in skills and ability between Islamic and conventional family managers due to their difference in main objectives. The findings are important for managers and investors. Managers can position themselves better relative to their competitors, while investors can more effectively allocate their resources to funds that are managed well by fund families.

Keywords: Family performance, Selectivity skills, Timing ability, Islamic focused family.

1 Introduction

1.1. Background

Fund families or asset management company (AMC) is a financial intermediary that offers various mutual funds under a common brand name and marketed and distributed via common channels [1]. The significance of mutual funds at the fund family level is threefold [2]. First, a fund family structure brings economies of scale to the distribution examining, servicing, and promotion of funds. Second, it can reallocate its resources more flexibly in response to market opportunities compared to individual funds. Third, fund family reputation can signal the selection and timing ability of its managers. Some reports, such as Morningstar and Barron's, classify fund families using their performance to provide the most effective research and investment data for investors. The reports aim to provide easily accessible data on fund families; verify the statistics provided by fund families, thereby reducing information asymmetry; and provide assurance to investors that the families act in their best interests. These reports boost investor confidence and financial experience. The global mutual fund industry is valued at USD 103 trillion in 2020, a 20% growth from USD 82 trillion in 2017. This figure is expected to grow by 22% by 2025 to USD 145.4 trillion (Figure 1) (PWC Report).

Three rationales underlie this study. First, by assessing the performance of funds within a family, it is possible to identify superior-performing funds and from among them star fund(s). Evaluating fund family performance is a different matter altogether because it comprises different funds with varying strategies. [3-4]. Fund family attributes and fund family manager reputation are important determinants of fund investment decision. When member funds perform well, the reputation of the family improves, as it signals to investors the skills of the fund managers [5-6]. This paper therefore examines whether fund families can outperform market indices and whether their managers have market timing skills. Second, most investors select a fund family first before selecting a fund to invest in. Investors can thus save resources using information on fund family performance and manager skills. Third, to compare between the performance of Islamic mutual funds (IMFs) and conventional mutual funds (CMFs) within a family. The performance of both is expected to differ because IMFs apply Sharia screening in their portfolio construction, which incurs additional monitoring and compliance costs. Previous studies suggest that IMFs are superior to CMFs in a bear market [7-10]. In addition, IMFs implement strong environment, social, and governance (ESG) principles, which are the obligation of the investment to ensure sustainable and equitable long-term wealth for stakeholders while improving social welfare [11-14]. Empirical evidence indicates that good ESG investment is rewarded by investors, while poorly disclosed ESG indicates idiosyncratic

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risks [15-17] ESG-compliant investments have better governance and lower earnings volatility, as well as better access to low-cost funds. This study thus compares the performance of IMFs and CMFs.

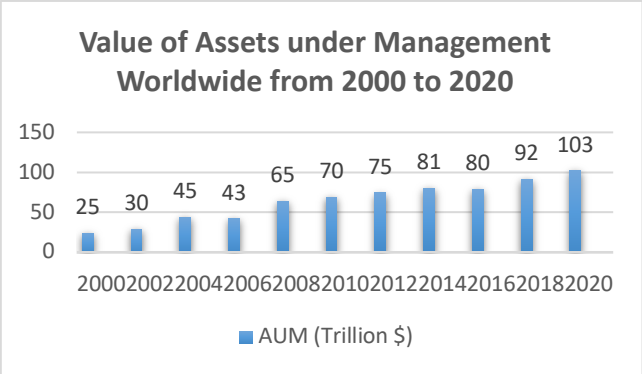

Fig. 1: Asset under Management Worldwide

1.2 Objective

This study contributes to mutual fund literature by evaluating fund family performance. Most studies have only focused on the performance of standalone funds. Extending this evidence to fund families would be improper, as member funds of a fund family enjoy the resources provided by the fund family structure, which theoretically grants them some advantages over standalone funds. Therefore, this study aims to evaluate and compare between the performance of Islamic- and conventional-focused families in four emerging markets.

The remainder of this paper is organized as follows. Section 2 is the literature review. Section 3 presents the methodology. Section 4 discusses the results. Section 5 concludes.

2 Literature Review

2.1 Background Theory

Fund and fund family performance are directly related to risk and return. Both are the objects of interest of investors and managers. Accordingly, both serve as the basis of financial theories and models. The issues examined by this study are significantly related to the modern portfolio theory and partially linked to behavioral finance theory. The next sections discuss these two theories.

Modern portfolio theory

Portfolio performance was historically measured using raw returns, whereas mutual fund performance was measured using returns, ignoring potential risk [18]. Harry Markowitz introduced the modern portfolio theory (20: p. 1744) to explain how a rational investor would select his portfolio under uncertainty [19] This theory challenges the conventional view that portfolio returns are maximized by investing in diverse assets that, together, provide the highest expected return. Markowitz argues that a portfolio should instead be comprised of securities that weakly covary to reduce risk, as return variability is determined by portfolio variance attributes. His mean-variance framework evinces that a good, diversified portfolio comprises securities with low covariances. This means that given a level of return, the best portfolio has the lowest variance; given a level of variance, the best portfolio has the best return.

Stock selection models.

There are three common models to evaluate the stock selection efficiency (i.e., more gains at lower risks) of a fund: [20-23] These models also aid stock selection and promote diversification efficiency. [20] introduces a model to measure the degree to which a fund is performing better (or worse) relative to its risk. The model produces a ratio, which is obtained by subtracting the risk-free rate from a fund's excess returns and dividing the result with the standard deviation of the returns. This model is further improved by [24], who uses beta (market risk) in place of standard deviation. He also argues that the performance of a fund must be measured against a relevant benchmark. Similar to the Sharpe ratio, the Treynor ratio indicates the degree to which a fund out- or underperforms against a benchmark.

[22] follows up both models by developing a risk-adjusted stock selection model. Unlike the two models, Jensen's model measures the absolute, not relative, performance of a fund. While the model is based on the CAPM model, realized returns are substituted with expected returns. The model produces an alpha, where a significant positive alpha indicates that the fund outperforms a given benchmark. A high positive beta value indicates the positive relationship between fund returns and market returns. Jensen also criticizes the variability of the two previous models in defining risk, as Sharpe uses

standard deviation while Treynor uses beta.

[25] find a linear relationship between risk (both systematic and unsystematic) and return (book to market value and stockholding size) of common stock portfolio on the New York Stock Exchange. Risk here is divided into systematic and unsystematic. Returns are explained using stockholding size and book to market value. [26] find that portfolio returns are explained well using the three-factor model, which includes book to market value and stock size. However, they maintain that the model is still flawed because of the continuation of short-term returns. [27] finds that size is negatively related to returns, suggesting that highly capitalized stocks produce lower returns. Stocks with higher risk and expected returns have a high earning-to-price ratio. In contrast, the book-to-market ratio is positively related to average returns [28-30]. Finally, [31] adds the one-year momentum factor to Fama and French's three-factor model based on [32] These models will be further explained in the methodology section.

Market timing models.

Market timing models measure fund manager's ability to timely shift from one asset class to another to generate gains and avoid losses. [21] introduce an important market timing model that shows a quadratic nonlinear relation between fund and market returns. It is nonlinear because it is assumed that when the market return is high, investors who successfully forecast market returns will hold a higher proportion of the market portfolio and vice versa.

[33] criticize the TM model and propose another market timing model, which includes a dummy variable to separate between positive and negative market returns. They argue that binary prediction of whether stock outperforms bonds or otherwise founds the equilibrium theory for market timing.

2.2 Previous Studies

A management firm—fund family—manages and operates a mutual fund, hence all mutual funds belong to a family of funds. Therefore, issues relating to mutual funds should be examined at the fund family level. A fund family offers various mutual funds with different objectives so that investors can diversify with funds from the same family. A fund family, therefore, can use diverse strategies to attract investors. Research is growing on how fund families determine the attributes of member funds. [34] argue that large families have lower costs and better performance because they enjoy economies of scale. Families that are older also perform better as they learn from experience and improve their efficiency over time. These results are also supported [35] been a subject of several studies [36-39]. Some studies have also analyzed how family members affect mutual funds, [40] examines the risk faced by investors when they invest solely in funds belonging to the same family. Analyzing monthly returns in 1998–2002, they find a strong correlation between member funds of a family with similar objectives to than between member funds and other fund families. Member funds tend to hold similar stocks and are exposed to similar total risk, hence the strong correlation. The authors conclude that investors should diversify across different families to reduce total portfolio risk.

Some studies show that families transfer reallocate resources between its funds to promote funds that can increase the overall family value [38-41]. [38] examines how fund families use category proliferation strategy to determine between-fund competition. The sample is 18,000 US mutual funds in 1992–2000. Heterogeneity of funds is correlated with between-fund competition within and between families. Fund differentiation is positively correlated with the category proliferation strategy. Proliferation strategy and fund performance are not correlated, suggesting that within-family peers do not affect a fund. The performance of a family also affects its members. [39] reveal that member funds show persistent performance within their families. Performance persistence is correlated with fund family size. This can be interpreted as the autonomy exercised by the family to allocate resources unevenly among its members, particularly prioritizing those members that increase the overall value of the family. This finding supports the view that resource allocation in a family is based on fund performance, not needs. [42] also support this result, as they find that families transfer performance to funds that increase the overall return of the family. The superior performance of high-value funds (high fees or historical performance) comes at the expense of low-value funds. These results highlight how the family organization generates distortions in delegated asset management.

[43] examines the competitive and strategic behaviors of US and European family funds in 1999–2009, as well as determining risk-taking and performance persistence in the funds. They find no significant difference in performance persistence between family and non-family funds. However, the future performance of the family fund portfolio and non-family-fund portfolio, based on historical performance, is significantly different. [44] examine how managerial placement strategies relate to market efficiency to determine how fund families coordinate their fund managers. They find that highly skilled managers are typically assigned to less efficient funds so that their performance improves. Therefore, families intervene in the duties of fund managers to enhance their overall value rather than maximizing investor returns. [2] examine trading desk efficiency of fund families affect portfolio performance and investment behavior of affiliated funds in the US. They conclude that efficient trading desks can reduce costs, improve fund performance, and increase trading of liquid portfolios. [45] examine the effect of the fund size of fund families on their AUM in Pakistan. They find that

introducing new funds and increasing current funds positively affects AUM. Fund growth and family growth are also strongly associated. [46] and [47] study the behavior of fund managers in a family and how they compete with their peers in the same firm. They find that the managers compete with their peers for better ranking within the family, and this behavior is more apparent in large families.

Recently, [48] and [49] provide evidence for the good fund selection skills but poor market timing ability of fund families. [49] extended this work by analysing a sample of four markets and Islamic-focused funds (IFF) and conventional-focused funds (CFF). Research on fund family performance is still lacking. Past studies mainly focus on individual fund performance and fund family characteristics and their effect on fund performance. This study closes this gap by contributing new evidence on fund family performance in relation to the skills and abilities of fund family managers.

3 Methodology

3.1. Data

Data is primarily collected from Bloomberg. The sample comprises 70 families across Saudi Arabia (25), Malaysia (20), Indonesia (14), and Pakistan (11). In total, there are 503 funds. The sample period is January 2007–December 2021. We use the 33% rule to identify Islamic and conventional focused families. In other words, if conventional funds make up more than one-third of a family, then the family is defined as conventional-focused. Otherwise, it is defined as an Islamic-focused family.

Fund family performance is defined as the weighted average performance of each member fund. Performance is measured as monthly returns:

$$Returns_{i,t} = \frac{Price_{i,t} - Price_{i,t-1}}{Price_{i,t-1}} \quad (1)$$

Fund family performance is measured against relevant benchmarks collected from Bloomberg. The global Islamic benchmark is FTSE Global Islamic Index, while the global performance benchmark is FTSE All-World Index. The latter index is selected because it covers the largest global equity market capitalization. Following past studies on mutual fund performance, the risk-free rate is the 3-month T-bill rate.

3.2. Selectivity Skills Models

Mutual fund performance is commonly measured using selectivity models. The models used in this study are Jensen's alpha and Carhart's four-factor model. Following [5] and [48], fund family performance is measured as the weighted average performance of all member funds using all measurements.

Single factor CAPM model.

Jensen's alpha measures risk-adjusted abnormal performance in the market by capturing abnormal excess returns. The alpha is computed as:

$$Jensen = Return_{fam,t} - Return_{f,t} = \alpha_i + \beta\left(Return_{m,t} - Return_{f,t}\right) + \varepsilon_{fam,t} \quad (2)$$

where $R_{fam,t}$ is the family returns, β is the sensitivity between excess returns of the market benchmark and the family, α_i is any excess returns above the market benchmark, and $\varepsilon_{i,t}$ is the term error. Jensen's alpha measures whether a fund performs better or worse than a given benchmark. A positive and significant alpha means that the fund overperforms the benchmark and that the manager's stock selection ability generates extra returns for the fund family.

Carhart's four-factor model (1997).

[14] expands Jensen's alpha by accounting for three additional factors: size, book-to-market value, and momentum. Carhart's model is expressed as:

$$R_{fam,t} - R_{f,t} = \alpha_i + \beta_1\left(R_{m,t} - R_{f,t}\right) + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 MOM_t + \varepsilon_{fam,t} \quad (3)$$

where $R_{fam,t}$ is the mean family return over period t, $R_{f,t}$ is the risk-free rate of return over period t, $R_{m,t}$is the return on the relative market benchmark, β_1 measures the sensitivity between the market and the fund family (if positive and significant, then the fund family is highly associated with market movement), β_2 is a coefficient that measures fund family exposure (if positive and significant, then the fund family is associated with small-capitalization stocks), β_3 is a coefficient that measures fund family exposure (if positive and significant then the fund family is exposed to high-book-to-market stocks), and α_i measures selectivity ability (if positive and significant, then the fund family has superior stock selection ability).

3.3. Timing Ability Models

Market timing models are used to measure timing ability. These models assess the ability of fund managers to timely shift capital between less and more risky securities based on their expectation of future market direction.

TM model (1966).

The TM model recognizes good market timing, which is captured by the square of market returns. The model is expressed as:

$$T.M = R_{fam,t} - R_f = \alpha_i + \beta_i R_m - R_f + \gamma_i (R_m - R_f)^2 + \varepsilon_{fam} \quad (4)$$

where $R_{fam,t}$ is the mean family return over period *t*, $R_{m,t}$is the return on the relative market benchmark, α_i measures selectivity ability, ${R_{m,t}}^2$ is the squared market returns, and $\gamma_{i,t}$ indicates market timing (if positive and significant, then fund family is successful and market exposure is increased when markets are doing well).

HM model (1981).

Hendrickson and Merton (1981) introduce another market timing model to improve over the TM model. In the HM model, a dummy variable separates between positive and negative market returns:

$$HM = R_{fam,t} - R_{f,t} = \alpha_i + \beta_i R_{m,t} - R_f + \delta_i (R_m - R_f) D_t + \varepsilon_{fam} \quad (5)$$

where $R_{fam,t}$ is mean family return over period *t*, $R_{f,t}$ is the risk-free rate of returns over period *t*, $R_{m,t}$ is the return on the relative market benchmark, α_i measures selectivity ability, δ_i is the market timing coefficient, D_t is a dummy variable that takes a value of one if the market returns is positive and zero otherwise, and $\varepsilon_{fam,t}$ is the error term.

4 Results and Analysis

4.1. Descriptive Statistics

The Breusch-Pagan/Cook-Weisberg test indicates the absence of heteroscedasticity because prob>chi2 is more than 0.05 (0.071). Therefore, the null hypothesis (constant variance) cannot be rejected. Variance inflation factors (VIFs) are examined to verify the absence of multicollinearity. Following the prevalent rule of thumb, multicollinearity is present if VIF > 10. Multicollinearity is not found in the variables as all VIFs are less than 10.

Table 1: Breusch-Pagan/ Cook-Weisberg and VIF Test

Variables	**VIF**	**1/ VIF**	**Heteroscedasticity test**
FTSE Islamic	1.66	0.7134	H0: Constant variance Prob > Chi2 = 0.071
FTSE All World	1.52	0.7717	
SMB	1.41	0.8770	
HML	1.72	0.8866	
MOM	2.54	0.9593	
TB	1.77	0.8954	
Mean VIF	**1.77**	**-----**	

Table 2 summarizes the descriptive statistics of the overall fund family, Islamic-focused family (IFF), and conventional-focused family (CFF) for the four sample countries, as well as the market benchmark returns and other risk factors. Overall, all fund families in Saudi Arabia, Malaysia, Indonesia, and Pakistan have positive average raw returns (0.2742) and excess returns (0.2062). Both market benchmarks report positive mean returns (FTSE Islamic = 0.0032, FTSE All World = 0.0075). Observation by countries shows that, on average, Saudi Arabia reports the highest fund family raw returns (0.5373%) and excess returns (0.4683), while Malaysia reports average raw returns of 0.2452 and excess returns of 0.2162. Pakistan reports, on average, the lowest average raw returns (0.1373) and excess returns (0.0283), while Indonesia reports raw returns of 0.2391 and excess returns of 0.1681. Indonesia has the highest return volatility (0.442), followed by Pakistan (0.425), Saudi Arabia (0.342), and Malaysia (0.237). This indicates that the risk is highest in Indonesia and lowest in Malaysia.

Next, the returns of IFF and CFF are compared generally and by country. Saudi Arabia is excluded since its fund family sample is entirely Islamic mutual funds (IMFs). On average, for all countries, the IFF has higher raw returns (0.2402) and excess returns (0.1722) compared to CFF (raw returns = 0.1343, excess returns = 0.0663). This implies that, for all countries, IFF performs better than CFF.

Observation by countries strengthens this conclusion, as IFF has superior raw returns and excess returns compared to CFF in all sample countries. Malaysia has the highest IFF returns (raw IFF = 0.1533; raw CFF = 1.355; excess IFF = 1.243;

excess CFF = 1.065), followed by Indonesia (raw IFF = 0.1432; raw CFF = 0.1422; excess IFF = 0.0722; excess CFF = 0.0712) and Pakistan (raw IFF = 0.1282; raw CFF = 0.1244; excess IFF = 0.0192; excess CFF = 0.0154).

Table 2: Descriptive Statistics

		Fund Family		IFF		CFF		Equality of variance		Equality of means	
		N	Mean (S.D)	N	Mean (S.D)	N	Mean (S.D)	T. Stat.	P. Value	T. Stat.	P. Value
Malaysia	No. of funds	170	165.5 (3.304)	75	71.7 (8.562)	95	88.6 (1.258)	1.426	0.084	4.591	0.000
	No. of families	20	17.9 (1.552)	8	7.71 (1.132)	12	11.5 (1.865)	1.453	0.080	2.933	0.000
	Raw return	2880	0.2452 (0.237)	1152	0.1533 (0.333)	1728	0.1355 (0.407)	1.340	0.090	1.586	0.040
	Excess return	2880	0.2162 (0.367)	1152	0.1243 (0.337)	1728	0.1065 (0.406)	1.574	0.058	0.066	0.047
	FTSE Islamic	2880	0.0032 (0.057)	1152	0.0032 (0.057)	1728	0.0032 (0.057)	--	--	--	--
	FTSE all world	2880	0.0075 (0.063)	1152	0.0075 (0.063)	1728	0.0075 (0.063)	--	--	--	--
	SMB	2880	-0.080 (0.281)	1152	-0.0801 (0.281)	1728	-0.0801 (0.281)	--	--	--	--
	HML	2880	0.0460 (0.267)	1152	0.0460 (0.267)	1728	0.0460 (0.267)	--	--	--	--
	MOM	2880	-0.019 (0.519)	1152	-0.0190 (0.519)	1728	-0.0190 (0.519)	--	--	--	--
	TB	2880	0.0290 (0.027)	1152	0.0290 (0.027)	1728	0.0290 (0.027)	--	--	--	--
Indonesia	No. of funds	83	79.3 (2.718)	34	30.6 (6.006)	49	47.5 (3.175)	5.339	0.000	5.668	0.000
	No. of families	14	13.3 (1.374)	5	4.78 (1.179)	9	8.51 (1.118)	4.424	0.000	4.282	0.000
	Raw return	2016	0.2391 (0.442)	720	0.1432 (0.504)	1296	0.1422 (0.437)	0.435	0.000	0.601	0.000
	Excess return	2016	0.1681 (0.485)	720	0.0722 (0.503)	1296	0.0712 (0.438)	0.425	0.000	0.600	0.000
	FTSE Islamic	2016	0.0032 (0.057)	720	0.0032 (0.057)	1296	0.0032 (0.057)	--	--	--	--
	FTSE all world	2016	0.0075 (0.063)	720	0.0075 (0.063)	1296	0.0075 (0.063)	--	--	--	--
	SMB	2016	-0.080 (0.281)	720	-0.0801 (0.281)	1296	-0.0801 (0.281)	--	--	--	--
	HML	2016	0.0460 (0.267)	720	0.0460 (0.267)	1296	0.0460 (0.267)	--	--	--	--
	MOM	2016	-0.0190 (0.519)	720	-0.0190 (0.519)	1296	-0.0190 (0.519)	--	--	--	--
	TB	2016	0.0710 (0.035)	720	0.0710 (0.035)	1296	0.0710 (0.035)	--	--	--	--
Pakistan	No. of funds	87	82.8 (2.420)	33	28.5 (2.958)	54	52.8 (3.467)	–0.182	0.429	-0.561	0.293
	No. of families	11	10.81 (1.143)	3	2.62 (1.187)	8	7.31 (1.312)	2.343	0.014	3.745	0.000
	Raw return	1584	0.1373 (0.425)	432	0.1282 (0.742)	1152	0.1244 (0.551)	0.734	0.232	0.027	0.042
	Excess return	1584	0.0283 (0.661)	432	0.0192 (0.743)	1152	0.0154 (0.550)	0.720	0.236	0.051	0.048
	FTSE Islamic	1584	0.0032 (0.057)	432	0.0032 (0.057)	1152	0.0032 (0.057)	--	--	--	--
	FTSE all world	1584	0.0075 (0.063)	432	0.0075 (0.063)	1152	0.0075 (0.063)	--	--	--	--
	SMB	1584	-0.0801 (0.281)	432	-0.0801 (0.281)	1152	-0.0801 (0.281)	--	--	--	--
	HML	1584	0.0460 (0.267)	432	0.0460 (0.267)	1152	0.0460 (0.267)	--	--	--	--
	MOM	1584	-0.0190 (0.519)	432	-0.0190 (0.519)	1152	-0.0190 (0.519)	--	--	--	--
	TB	1584	0.1090 (0.032)	432	0.1090 (0.032)	1152	0.1090 (0.032)	--	--	--	--
Saudi Arabia	No. of funds	162	156.7 (3.590)	162	156.7 (3.590)	--	-- (--)	--	--	--	--
	No. of families	25	24.8 (1.785)	25	24.8 (1.785)	--	-- (--)	--	--	--	--

	Raw return	3600	0.5373 (0.342)	3600	0.5373 (0.342)	--	-- (--)	--	--	--	--
	Excess return	3600	0.4683 (0.490)	3600	0.4683 (0.490)	--	-- (--)	--	--	--	--
	FTSE Islamic	3600	0.0032 (0.057)	3600	0.0032 (0.057)	--	-- (--)	--	--	--	--
	FTSE all world	3600	0.0075 (0.063)	3600	0.0075 (0.063)	--	-- (--)	--	--	--	--
	SMB	3600	-0.0801 (0.281)	3600	-0.0801 (0.281)	--	-- (--)	--	--	--	--
	HML	3600	0.0460 (0.267)	3600	0.0460 (0.267)	--	-- (--)	--	--	--	--
	MOM	3600	-0.0190 (0.519)	3600	-0.0190 (0.519)	--	-- (--)	--	--	--	--
	TB	3600	0.0690 (0.020)	3600	0.0690 (0.020)	--	-- (--)	--	--	--	--
All	No. of funds	502	494.3 (7.819)	304	301.4 (9.168)	198	191.2 (8.147)	7.868	0.000	9.970	0.000
	No. of families	70	65.8 (5.742)	41	40.6 (4.481)	29	28.2 (3.955)	5.215	0.000	8.577	0.000
	Raw return	10080	0.2742 (0.297)	5904	0.2402 (0.445)	4176	0.1343 (0.374)	1.037	0.000	0.558	0.000
	Excess return	10080	0.2062 (0.317)	5904	0.1722 (0.544)	4176	0.0663 (0.471)	1.760	0.000	0.616	0.000
	FTSE Islamic	10080	0.0032 (0.057)	5904	0.0032 (0.057)	4176	0.0032 (0.057)	--	--	--	--
	FTSE all world	10080	0.0075 (0.063)	5904	0.0075 (0.063)	4176	0.0075 (0.063)	--	--	--	--
	SMB	10080	-0.080 (0.281)	5904	-0.0801 (0.281)	4176	-0.0801 (0.281)	--	--	--	--
	HML	10080	0.046 (0.267)	5904	0.0460 (0.267)	4176	0.0460 (0.267)	--	--	--	--
	MOM	10080	-0.019 (0.519)	5904	-0.0190 (0.519)	4176	-0.0190 (0.519)	--	--	--	--
	TB	10080	0.0680 (0.030)	5904	0.0680 (0.030)	4176	0.0680 (0.030)	--	--	--	--

Note: Standard deviation in brackets. SMB is the small-minus-low; HML is high-minus-low; MOM is momentum factor, and TB is the three-month Treasury bill rate. 'All' includes Saudi Arabia, Malaysia, Indonesia, and Pakistan for IFF and Malaysia, Indonesia, and Pakistan for CFF as nonresident in Saudi Arabia.

Table 3 shows the Spearman rank and Pearson product-moment correlations of the fund families, market benchmarks, and risk factors and their respective *p*-values. It is a diagnostic test to detect multicollinearity. Fund family returns are weakly correlated with the returns of both market benchmarks. The market indices are also weakly correlated, and these correlations are positive and significant. No strong correlation is found between the variables. The strongest correlation ($r = 0.305$) is between FTSE Global Islamic returns and T-bill rate. Therefore, the multicollinearity problem is less likely to affect the estimation.

Table 3: Correlation Matrix

	Fund Family	FTSE Islamic	FTSE All World	SMB	HML	MOM	TB
Fund Family	1.000	-0.002* (0.045)	-0.054* (0.001)	0.011 (0.051)	0.006* (0.042)	-0.025* (0.017)	0.029* (0.030)
FTSE Islamic	-0.030* (0.000)	1.000	0.066* (0.001)	0.044* (0.042)	0.044* (0.001)	-0.044* (0.001)	-0.115* (0.002)
FTSE All World	-0.084* (0.000)	0.086* (0.000)	1.000	.029* (0.001)	0.068* (0.001)	-0.071* (0.001)	-0.229* (0.004)
SMB	0.002** (0.052)	0.006* (0.055)	0.149* (0.000)	1.000	0.041* (0.010)	-0.043* (0.010)	-0.048 (0.239)
HML	0.007* (0.047)	0.058* (0.000)	0.128* (0.000)	0.064* (0.000)	1.000	-0.329* (0.040)	-0.185 (0.121)
MOM	-0.011 (0.229)	-0.068 (0.510)	-0.161 (0.610)	-0.056* (0.000)	-0.419* (0.000)	1.000	0.145 (0.138)

TB	0.045* (0.000)	-0.305* (0.000)	-0.109* (0.000)	-0.008 (0.439)	-0.025* (0.011)	0.015 (0.138)	1.000

Note: P-Value in brackets. Spearman rank above the diagonal; Pearson product-moment below diagonal. Asterisks denote significance at the * – .10, ** – .05 and *** – .01 level. T.B is the 3month treasury bills.

4.2. Selectivity Skills

The section presents the performance of fund families, in terms of selectivity skills of the managers, relative to the selected benchmarks using two measures of performance, Jensen's alpha and Carhart's four-factor model.

Single Factor Model

Overall Fund Family and by Country

This sub-section presents fund family performance against both market benchmarks using the single-factor model [32] Alpha indicates the monthly abnormal returns of the fund families. Table 4 shows that the alpha for all fund families, whether using the Islamic or conventional benchmark, is positive and significant. The alpha estimate for all fund families is 0.1942 percent per month for FTSE Global Islamic and 0.2025 percent per month for FTSE All-World. These indicate that the fund families outperform both market benchmarks.

By country, Saudi Arabia, Malaysia, and Indonesia have a positive significant alpha for both market benchmarks. This means that the fund families in these countries outperform both market benchmarks. Saudi Arabia has better performance compared to the other countries, whether using the Islamic or conventional market benchmarks. It is followed by Malaysia, Indonesia, and, lastly, Pakistan. Pakistan has an insignificant alpha for both market benchmarks. This result may be attributed to the government's lack of understanding of the complexities and significance of the mutual fund industry, which has resulted in tax policies that have seriously affected the industry's growth. In addition, the steps taken by the government over the past few years have been harmful to the mutual fund industry, as they contribute to higher administration costs, which negatively affect fund returns.

Table 4: One-Factor Model (Jensen, 1968)

	Fund Family			**IFF**		**CFF**		**Difference**	
		Alpha	**Beta**	**Alpha**	**Beta**	**Alpha**	**Beta**	**Alpha**	**Beta**
Malaysia	***Panel A: FTSE Global Islamic***								
	Coeff	0.0177	0.0319	0.0302	0.2381	0.0081	-0.2371	0.0253	0.1801
	Std.err	0.0075	0.1188	0.0091	0.1471	0.0123	0.1962	0.0144	0.2216
	P-value	0.0362	0.7878	0.0010	0.1051	0.0490	0.2267	0.0490	0.4100
	R2	---	0.53	---	0.55	---	0.59	---	0.61
	Panel B: FTSE All World								
	Coeff	0.0271	0.2666	0.0282	0.1416	0.0162	0.3751	0.0255	0.1961
	Std.err	0.0078	0.1433	0.0091	0.1781	0.0133	0.2371	0.0157	0.2672
	P-value	0.0048	0.0630	0.0045	0.4270	0.0282	0.1140	0.0504	0.4621
	R^2	---	0.57	---	0.53	---	0.61	---	0.52
Indonesia	***Panel A: FTSE Global Islamic***								
	Coeff	0.0163	-0.075	0.0961	0.0787	0.2534	-0.2780	-0.121	-0.117
	Std.err	0.0162	0.1785	0.0224	0.2451	0.0232	0.2461	0.030	0.329
	P-value	0.0005	0.6740	0.0000	0.7480	0.0000	0.2591	0.000	0.723
	R^2	---	0.66	---	0.61	---	0.63	---	0.69
	Panel B: FTSE All World								
	Coeff	0.0232	0.2030	0.1373	0.6651	0.2921	0.2981	-0.115	0.767
	Std.err	0.0921	0.1675	0.0252	0.2902	0.0252	0.2922	0.020	0.429
	P-value	0.0115	0.2255	0.0000	0.0221	0.0000	0.3064	0.000	0.074
	R^2	---	0.67	---	0.64	---	0.62	---	0.59
Pakistan	***Panel A: FTSE Global Islamic***								
	Coeff	0.015	-0.031	0.019	-0.192	0.032	0.166	0.006	-0.245
	Std.err	0.035	0.2650	0.049	0.403	0.040	0.327	0.059	0.483
	P-value	0.447	0.9057	0.699	0.634	0.421	0.613	0.899	0.611
	Panel B: FTSE All World								
	Coeff	0.016	-0.106	0.075	0.337	-0.053	-0.641	0.039	0.055
	Std.err	0.037	0.314	0.056	0.477	0.046	0.387	0.025	0.544
	P-value	0.654	0.735	0.185	0.480	0.245	0.097	0.121	0.919
	R^2	---	0.63	---	0.60	---	0.59	---	0.61
Saudi Arabia	***Panel A: FTSE Global Islamic***								
	Coeff	0.4714	0.0594	0.4714	0.0594	---	---	---	---
	Std.err	0.0120	0.1327	0.0120	0.1327	---	---	---	---
	P-value	0.0018	0.6540	0.0018	0.6540	---	---	---	---
	R^2	---	0.55	---	0.55	---	---	---	---

	Panel B: FTSE All World								
	Coeff	0.4904	0.3397	0.4904	0.3397	---	---	---	---
	Std.err	0.0131	0.1530	0.0131	0.1530	---	---	---	---
	P-value	0.0028	0.0264	0.0028	0.0264	---	---	---	---
	R^2	---	0.61	---	0.61	---	---	---	---
All	***Panel A: FTSE Global Islamic***								
	Coeff	0.1942	-0.243	0.2474	-0.176	0.0704	-0.2951	0.2116	-0.192
	Std.err	0.0072	0.0801	0.0091	0.0990	0.0122	0.0000	0.0102	0.1152
	P-value	0.0002	0.0023	0.0000	0.0762	0.0292	0.0221	0.0000	0.0962
	R^2	---	0.81	---	0.72	---	0.69	---	0.72
	Panel B: FTSE All World								
	Coeff	0.2025	-0.107	0.2584	-0.018	0.0762	-0.1972	0.2292	0.0830
	Std.err	0.0077	0.0916	0.0094	0.1133	0.0125	0.147	0.0113	0.1322
	P-value	0.0001	0.2441	0.0000	0.9171	0.0000	0.180	0.0000	0.5302
	R^2	---	0.85	---	0.70	---	0.73	---	0.70

Note: Coeff is the coefficient. Std.err is the standard error. 'All' includes Saudi Arabia, Malaysia, Indonesia, and Pakistan for IFF and Malaysia, Indonesia, and Pakistan for CFF as nonresident in Saudi Arabia.

Islamic Focused Family (IFF) vs. Conventional Focused Family (CFF)

This sub-section presents the analysis results for IFF and CFF performance, as well as the difference between both portfolios (IFF-CFF). This section focuses on the entire fund family sample and three countries (Malaysia, Indonesia, and Pakistan). Table 4 shows that the alpha estimate of IFF for the entire sample is 0.2474 percent per month for the Islamic benchmark and 0.2584 percent per month for the conventional market benchmark. These figures are higher than the CFF (respectively, 0.0704 and 0.0762 percent). In addition, the alphas of both are positive and significantly differ from zero, which means that IFF outperforms CFF significantly. The results also show that the alpha of the difference between portfolios (IFF-CFF) is significant for both market benchmarks at the 5 percent level. This means the IFF significantly outperforms CFF.

For the individual country analysis, Malaysia and Indonesia are positively significant for both IFF and CFF, which means that the managers of both have good selectivity skills. For Malaysia, IFF outperforms CFF for both market benchmarks (Islamic benchmark: IFF = 0.0302, CFF = 0.0081; conventional benchmark: IFF = 0.0282, CFF = 0.0162). This means that IFF managers have better selectivity skills than CFF managers, which is possibly because IFF is more diversified and less risky than CFF. However, for Indonesia, CFF outperforms IFF in both market benchmarks (Islamic benchmark: IFF = 0.0961, CFF = 0.2534; conventional benchmark: IFF = 0.1373, CFF = 0.2921). The different results between Malaysia and Indonesia are likely because the screening process in Malaysia does not add more fees to Islamic investments, while conventional managers in Indonesia are more experienced in managing large numbers of funds. For Pakistan, the results are insignificant for both types of fund family, which means that the managers of IFF and CFF in Pakistan have poor selectivity skills. The poor performance may result from expenses and fees, as well as taxes imposed by the Pakistani government on the mutual funds industry. As for the difference between portfolios (IFF-CFF), the IFF outperforms CFF in Malaysia and Pakistan, while CFF outperforms IFF in Indonesia.

Four-factor Model.

Overall Fund Family and by Country

Data for the four factors of the model are not readily available, and so data from Fama and French's website are used instead. The FTSE All-World database is then used to construct monthly data for the four factors. Table 5 presents the analysis results for the entire sample, using the FTSE All-World index as the market benchmark.

Table 5 shows that the four-factor alpha for the entire sample is 0.201 percent and significant, which means that, on average, the fund families are outperforming the four-factor benchmarks. The fund families also have lower risk, as indicated by the beta (-0.140). This result is consistent with that of the single-factor model. Fund families prefer smaller funds over larger funds, as indicated by the statistically significant SMB factor loading of -0.034. The HML factor of -0.054 is also statistically significant, indicating the preference of the families for growth-to-value stock. However, MOM is not significant.

For the individual country analysis, Saudi Arabia (α = 0.491), Malaysia (α = 0.289), and Indonesia (α = 0.201) have positive and significant alphas, which means that the families in those countries, on average, outperform the four-factor benchmarks. Families in Saudi Arabia also have lower risk (b = 0.022). In contrast, Pakistani funds are not outperforming the four-factor benchmarks, as all alphas are not significant. The preference for smaller stock over larger stock is also apparent in all countries except Pakistan, as indicated by the significant SMB factor. However, HML and MOM are not significant for all countries. The superior performance of fund families can be attributed to their removal of unsystematic risk using available advantages, which means the families operate their member funds by only considering market

(systematic) risk.

Table 5: Carhart's Four Factor Model (Carhart, 1997)

		Fund Family			IFF			CFF			Difference		
		Coeff	**S.E**	**P.V**	**Coeff**	**S.E**	**P.V**	**Coeff**	**S.E**	**P.V**	**Coeff**	**S.E**	**P.V**
Malaysia	Alpha	0.289	0.008	0.006	0.034	0.010	0.001	0.023	0.014	0.004	0.040	0.016	0.011
	Beta	0.258	0.144	0.024	0.125	0.178	0.003	0.371	0.238	0.119	0.173	0.267	0.017
	SMB	0.013	0.025	0.011	0.009	0.031	0.776	0.007	0.041	0.868	0.030	0.046	0.710
	HML	0.034	0.029	0.235	0.032	0.036	0.376	0.055	0.047	0.543	0.026	0.054	0.432
	MO	0.042	0.015	0.440	0.041	0.018	0.025	0.050	0.024	0.390	0.083	0.057	0.063
	$\mathbf{R^2}$	---	0.72	---	---	0.69	---	---	0.53	---	---	0.67	---
Indonesia	Alpha	0.201	0.019	0.000	0.141	0.026	0.000	0.283	0.026	0.000	-0.070	0.035	0.040
	Beta	0.031	0.211	0.017	0.676	0.291	0.020	0.294	0.292	0.315	0.600	0.391	0.125
	SMB	0.025	0.039	0.013	0.090	0.053	0.291	-0.063	0.054	0.245	0.021	0.072	0.272
	HML	-0.004	0.047	0.924	-0.033	0.063	0.302	0.024	0.063	0.451	-0.051	0.085	0.046
	MO	-0.024	0.023	0.294	-0.028	0.032	0.383	-0.019	0.032	0.561	-0.010	0.043	0.617
	$\mathbf{R^2}$	---	0.78	---	---	0.77	---	---	0.72	---	---	0.75	---
Pakistan	Alpha	0.013	0.038	0.744	0.070	0.058	0.230	-0.054	0.047	0.245	0.070	0.058	0.230
	Beta	-0.131	0.314	0.677	0.303	0.478	0.526	-0.638	0.387	0.100	-0.303	0.478	0.526
	SMB	0.022	0.059	0.708	-0.024	0.091	0.792	0.081	0.074	0.275	-0.024	0.091	0.592
	HML	0.092	0.071	0.191	0.124	0.107	0.244	0.048	0.088	0.586	0.124	0.107	0.244
	MO	-0.004	0.036	0.917	0.025	0.055	0.647	-0.038	0.045	0.395	0.025	0.055	0.547
	$\mathbf{R^2}$	---	0.59	---	---	0.51	---	---	0.57	---	---	0.50	---
Saudi Arabia	Alpha	0.491	0.013	0.000	0.491	0.013	0.000	---	---	---	---	---	---
	Beta	0.022	0.153	0.035	0.022	0.153	0.035	---	---	---	---	---	---
	SMB	0.027	0.029	0.035	0.027	0.029	0.035	---	---	---	---	---	---
	HML	0.042	0.034	0.216	0.042	0.034	0.216	---	---	---	---	---	---
	MO	0.007	0.017	0.690	0.007	0.017	0.690	---	---	---	---	---	---
	$\mathbf{R^2}$	---	0.85	---	---	0.85	---	---	---	---	---	---	---
All	Alpha	0.201	-0.08	0.001	0.259	0.010	0.000	0.075	0.013	0.000	0.231	0.012	0.000
	Beta	-0.140	0.097	0.051	-0.024	0.114	0.833	-0.010	0.148	0.155	-0.07	0.132	0.601
	SMB	-0.034	0.002	0.049	0.027	0.023	0.236	-0.007	0.032	0.325	0.042	0.027	0.118
	HML	-0.054	0.002	0.002	0.047	0.027	0.083	-0.049	0.037	0.182	0.052	0.032	0.097
	MO	-0.002	0.002	0.204	0.011	0.014	0.421	-0.007	0.019	0.719	0.011	0.016	0.510
	$\mathbf{R^2}$	---	0.71	---	---	0.64	---	---	0.59	---	---	0.63	---

Note: Coeff is the coefficient. Std.err is the standard error. P.V is the P-Value. 'All' includes Saudi Arabia, Malaysia, Indonesia, and Pakistan for IFF and Malaysia, Indonesia, and Pakistan for CFF as non-resident in Saudi Arabia. P. V is the P.value.

Islamic Focused Family (IFF) vs. Conventional Focused Family (CFF)

Table 5 shows that IFF and CFF for the entire sample have positive and significant alpha, which means that, on average, they outperform the four-factor benchmarks. This result is consistent with single-factor model. The IFF ($\alpha = 0.259$) also outperforms CFF ($\alpha = 0.075$), and it is less risky ($b = -0.024$) than CFF ($b = -0.010$). The results of the difference between portfolios are significant at 5 percent, which supports the conclusion that IFF outperforms CFF.

For the individual countries analysis, similar to the single-factor model, Malaysia and Indonesia have positive and significant alphas. In Malaysia, IFF ($\alpha = 0.034$) outperforms CFF ($\alpha = 0.023$), and IFF has lower risk than CFF based on the market beta. This is because IFF includes both CMFs and IMFs. IFF is a fund family whose CMF comprises, at most, 33 percent or less of its total funds. In Indonesia, CFF ($\alpha = 0.283$) outperforms IFF ($\alpha = 0.141$), and it has lower risk than IFF. Based on Carhart's four-factor model, Indonesia outperforms Malaysia. Moreover, the difference between portfolios for Indonesia is negative and significant, which indicates that IFF does not outperform CFF in Indonesia. However, it is positive and significant in Malaysia, which means that IFF outperforms CFF. In Pakistan, the results are not significant, similar to the results of the single-factor model.

4.3. Market Timing Ability

This section presents the empirical analysis results of two performance measures, [46] (TM) and [29] (HM), used to evaluate the timing ability of managers.

Overall Fund Family and by Country

The results show that fund families have good selectivity skills but poor market timing ability, regardless of the market benchmarks used. Table 6 shows the results of the TM model. The alpha of the entire sample is positive and significant ($\alpha = 0.195$ for FTSE Global Islamic; $\alpha = 0.193$ for FTSE All-World), while gamma is negative but insignificant ($\gamma = -0.129$ for FTSE Global Islamic; $\gamma = -0.347$ for FTSE All-World). Table 6 also shows similar results for the HM model.

Alpha is positively significant for both market benchmarks, while delta is positive but insignificant using the Islamic benchmark, and negative but also insignificant using the conventional benchmark. The results indicate that the overall fund family sample shows good selectivity skills but poor timing ability.

Table 6 also presents the security selection and market timing ability of the fund families by country. In the case of Malaysia and Indonesia, the results of the selectivity skills are similar to the results of the overall sample analysis. The TM and HM model show that alpha is positive and significant for both Islamic and conventional benchmarks. However, in Pakistan, the alpha is not significant in both models, regardless of benchmarks.

Overall, both market timing models show similar results. There is strong evidence to suggest that fund family managers have good selectivity skills, as can be concluded from the results of the single-factor and four-factor models. These skills are perhaps supported by the diversification and investment opportunities provided by fund families, on top of other advantages. However, fund families have poor market timing ability. Because fund families have many and diverse types of funds, it is likely that the management process becomes difficult, eventually hindering the managers' efficiency and ability. As a result, the managers are unable to correctly predict market movements and beat market benchmarks.

Islamic Focused Family (IFF) vs. Conventional Focused Family (CFF)

Table 6 also presents the TM and HM results for IFF and CFF. Both IFF and CFF show security selection coefficients that significantly differ from zero, regardless of the market benchmarks. At the same time, market timing coefficients of both IFF and CFF do not significantly differ from zero, regardless of the market benchmarks. IFF and CFF have positive alphas for both market benchmarks. Nonetheless, there is evidence that IFF managers have better selectivity and timing skills than CFF managers (except in the TM model and against the FTSE All-World Index). In conclusion, both IFF and CFF have good selectivity skills but poor timing ability, though IFF has a marginal advantage. For the difference between portfolio (IFF-CFF) analysis, for both measures (TM and HM) and both market benchmarks, the results are positive and significant, which suggest that IFF outperforms CFF.

For the analysis by country, IFF and CFF in Malaysia have positive and significant alphas, indicating that managers of both types of families demonstrate good selectivity skills. However, their gamma and delta are not significant. The portfolio difference analysis shows that IFF outperforms CFF in Malaysia, while in Indonesia, CFF outperforms IFF. The difference between portfolios (IFF-CFF) analysis supports these results since it is negative and significant, which means that CFF outperforms IFF. In Pakistan, both gamma and delta are not significant. Nevertheless, the difference between portfolios (IFF-CFF) analysis provides evidence that IFF outperforms CFF, since the result is positive and significant. This means that even though IFF underperforms the market benchmarks, it still outperforms CFF.

Table 6: Market Timing Models (TM and HM)

		Fund Family		IFF		CFF		Difference	
		Coef (S.E)	P. Value	Coef (S.E)	P. Value	Coef (S.E)	P. Value	Coef (S.E)	P. Value
Malaysia	Panel A: FTSE Global Islamic								
	Alpha	0.020 (0.008)	0.011	0.034 (0.010)	0.001	0.006 (0.013)	0.047	0.033 (0.015)	0.027
	Gama	-0.620 (0.363)	0.087	-0.395 (0.449)	0.379	-0.879 (0.599)	0.143	-0.097 (0.673)	0.043
	R^2	0.77	---	0.71	---	0.54	---	0.70	---
	Alpha	0.018 (0.008)	0.021	0.031 (0.010)	0.002	0.004 (0.013)	0.022	0.031 (0.015)	0.035
	Delta	-0.228 (0.231)	0.323	-0.073 (0.286)	0.798	-0.366 (0.382)	0.338	-0.567 (0.429)	0.037
	R^2	(0.74)	---	0.73	---	0.61	---	0.68	---
	Panel B: FTSE All World								
	Alpha	0.024 (0.008)	0.003	0.029 (0.010)	0.003	0.019 (0.013)	0.018	0.024 (0.015)	0.048
	Gama	-2.309 (1.535)	0.132	-0.948 (1.903)	0.618	-4.103 (2.535)	0.106	1.044 (2.854)	0.714
	R^2	0.79	---	0.53	---	0.74	---	0.64	---
	Alpha	0.024 (0.008)	0.009	0.028 (0.010)	0.008	0.019 (0.014)	0.017	0.020 (0.016)	0.009
	Delta	-0.193 (0.369)	0.112	0.046 (0.457)	0.919	-0.428 (0.609)	0.482	0.596 (0.686)	0.038
	R^2	0.75	---	0.59	---	0.71	---	0.69	---
Indonesia	Panel A: FTSE Global Islamic								
	Alpha	0.162 (0.018)	0.002	0.099 (0.025)	0.000	0.248 (0.025)	0.000	-0.107 (0.033)	0.001
	Gama	0.039 (0.542)	0.942	-0.216 (0.745)	0.772	0.371 (0.748)	0.619	-1.015 (0.999)	0.010

	R^2	0.74	---	0.69	---	0.66	---	0.71	---
	Alpha	0.161 (0.016)	0.004	0.095 (0.023)	0.000	0.250 (0.023)	0.000	-0.119 (0.030)	0.000
	Delta	0.189 (0.240)	0.431	0.130 (0.331)	0.695	0.259 (0.332)	0.436	-0.229 (0.443)	0.060
	R^2	0.75	---	0.68	---	0.64	---	0.72	---
	Panel B: FTSE All World								
	Alpha	0.212 (0.019)	0.004	0.135 (0.027)	0.000	0.315 (0.027)	0.000	-0.086 (0.036)	0.018
	Gama	0.416 (2.039)	0.236	-0.437 (2.803)	0.876	6.161 (2.812)	0.029	-1.600 (3.762)	0.039
	R^2	0.79	---	0.66	---	0.68	---	0.73	---
	Alpha	0.205 (0.019)	0.002	0.128 (0.027)	0.000	0.309 (0.027)	0.000	-0.098 (0.036)	0.007
	Delta	0.113 (0.335)	0.736	-0.398 (0.460)	0.387	0.804 (0.461)	0.082	-1.186 (0.616)	0.044
	R^2	0.78	---	0.69	---	0.63	---	0.71	---
Pakistan	Panel A: FTSE Global Islamic								
	Alpha	0.026 (0.033)	0.429	0.022 (0.050)	0.659	0.012 (0.041)	0.436	0.022 (0.050)	0.049
	Gama	-0.206 (0.871)	0.813	-0.440 (1.323)	0.739	0.066 (1.074)	0.951	-0.440 (1.323)	0.839
	R^2	0.60	---	0.56	---	0.50	---	0.59	---
	Alpha	0.025 (0.033)	0.441	0.019 (0.050)	0.703	0.013 (0.040)	0.407	0.019 (0.050)	0.033
	Delta	0.096 (0.275)	0.727	-0.069 (0.417)	0.870	0.290 (0.339)	0.393	-0.069 (0.417)	0.870
	R^2	0.61	---	0.58	---	0.51	---	0.53	---
	Panel B: FTSE All World								
	Alpha	0.006 (0.061)	0.919	0.116 (0.093)	0.212	-0.126 (0.075)	0.093	0.116 (0.093)	0.042
	Gama	-0.784 (3.569)	0.826	2.993 (5.422)	0.581	-5.382 (4.395)	0.221	2.993 (5.422)	0.041
	R^2	0.66	---	0.55	---	0.66	---	0.63	---
	Alpha	0.009 (0.049)	0.861	0.072 (0.075)	0.336	-0.105 (0.061)	0.064	0.072 (0.075)	0.036
	Delta	0.338 (0.427)	0.429	-0.045 (0.649)	0.945	-0.682 (0.526)	0.195	-0.045 (0.649)	0.945
	R^2	0.63	---	0.53	---	0.67	---	0.65	---
Saudi Arabia	Panel A: FTSE Global Islamic								
	Alpha	0.473 (0.012)	0.005	0.473 0.012	0.005	---	---	---	---
	Gama	-0.181 (0.396)	0.648	-0.181 (0.396)	0.648	---	---	---	---
	R^2	0.82	---	0.82	---	---	---	---	---
	Alpha	0.472 (0.012)	0.001	0.472 (0.012)	0.001	---	---	---	---
	Delta	-0.007 (0.185)	0.968	-0.007 (0.185)	0.968	---	---	---	---
	R^2	0.80	---	0.80	---	---	---	---	---
	Panel B: FTSE All World								
	Alpha	0.499 (0.016)	0.001	0.499 0.016	0.001	---	---	---	---
	Gama	-1.538 (1.498)	0.304	-1.538 (1.498)	0.304	---	---	---	---
	R^2	0.73	---	0.73	---	---	---	---	---
	Alpha	0.508 (0.015)	0.009	0.508 (0.015)	0.009	---	---	---	---
	Delta	-0.039 (0.291)	0.011	-0.039 (0.291)	0.011	---	---	---	---
	R^2	0.71	---	0.71	---	---	---	---	---
All	Panel A: FTSE Global Islamic								
	Alpha	0.195 (0.008)	0.019	0.248 (0.009)	0.000	0.073 (0.012)	0.000	0.215 (0.011)	0.000
	Gama	-0.129 (0.255)	0.612	-0.082 (0.310)	0.791	-0.274 (0.424)	0.517	-0.406 (0.362)	0.026
	R^2	0.79	---	0.74	---	0.57	---	0.69	---
	Alpha	0.194 (0.007)	0.002	0.247 (0.009)	0.000	0.069 (0.012)	0.000	0.212 (0.010)	0.000

	Delta	0.087 (0.119)	0.498	0.063 (0.145)	0.663	0.098 (0.199)	0.621	0.153 (0.169)	0.364
	R^2	0.75	---	0.76	---	0.60	---	0.67	---
	Panel B: FTSE All World								
	Alpha	0.193 (0.008)	0.046	0.246 (0.010)	0.000	0.074 (0.013)	0.000	0.220 (0.012)	0.000
	Gama	-0.347 (0.087)	0.006	-3.167 (1.091)	0.074	-0.957 (1.460)	0.512	-2.468 (1.272)	0.052
	R^2	0.76	---	0.59	---	0.78	---	0.68	---
	Alpha	0.199 (0.008)	0.001	0.253 (0.010)	0.000	0.075 (0.013)	0.000	0.224 (0.012)	0.000
	Delta	-0.307 (0.169)	0.061	-0.317 (0.201)	0.115	-0.202 (0.255)	0.430	-0.309 (0.234)	0.287
	R^2	0.75	---	0.69	---	0.84	---	0.70	---

Note: Alpha indicates the monthly abnormal returns of fund families. Gamma and Delta are the coefficient of the quadratic variable representing market timing ability. Gamma represents TM model, and Delta represent HM model. Coeff is the coefficient. Std. err is the standard error. Standard error in brackets. 'All' includes Saudi Arabia, Malaysia, Indonesia, and Pakistan for IFF and Malaysia, Indonesia, and Pakistan for CFF as nonresident in Saudi Arabia.

Discussion

The results indicate that the fund families outperform market benchmarks and demonstrate good selectivity skills but poor market timing ability. This can be attributed to the advantages offered by the fund family structure, such as diversification and liquidity. This is consistent with the modern portfolio theory, which suggests that good diversification when creating investment portfolios reduces risk and improves performance. Moreover, fund families remove unsystematic risk using the advantages provided, which means the families operate their member funds by only considering market (systematic) risk. As for the weak timing ability, it is likely because fund families manage a large number of diverse funds, which increases the complexity of the management process and weakens the managers' ability to read market trends and trajectories. This is consistent with studies at the fund level, [e.g., 1, 11, 12].

In addition, the results show that Saudi Arabia perform better than other countries. It is followed by Malaysia, Indonesia, and Pakistan. This may be attributed to the nature of investment in Saudi Arabia, which is highly characterized by family-oriented businesses. This provides new and diversified funding sources for funds families. In the case of Pakistan, the results may be due to the government's poor understanding of the complexities and significance of the mutual fund industry, which has resulted in tax policies that have seriously affected the industry's growth. In addition, the steps taken by the government over the past few years have been harmful to the mutual fund industry as they contribute to administration costs.

Comparing between IFF and CFF, the results showed that their performance differ. Overall, IFF outperforms CFF. By country, however, this is not always so. In Malaysia and Pakistan, IFF outperforms CFF. Sharia screening in those countries does not impose major costs on Islamic investments.

5 Conclusion

This paper presents new evidence on the mutual fund family performance, as well as on the comparison of performance between IFF and CFF. The study uses four performance measurements: single- and four-factor models as selectivity measurements, and HM and TM models as timing ability measurements. Overall, the results suggest that fund families outperform the market benchmarks and have good selectivity skills and poor timing ability. Saudi Arabia has the best performance, followed by Malaysia, Indonesia, and Pakistan. There are also differences between the performance of IFF and CFF. Generally, IFF outperforms CFF. In Malaysia and Pakistan, IFF outperforms CFF, while in Indonesia, CFF outperforms IFF.

The findings are useful for both investors and managers. Managers must make necessary changes to increase their efficiency relative to their competitors. Investors can use the results to make better investment decisions and allocate their capital to more efficient funds. The results are also expected to be useful for regulators and academicians as they provide new insight into the mutual fund industry generally and fund family specifically.

6 Recommendations

Two recommendations are proposed based on the results. First, future studies should focus on analysis at the fund house level, as evidence on its performance is still limited. It is worthwhile to examine how the advantages provided by and the characteristics of fund houses may lead to better performance of the houses themselves and of their funds. Second, the literature has mainly focused on developed markets such as the USA and the UK. Future works may consider other

emerging markets, such as the Middle East and South Asia.

Conflict of interest

The authors declare that there is no conflict regarding the publication of this paper.

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