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Islamic Fund Managers' Market Timing Abilities and their Impact on Fund Performances

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ABSTRACT

This study examines Shariah-compliant fund's financial performance compared to conventional funds based on managerial timing abilities. Compared with traditional fund managers' timing skills, the study focuses on the most neglected area of Shariah-compliant manager timing abilities, liquidity, and volatility timing abilities. The study uses 69 funds whose significant exposure is the equity between January 2010 and June 2022, consisting of three investment styles: equity, asset allocation, and balanced funds. The study incorporates volatility factors based on Busse (1999) and liquidity factors from Amihud (2002) into the Carhart (1997) four-factor model. The study found that Islamic fund managers have better liquidity and volatility timing skills than conventional fund managers. The results are robust for analyzing individual funds based on different liquidity measures. There is no substantial evidence that Islamic and traditional fund managers can predict market returns.

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1. Introduction

Mutual funds are investment vehicles in which investors pool their money and make investments on behalf of an investment manager. A mutual fund provides each investor with a proportionate return based on their investment. There are many forms of investments that mutual funds can make, including stocks, bonds, money market instruments, and other assets (Delle Foglie & Panetta, 2020). Investing in mutual funds can be tax-efficient, depending on the type of funds and redemption pattern. Mutual funds offer diversification across industries, low fees, and the presence of professional expertise in the form of fund managers(Cumming, Johan, & Zhang, 2019). Among the main benefits of mutual funds for investors is that they provide a portfolio manager who manages their investments without their involvement. Whether a passive (index fund) or an actively managed fund (equity), there will always be a human being at the helm of these funds in the form of fund managers (Elton & Gruber, 2020).

It is a fact that a good fund manager can make the difference between making or breaking your investment. The fund manager is responsible for ensuring the fund investment selection in the stocks, bonds, or other assets (Deb, 2019). Stock picking (selectivity) will be the fund manager's primary role (Oliveira, Salen, Curto, & Ferreira, 2019). To meet the fund's objectives, a fund manager will build a portfolio of assets by analyzing price-to-earnings ratios, price momentum, sales, earnings, dividends, and other metrics. Fund managers are usually free to choose sectors and styles appropriate to the fund's prospectus (growth, value, income, etc.) (Mirza, Rizvi, Saba, Naqvi, & Yarovaya, 2022). Additionally, the manager evaluates risk and potential return on individual stocks and portfolios, depending on the different fund types (Lien, Hung, & Chen, 2021).

The role of the mutual fund manager is crucial when looking at the factors influencing financial performance (Jiang, Zaynutdinova, & Zhang, 2021). If fund managers have a

competitive advantage, they can extract value from the capital market for their investors (Berk & Van Binsbergen, 2015). In finance, "timing" is a strategy used to modify a portfolio's exposure to the market by using fund managers' market forecast ability (Zheng, Osmer, & Bai, 2021). If a fund manager has timing abilities, then the fund manager raises (lower) funds' exposure before the market increases (falls) (Cagnazzo, 2022). Previous literature elaborated that if a fund manager could time the market, they could adjust their exposure to produce a good return and decrease losses. Fund managers who can time the market may earn additional profits, particularly during market instability (Busse, Ding, Jiang, & Tang, 2020; Chen, Liu, & Li, 2021; Zouaoui, 2019). According to Liao, Zhang, and Zhang (2017), top-timer fund managers can produce abnormal returns compared to non-timer fund managers. They further elaborated that investment decisions must take timing measures into account. The funds' financial performances depend on the fund managers' timing abilities (Bollen & Busse, 2001; Kacperczyk & Seru, 2007). The fund managers must adjust the fund's exposures according to the market situation to increase returns and reduce losses (J.-H. Li, You, & Huang, 2020).

Different types of funds perform differently because of other characteristics, fees, operations, and restrictions. Such as hedge fund managers have to face no limits; they can quickly adopt various strategies to time the market, such as short selling and avail the derivatives opportunities (Kooli & Stetsyuk, 2021). Conventional funds (hereafter, CF) cannot benefit from short-selling opportunities. Still, they can incorporate fixed-interest asset securities in their portfolio to achieve better financial performance than the market (C. Li, Li, & Tee, 2020). On the other hand, Shariah-Compliant Funds (hereafter, SCF) can not avail of the opportunities of short selling and interest-based investments because of Shariah rules which make fewer opportunities for the investment selection for their asset managers (Kamil, Bacha, & Masih, 2014). So, the financial performances of SCF will be other than the conventional funds. The timing abilities adjust the fund exposure by switching in various assets included in the mutual funds. SCF managers have to adapt their fund's exposures o restricted available opportunities, so the SCF financial performances also depend on the timing abilities of their fund managers (Zouaoui, 2019).

There may be a difference in financial performance between mutual and hedge funds. Hedge funds have highly skilled managers, which increases their attraction compared to mutual funds (Cai, Cheng, & Yan, 2018). In addition, more restricted funds, such as SCF, may exhibit different financial performance than less restricted funds. Experienced and skilled managers may exploit such conditions and produce better results for the funds (Osinga, Schauten, & Zwinkels, 2021). According to Shariah rules, SCF invests in restricted sectors, such as small-cap, technology, etc., leaving them with less diversified and volatile portfolios than CF (Mirza et al., 2022). Muslim investors must follow Shariah and cannot invest in conventional investments (Azmi, Mohamad, & Shah, 2020). So, it is interesting to investigate whether the SCF managers have the timing abilities and whether the performance of SCF is different compared to CF based on the various timing abilities (market, volatility, and liquidity) of fund managers. This study will compare these managers' timing skills with their conventional counterparts to analyze whether SCF investors benefit from investing in SCF.

This paper proceeds as tracks: Section 2 presents the related literature on timing abilities and their impact on fund performances. Section 2 describes the data and construction of variables. Section 3 describes the methodology for testing liquidity and volatility timing variables. The empirical analysis will be discussed in Section 4, and Section 5 concludes the discussion.

2. Literature Review

It is uncommon for mutual fund companies to receive money without a plan from investors. A wide selection of funds is available so investors can find something that fits their needs. Many people save less but wish to invest less, while others save more and invest it all in any safe investment. In mutual fund companies, various types offer different returns; some offer lower returns for less investment, while others offer high returns for huge investments. Investments generally have higher returns at the expense of higher risks. CF is typically a safe investment. Still, an SCF is usually safer as it is an investment pool and makes a diversified portfolio safe from significant losses (Delle Foglie & Panetta, 2020). But an element of interest (riba) involved in the CF makes it riskier than CF. SCF does not include illegitimate investing forms that deviate from Shariah principles, making it safer than CF Investment experts, the fund

managers, are also responsible for managing investors' investments to save them from losses by creating a diversified portfolio, which is why they use a safe investment mode(Cagnazzo, 2022).

Understanding mutual fund performance analysis requires knowledge of the leading financial theories and concepts. While this study primarily compares SCF with CF, understanding the fundamental theories underpinning fund performance is also very important. It is, therefore, necessary to begin with a discussion of modern portfolio theory (hereafter, MPT) (Markowitz, 1952). The debate over the efficient market hypothesis (hereafter, EMT) (Fama, 1972) is then introduced as one of the most widely debated research topics in asset pricing and financial markets (Galagedera, Fukuyama, Watson, & Tan, 2020).

In 1952, Harry Markowitz developed a seminal paper on portfolio selection that established the Modern portfolio theory (MPT). It is today one of the most widely applied financial theories, both in financial theory and practice. According to MPT, diversification is the process of maximizing portfolio returns at a given level of risk. It is a tool for rational investors to assist them in maximizing the returns on their portfolios. Therefore, according to the theory, a sensible investor will determine the investment alternative that offers the highest return with the lowest level of risk (Fabozzi, Gupta, & Markowitz, 2002).

A restricted fund could face relatively high unsystematic risks if screens were applied and certain firms or industries were excluded (Kurtz, 1997). The lack of diversification opportunities resulting from investing in a restricted universe of stocks has been documented in studies such as (Geczy, Stambaugh, & Levin, 2005). The author reported that portfolios using social screening lost approximately one percent of their returns compared to conventional portfolios that were well diversified. According to empirical research on modern portfolio theory, the lack of diversification may hurt an Islamic portfolio's returns. The current portfolio theory, on the other hand, deals only with the ability of a security to move a portfolio towards or away from the optimal frontier (Markowitz, 1952) and refrains from considering the advantages associated with a strategy such as Islamic investing, for example, which may help the portfolio.

SCF managers will follow Shariah's stricter screening strategy in selecting stocks to diversify the portfolio. At the same time, however, this will result in fewer possibilities for diversification and an increased ability to choose stocks based on selectivity. As a result, one might suggest that an Islamic investment strategy followed by a mutual fund may suffer losses if there is an absence of diversification. However, they may have the potential to be offset by the better selectivity offered by the fund (Lowry, 1993). M. L. Barnett and Salomon (2006) have found that while a fund with a strict screening process possesses a small pool of securities, the pool from which these securities are drawn is said to be richer regarding the securities selected than those investments with no restrictions. As a result, the fund would have a higher probability of picking securities that would outperform the market return if it chose securities from a smaller pool of investments rather than from a more extensive collection of possible assets.

It is assumed that MPT implies that for any given risk level, by using social screens or restrictions in a mutual fund, the fund will generate lower risk-adjusted returns than a conventional fund with no social screening. According to P. Barnett, Watson, and Connelly (1984) , integrating MPT with Freeman (1984) stakeholder theory, the financial loss resulting from a lack of diversification can be offset by restrictions implemented by Islamic funds. According to stakeholder theory, companies can achieve better financial performance and value over time by managing their stakeholders effectively.

According to stakeholder theory, companies can achieve better financial performance and value over time by managing their stakeholders effectively. An intensive Shariah screening strategy could eliminate companies with poor track records and stakeholder management practices to select well-managed and over-performing companies (Mansor, Bhatti, Rahman, & Do, 2020). Islamic funds employ a variety of strict screens even more than SRI to ensure that poor-performing companies are excluded to enhance returns for investors (Kiymaz, 2019; Mirza et al., 2022). In contrast, funds utilizing a limited number of screening methods will likely benefit from better diversification opportunities to improve their performance (M. L. Barnett & Salomon, 2006).

Islamic research on timing abilities primarily focused on market and selectivity timing without concrete results. From a broader perspective, little research analyses managers' timing capacity in the SCF industry, the second most prominent and significant economy. However, a rich quantity of literature on SCF financial performance; research focuses very little on mutual fund liquidity and volatility timing abilities in the SCF industry. Omri, Soussou, and Ben Sedrine Goucha (2019) looked at the performance and investment style of SCF funds following the financial crisis, focusing on the post-crisis period only and its comparison with CF. Using single-factor or multifactor models, they estimated absolute and relative risk-adjusted measures. As a result of their research showed that SCF demonstrated more fantastic performance than CF under the same level of risk exposures and produced different outcomes worldwide when the risk level was lower.

Similarly, in the Saudi context, Zouaoui (2019) uses returns from the Hongkong and Shanghai Banking Corporation Limited (HSBC) Saudi SCF and CF from 2011 to 2018 to empirically compare performances based on stock selection, market timing, and persistence. According to the empirical results, SCF tends to have underperformed CF on a global scale but not on a local scale. They found a good understanding of market timing is only kept by managers of CF investing in international investments, as they can predict the market index's movements and make the appropriate purchase and sell decisions based on their predictions. HSBC's Saudi funds are also briefly reviewed here regarding their performance persistence. According to the results, the fund's performance persists when Shariah does not govern it. Hasnaoui and Fatnassi (2021) examined SCF managers' market timing and selectivity of Saudi SCF managers on profitability and risk factors relating. Based on historically significant data sets covering 134 Islamic funds from June 2002 through December 2019, SCF managers in the Kingdom of Saudi Arabia (KSA) exhibited good selectivity skills but did not demonstrate market timing abilities. Additionally, despite low profitability, SCF managers selected companies with aggressive investment patterns.

Khan, Hassan, Paltrinieri, Dreassi, and Bahoo (2020) analyzed stock selection and market timing skills to determine the performance of fund managers in Pakistan by employing Jensen and Trenoy-Mazuy model. They found that Pakistani fund managers could not beat the market and did not have market timing abilities. However, there is a significant difference between Islamic and conventional fund managers regarding stock selection skills. Another study on the Pakistani mutual fund industry was conducted by Maroof, Javid, and Mian (2019), using 84 Pakistani mutual funds. They found that Pakistani funds performed poorly during bull markets and well during bear markets from 2007 to 2014. They further found that market timing and volatility timing abilities are evident in bear markets. In contrast, selectivity timing is apparent in bull markets, and Pakistani fund managers have no style timing abilities during market movements.

Mansor et al. (2020) conducted a similar study on market instability to investigate the performance differences between SCF and CF in the Malaysian fund industry by considering two major extreme events of the Asian and global crises. They found that both funds outperformed the market and produced similar results with each other during the entire sample period. Similarly, using Sharp, Jensen, and Treynor methods, but with different results from stock selectivity skills, market timing abilities, risk, and size, Lailiyah and Setiawan (2020) examined how Shariah equity funds' performance varied from 2012-2017. They found that the Shariah equity fund's performance is significantly influenced by its stock selectivity skills, market timing abilities, risk, and size. Alsharif and Ahmad (2021) examined fund managers' market timing and SCF and CF selectivity using a Saudi fund industry sample. This paper concludes that the Treynor ratio and Jensen's Alpha for SCF and CF are almost similar. SCF performed better than CF as measured by the Sharpe ratio. Additionally, SCF and CF outperform the market portfolio regarding selectivity and timing. Further, SCF managers have superior selectivity skills compared to CF managers, while both types of managers have the same market timing abilities.

According to the above discussion, it can be seen that the majority of the study on SCF managers' timing abilities a based-on selectivity and market timing abilities on various factors without any concrete results on the timing abilities of SCF and CF managers. The other timing abilities, such as volatility and liquidity overlooked. A plethora of research on these timing abilities is available on the conventional developed market of funds, showing the importance of these

timing abilities. The importance of other timing abilities and their impact on SCF performance motivates us to investigate these timing abilities of SCF managers and their comparison with CF managers. So, exploring these timing abilities for SCF managers and their impact on fund performance is crucial. Our study will fill this gap by investigating the volatility, and liquidity timing abilities of SCF managers, their comparison with CF managers' timing abilities, and the impact of these timing abilities on fund performance.

3. Data Set on Mutual Funds

This study used the Mutual Funds Association of Pakistan (MUFAP) database. In addition to daily Net Asset Value (NAV), category inception date, and Assets under management (AUM), MUFAP provides daily asset information. The dataset used in this study contains 69 open-ended equity funds, both conventional and Islamic. There are different filters used in this study to filter the data. During the sample period, the study removed funds that no longer exist or with less than three years of history. This study released funds with overlapping returns to avoid overlapping fund returns across share classes. The sample consists of three types of investment funds, classified based on their styles. There are conventional equity funds (26), conventional asset allocation funds (11), and conventional balanced funds (4), as well as Islamic equity funds (19), Islamic asset allocation funds (8), and balanced Islamic funds (1). Funds are classified according to the value research fund classification.

As shown in Table 1, the dataset used in the study consists of various fund characteristics. Across each fund category, age represents the total number of months since the fund was launched. The fund size indicates the total amount of assets of each fund manager. An expense ratio measures a fund's annual expenses and fees (in percentages). Expense ratios and fund sizes are taken annually and averaged over time across each fund category. Equity funds in the sample have a total size of 16.14 billion PKR (Pak Rupees), the average age of CF is 16.78 years (201 monthly), and SCF has 13 years (156 months). CF has an average expense ratio of 2.22%, whereas the SCF expense ratio is 2.08%. A conventional balanced fund expense ratio has the highest expense ratio (2.30%) among others, followed by Islamic equity funds (2.26%), conventional asset allocation funds (2.15%), and balanced Islamic funds (2.0%). In terms of fund size, traditional equity funds have the largest fund size (4.77 billion), followed by Islamic equity funds (2.61 billion), and conventional asset allocation funds (0.52 billion) is the smallest fund in size.

Table 1: Summary Statistics of Fund Characteristics

Characteristics	Conventional			Islamic		
	Equity	Asset Allocation	Balance	Equity	Asset Allocation	Balance
Number of Funds	26	11	4	19	8	1
Age (Months)	268	120	216	128	133	207
Size(billions)	4.77	0.52	0.59	2.61	2.60	2.72
Expense Ratio	2.20	2.15	2.30	2.26	1.99	2.00

A comparison of fund characteristics between January 2010 and June 2022 presents in Table 1. Fund's age is measured in months since inception.

Table 2(a): Descriptive Statistics CF

Variables	Obs	Mean	Std. Dev.	Min	Max	p1	p99	Skew.	Kurt.
Equity	150	0.040	6.220	-27.57	16.03	-21.44	13.11	-0.88	5.73
Asset Allocation	150	0.000	2.940	-12.74	7.66	-10.54	5.910	-0.75	5.49
Balanced	150	0.190	4.410	-17.19	11.66	-16.77	9.070	-0.92	5.63
All Conventional	150	0.080	4.420	-19.03	11.78	-14.76	9.230	-0.80	5.50

Table 2(a) presents descriptive summary statistics across the entire sample period and various factors for CF and SCF. From January 2010 to June 2022, Table (2a) shows the average monthly return and CF and SCF standard deviation with different fund categories. The average return of all CF was 0.08%, with a standard deviation (SD) of 4.42% recorded in all CF portfolios over the entire study period. In excess monthly returns, balanced funds have the highest average at 0.19%, while asset allocation funds have the lowest monthly average at 0.003%. Equity funds record a monthly highest standard deviation of 6.22%, while asset allocation funds register the lowest standard deviation of 2.94 %.

Similarly, Table(2b) represents Islamic funds' descriptive statistics. The highest return over equity-oriented Islamic funds for the entire period is 0.05%, with a standard deviation of 5.19%. Over monthly average return, asset allocation has the highest return, 0.11%, while the balanced funds have -0.30% of all Islamic equity-oriented funds. The highest monthly standard deviation, 6.6%, is recorded with balanced Islamic funds, and the lowest standard deviation, 4.99%, is with Islamic asset allocation funds.

Table 2(b): Descriptive Statistics SCF

Variables	Obs	Mean	Std. Dev.	Min	Max	p1	p99	Skew	Kurt
Equity	150	0.040	5.180	-23.44	16.760	-15.85	11.16	-0.73	6.26
Asset Allocation	150	0.110	4.980	-21.44	15.340	-21.43	9.050	-1.02	6.89
Balanced	75	-0.300	6.600	-25.74	18.730	-25.74	18.73	-0.77	6.89
All Islamic	150	0.050	5.190	-22.75	16.940	-18.67	10.71	-0.83	6.69

From both Tables.2(a,b), on the overall period from 2010 to 2022, the convention fund return is greater than the Islamic funds, and the standard deviation of Islamic funds is also more remarkable than the standard deviation of the convention funds. The average age of conventional funds (203 months) is greater than that of Islamic funds (156 months). This better performance and low risk represent that traditional fund managers are more experienced than the Islamic fund, generating higher returns and lower risk. The convention fund managers can avail more investment opportunities. According to Shariah principles, SCF managers are bound in some particular investments if we compare sector by sector between Islamic and conventional funds. Table (2a, 2b) shows that the SCF return is better than the CF. Even an SCF risk (SD) is lower than the CF. The overall situation is disturbed because of the balanced funds, in which the SCF has meager returns and risks compared to conventional funds.

Table 2(c): Descriptive Statistics (Factor Variables)

Variables	Obs	Mean	Std. Dev.	Min	Max	p1	p99	Skew	Kurt.
MKT	150	0.94	14.02	-36.05	42.72	-32.84	37.88	-0.028	3.3219
SMB	150	0.04	1.49	-3.36	4.19	-2.91	3.70	0.173	2.6813
HML	150	0.28	2.05	-6.89	6.06	-4.38	5.83	0.230	3.6725
MOM	150	0.99	2.38	-8.36	7.02	-7.67	6.16	-0.689	4.8351
$VOL_{i,t}$	150	4.20	1.87	1.64	14.74	1.72	11.12	1.919	9.7721
$LIQ_{i,t}$	150	-0.004	0.0048	-0.028	-0.000	-0.03	-0.000	-2.999	12.939
$ILLIQ_{i,t}$	150	0.01	0.01	0.00	0.07	0.00	0.06	2.999	12.939

A variable summary of the factor, liquidity, and volatility, can be found in Table 2(c)—excess market returns (MKT) average 0.94% per month and SD of 14.02%. The average monthly returns provided by SMB, HML, and MOM is 0.04%. 0.28% and 0.99 percent, respectively. A market liquidity average is -0.37%, with a standard deviation of 0.48%. Throughout the study period (2010-2022), the average monthly volatility measure is 4.2%, and SD is 1.87%, indicating the highly volatile Pakistani market.

4. Factor Construction

This study uses Carhart (1997) multifactor asset pricing measure to examine fund managers' various timing skill dimensions. SMB, HML, and MOM represent size, value and momentum factors, and other market-related variables collected from the KSE100 database. A monthly market excess return over a risk-free rate (MKT) is estimated from the KSE100 index. Three monthly Treasury Bills (TB) are calculated monthly from the State Bank of Pakistan website at a risk-free rate. SMB and HML factors are estimated each year at the end of December. Based on the firms' median market capitalization size, this study sorts them into small and large portfolios.

An extensive portfolio is one with a market capitalization above the median and a small one with a market capitalization below the median. This study follows the SMB and HML of (Fama & French, 1993). A market capitalization (price times the number of shares) analysis is performed every December to sort all stocks. The factor SMBs consider a return risk factor on their size bases, HML, which captures the risk factor in firm value-related returns. The study divided the sizes into two groups, representing the bottom 50% by S, while B represents the top 50%. Each

year, HML is constructed based on the book-to-market value of stocks at the end of December. A stock with the highest (30%) market capitalization in time (t) categorizes as a high stock (H), a middle stock (M) (40%), and a low stock (L) (30%). Using Carhart (1997), the study constructs the MOM factor.

The liquidity and volatility factors are calculated based on daily return data. We capture fund managers' liquidity timing using the liquidity measure developed by (Karolyi, Lee, & Van Dijk, 2012).

$$L_{i,t} = -\ln\left(1 + \frac{|R_{i,t}|}{P_{i,t}V_{i,t}V}\right) \quad (1)$$

Using Amihud (2002) illiquidity as a proxy for market liquidity, Eq. (1) estimates market liquidity. It measures illiquidity based on the absolute results of each stock as a function of its volume based on an equal-weighted average of "illiquidity" the following the formula below:

$$IL_{i,t} = \frac{\sum\left(\frac{|R_{i,d,t}|}{V_{i,t}}\right)}{D_{i,t}} \quad (2)$$

In Equation (2), 'i' stock on day d and t month has an absolute return of $R_{i,d,t}$ and the dollar volume is $V_{i,t}$ of "i" stock on month t. The study measure $V_{i,t}$ in billion rupees. $D_{i,t}$ the total days in a month t traded. In addition, the impact of outliers adjusts as the study takes the log returns and gets liquidity from the illiquidity factor by multiplying it by a negative one (Karolyi et al., 2012). The study further adjusts outliers by dropping 1% of stocks from the bottom and top. The study reached the market-wide liquidity measurement by averaging the daily liquidity monthly.

The study used the Busse (1999) methodology to calculate market volatility.

$$VOL_{m,t} = [\sum_{i=1}^{n_t}(R_{mt} - \bar{R}_{m,t})^2]^{1/2} \quad (3)$$

Here, R_{mt} is the daily market return and $\bar{R}_{m,t}$ is the monthly time series mean. Here we need to find the correlation between the above measure of volatility and the monthly returns of the market under the specified period of study. Based on previous empirical and theoretical findings, studying how fund managers react to market volatility changes is interesting. Busse (1999) tested the factors that significantly impact fund volatility to measure the correlation between factor-beta and volatility. Table 3 shows the correlation index, which shows that the values of independent factor variables are unrelated in the form of correlation measures since they fall below 0.29, indicating a small degree of collinearity. There is a moderately high (negative) correlation between liquidity and volatility. In comparison, the regression does not suffer from multi-collinearity. Because there is less than 10.0 VIF for each independent factor, there is no multi-collinearity problem.

Table 3: Correlations

Factors	MKT	SMB	HML	MOM	VOL	LIQ	VIF
MKT	1.000						1.011
SMB	-0.010	1.000					1.049
HML	0.067	-0.010	1.000				1.364
MOM	-0.024	0.130	-0.494	1.000			1.356
VOL	-0.066	-0.142	-0.122	0.035	1.000		1.076
LIQ	0.067	0.111	0.109	0.013	-0.208	1.000	1.068

5. Analytical Framework

A manager's timing ability refers to adjusting their investments to take advantage of future market conditions to increase returns. The choice of the benchmark can affect performance tests, according to (Grinblatt & Titman, 1989). According to Goetzmann, Ingersoll, and Ivković (2000), the Fama-French model is less biased regarding timing. Several studies have indicated that multifactor models better capture the returns generated by mutual funds than single-factor models (Elton & Gruber, 2020). This study examines the timing skills of both Islamic and conventional fund managers by using Carhart (1997) model as the benchmark.

$$R_{i,t} = \alpha_{i,t} + \beta_{1,t}MKT_t + \beta_{2,t}SMB_t + \beta_{3,t}HML_t + \beta_{4,t}MOM_t + \mathcal{E}_{i,t} \quad (4)$$

The excess return of the fund' i' at the time of t month above the risk-free rate r_f is $R_{i,t}$. The risk-free rate is the 90 days' T-bills from the State Bank of Pakistan converted into monthly. $\propto_{pt}$ represents **t**he abnormal return at time t of fund i. β_{jt} is the sensitivity of the factors. The factors adjust with risk-free rates. MKT_t. SMB_t, HML_t, and MOM_t, respectively, represent Carhart's factors and $\mathcal{E}_{i,t}$ is representing the error term at the time t.

6. Market Timing (MT) Model

As a measure of the MT of Islamic and conventional equity funds, this study uses the two most commonly used financial literature to assess the market timing skills, the TM (Treynor & Mazuy, 1966) model and the HM (Henriksson & Merton, 1981) model.

$$R_{i,t} = \alpha_{i,t} + \beta_{1,t}MKT_t + \gamma_{i,t}{MKT_t}^2 + \beta_{2,t}SMB_t + \beta_{3,t}HML_t + \beta_{4,t}MOM_t + \mathcal{E}_{i,t} \quad (5)$$
$$R_{i,t} = \alpha_{i,t} + \beta_{1,t}MKT_t + \gamma_{i,t}\max(MKT_t, 0) + \beta_{2,t}SMB_t + \beta_{3,t}HML_t + \beta_{4,t}MOM_t + \mathcal{E}_{i,t} \quad (6)$$

$\alpha_{i,t}$ is the market timing ability measure of the mutual funds and $\gamma_{i,t}$ is the selectivity timing of the funds' i'. $R_{i,t}$ and MKT_t is the excess return of the fund 'i' and the market at the time of t month over the risk-free rate r_f. The size, value, and momentum of the time series are denoted by SMB_t, HML_t, and MOM_t, respectively. For the timing term ${MKT_t}^2$ uses the quadratic Equation. In TM and HM measures, ${MKT_t}^2$ in the timing term is the quadratic Equation, and $\gamma_{i,t}$= 1 when market returns will be positive or $\gamma_{i,t}$= 0 elsewhere. It implies that fund managers can adjust portfolio exposures ahead of market advances or declines when there $\gamma_{i,t}$ is positive. The error term is represented by $\mathcal{E}_{i,t}$.

4.1. Liquidity Timing (LT) Models

The liquidity timing of a fund is correlated with demeaned market liquidity and has a time-varying exposure to market risk (Cao, Simin, & Wang, 2013). The study selects the most suitable regression to assess liquidity timing abilities. As a result, liquidity timing is as follows:

$$R_{i,t} = \alpha_i + \beta_{i,t-1}\ MKT_t\beta_{i,2}\ SMB_t + \beta_{i,3}\ HML_t + \beta_{i,4}\ MOM_t + \lambda_{m,t}\ L_{m,t} + \varepsilon_{i,t} \quad (7)$$
$$R_{i,t} = \alpha_i + \beta_{i,t-1}\ MKT_t + \gamma_i MKT_t\ (L_{m,t} - \overline{L_m}) + \beta_{i,2}\ SMB_t + \beta_{i,3}\ HML_t + \beta_{i,4}\ MOM_t + \varepsilon_{i,t} \quad (8)$$

$L_{m,t}$ is Liquidity measure in time t proposed by Karolyi et al. (2012) and $\overline{L_m}$ is the time series average of the market liquidity measure over the sample period. $\lambda_{m,t}$ the liquidity timing coefficient represents the manager's liquidity timing ability if it is positive and vice versa.

4.2. Volatility Timing (VT) Model

Market volatility projections focus on volatility timing, whereas market liquidity estimates focus on liquidity timing. Both timing models are based on (Treynor & Mazuy, 1966) groundbreaking work. Busse (1999) volatility timing model emphasizes that market exposure is directly related to demeaned volatility of the market. To assess volatility-timing abilities, we use the following regression:

$$R_{i,t} = \alpha_{i,t} + \beta_{1,t}\ MKT_t + + \beta_{2,t}\ SMB_t + \beta_{3,t}\ HML_t + \beta_{4,t}\ MOM_t + \delta_{m,t}\ V_{m,t} + \varepsilon_{i,t} \quad (9)$$
$$R_{i,t} = \alpha_{i,t} + \beta_{1,t}\ MKT_t + \beta_{2,t}\ SMB_t + \beta_{3,t}\ HML_t + \beta_{4,t}\ MOM_t + \delta_{m,t}MKT_t\ (V_{m,t} - \overline{V_m}) + \varepsilon_{i,t} \quad (10)$$

$\delta_{m,t}$ is the skill measurement of market volatility timing skill. $V_{m,t}$ measures the market volatility in month t and $\overline{V_m}$ measures the average market volatility for the whole period. $V_{m,t}$- $\overline{V_m}$ it is the inference of removal of forecaster noise. The negative and significant statistically show the volatility timing abilities existence of fund managers, which suggests that fund managers can adjust fund exposure to increase or decrease market volatility decrease (increase).

4.3. Empirical Results and Discussion

This section presents the empirical analysis by looking at the TA of CF and SCF managers. The study constructed portfolios of equity funds with varying sizes and styles using a time series and equal-weighted average monthly return methodology. This study compares the results with

those of Carhart (1997) as the benchmark. This study assesses liquidity timing, volatility timing, and returns timing abilities on the augments of the base model to various timing models.

4.4. Return Timing

The first step is regressing Equations 5 and 6, discussed in the market timing section on fund managers. Table 4 shows the coefficient measures of market return timing for equity, asset allocation, and balanced funds for CF and SCF, respectively, and all equity samples.

In Table. 4(a), SCF and CF managers are compared concerning their ability to time returns using Treynor and Mazuy (1966) models. Market timing ability can be measured by a positive and significant $\gamma_{i,t}$ coefficient. According to the TM model, the return timing coefficient $\gamma_{i,t}$ all equity funds are negative and insignificant for both SCF and CF. These results align with the results of Mansor et al. (2020), who investigate Malaysian SCF and CF's selectivity and market timing abilities.

Table 4(a): Treynor and Mazuy model

Factors	Conventional Equity	Asset Allocation	Balance	ALL	Islamic Equity	Asset Allocation	Balance	ALL
MKT	.122***	.033*	.069***	.075***	.088***	.088***	.089*	.091***
	(.035)	(.017)	(.025)	(.025)	(.029)	(.028)	(.046)	(.029)
SMB	.422	.129	.234	.262	.303	.218	.358	.28
	(.329)	(.159)	(.236)	(.236)	(.273)	(.262)	(.511)	(.273)
HML	.31	.127	.191	.209	.302	.28	.256	.29
	(.274)	(.132)	(.197)	(.196)	(.228)	(.219)	(.364)	(.227)
MOM	-.306	-.191*	-.283*	-.26	-.314	-.336*	-.536	-.347*
	(.238)	(.115)	(.17)	(.17)	(.198)	(.19)	(.373)	(.197)
$\gamma_{i,t}$	-.056	-.06	-.089	-.068	-.116	-.114	-.146	-.119
	(.163)	(.079)	(.117)	(.117)	(.136)	(.13)	(.199)	(.135)
$\alpha_{i,t}$	.002	.002	.005	.003	.004	.005	.005	.005
	(.006)	(.003)	(.005)	(.005)	(.005)	(.005)	(.011)	(.005)
R^2	.123	.078	.103	.109	.123	.129	.129	.129

From January 2010 through June 2022, this Table provides equal-weighted portfolio returns for equity, asset allocation, and balanced funds for Islamic and conventional funds. The value of $\gamma_{i,t}$ Indicates the market timing coefficient. MKT, SMB, HML, and MOM Standard errors in parentheses*** p<.01, ** p<.05, * p<.1

However, the HM model in Table 4(b) provides weak evidence of return timing because mid-cap funds have significant and positive timing coefficients. These results also align with (Hasnaoui & Fatnassi, 2021), who investigated Saudi funds and found selectivity but no market timing abilities of SCF fund managers. There is a high proportion of negative and nonsignificant timing coefficients among the sample of funds of traditional and Islamic with different investment objectives. Overall, there is no evidence of the market timing abilities of SCF and CF managers, which aligns with (Alam & Ansari, 2020; Ashraf, 2013; Cagnazzo, 2022) reporting market timing incompetence among fund managers. But our result does not align with the results of Mohammad and Ashraf (2015), who find the market timing abilities among SCF managers.

Table 4(b): Henriksson and Merton Model

Factors	Conventional Equity	Asset Allocation	Balance	ALL	Equity	Asset Allocation	Islamic Balance	ALL
MKT	.114*	.046	.077	.079	.11*	.106**	.144	.113**
	(.067)	(.033)	(.048)	(.048)	(.056)	(.054)	(.087)	(.056)
SMB	.43	.127	.238	.265	.302	.219	.335	.279
	(.33)	(.16)	(.237)	(.236)	(.275)	(.263)	(.509)	(.274)
HML	.313	.128	.193	.211	.303	.282	.247	.291
	(.274)	(.133)	(.197)	(.197)	(.228)	(.219)	(.365)	(.228)
MOM	-.308	-.192*	-.285*	-.262	-.317	-.339*	-.541	-.349*
	(.238)	(.115)	(.171)	(.17)	(.198)	(.19)	(.373)	(.198)
$\gamma_{i,t}$	.014	-.026	-.017	-.01	-.045	-.039	-.113	-.047
	(.112)	(.054)	(.081)	(.08)	(.093)	(.09)	(.146)	(.093)
$\alpha_{i,t}$	.001	.003	.004	.003	.004	.005	.008	.005
	(.008)	(.004)	(.006)	(.006)	(.007)	(.007)	(.013)	(.007)
R^2	.122	.076	.099	.106	.119	.126	.13	.126

From January 2010 through June 2022, this Table provides equal-weighted portfolio returns for equity, asset allocation, and balanced funds for Islamic and conventional funds. The value of $\gamma_{i,t}$ Indicates the market timing coefficient. MKT,

SMB, HML, and MOM are the market, size, value, and momentum factors. Standard errors are in parentheses*** p<.01, ** p<.05, * p<.1

5.2. Liquidity Timing

The study tested whether fund managers possessed liquidity timing ability using Equation (6). According to Karolyi et al. (2012), Table 5 provides regression estimates of liquidity timing. Table.5 shows that at a 5% significance level, all conventional equity fund portfolios exhibit positive and significant liquidity coefficients at the 5% level, and all Islamic equity funds show positive and considerable timing coefficients at the 10% level. When market average liquidity exceeds one SD monthly, the timing coefficient for all conventional funds is 1.536, calculated by a 0.0074 (1.536 × 0.0048) change in beta that is 9.9% of the market beta when joint liquidity is at its mean level. For SCF, it is 0.0079(1.645*0.0048), which is 8.67% of the market beta when expected liquidity is at its mean level.

The outcomes of liquidity timing fund-wise are positive and statistically significant at 5% for all conventional funds except asset allocation, which is positively significant at the 10% level. For SCF, results indicated that all liquidity timing coefficients for funds with different investment styles are positively significant at a 5% level except for asset allocation of both CF and SCF, which is positively significant at 10%. There is a substantial difference between equity and balanced fund portfolios, corresponding to coefficient values of 2.195 and 1.535 for conventional funds—the Islamic equity and balanced funds coefficient of liquidity are 1.898 and 15.54, respectively. The results of this study are identical to the study of Foran and O'Sullivan (2017), who investigated UK mutual fund liquidity timings, (Cao et al., 2013) investigated US funds liquidity; (J.-H. Li et al., 2020), who investigated Chinese funds; and the study of (Alam & Ansari, 2020), who examined the liquidity timing abilities of Indian mutual funds.

Table 5: Liquidity Timing (Karolyi)

	Conventional				**Islamic**			
Factors	**Equity**	**Asset Allocation**	**Balance**	**ALL**	**Equity**	**Asset Allocation**	**Balance**	**ALL**
MKT	.116***	.03*	.065***	.07***	.083***	.083***	.08*	.086***
	(.034)	(.017)	(.025)	(.025)	(.029)	(.028)	(.044)	(.029)
SMB	.354	.104	.191	.216	.249	.181	.16	.235
	(.325)	(.158)	(.234)	(.233)	(.271)	(.262)	(.497)	(.271)
HML	.24	.101	.144	.162	.244	.238	.138	.241
	(.272)	(.132)	(.195)	(.195)	(.226)	(.219)	(.355)	(.227)
MOM	-.339	-.205*	-.307*	-.284*	-.345*	-.359*	-.538	-.374*
	(.234)	(.114)	(.169)	(.168)	(.195)	(.189)	(.36)	(.196)
$\lambda_{m,t}$	2.195**	.878*	1.535**	1.536**	1.898**	1.417*	15.409**	1.645*
	(1.02)	(.497)	(.734)	(.732)	(.849)	(.821)	(6.432)	(.851)
$\alpha_{i,t}$	.01	.005	.009*	.008	.009	.008	.029*	.009
	(.007)	(.003)	(.005)	(.005)	(.006)	(.005)	(.015)	(.006)
R^2	.149	.094	.126	.133	.148	.142	.19	.147

*From January 2010 through June 2022, this Table provides equal-weighted portfolio returns for equity, asset allocation, and balanced funds for Islamic and conventional funds. The value of $\lambda_{m,t}$ Indicates the liquidity timing coefficient. MKT, SMB, HML, and MOM are the market, size, value, and momentum factors. Standard errors are in parentheses*** p<.01, ** p<.05, * p<.1*

On the other hand, all the coefficients of liquidity timing for Islamic funds are positively significant at 5%, but asset allocation is substantial at 10%. This study calculated Islamic equity and balance fund coefficients of liquidity timing at 1.898 and 15.409 with t-statistics at 2.23 and 2.40, respectively. These results evidence the liquidity timing abilities of both SCF and CF in the Pakistani fund industry. This result aligns with the study of (Alam & Ansari, 2020), who examined the liquidity timing abilities of Indian mutual funds. With young age, fewer investment opportunities, and smaller size, SCF showed good liquidity timing abilities of fund managers, which showed the skill fund managers are present in Islamic funds and can create returns like conventional funds and save investments from losses of their investors.

Since liquidity is an elusive concept, we use Karolyi et al. (2012) and Amihud (2002) measures to regress the liquidity timing. As Amihud (2002) measures market illiquidity, we multiply it by -1 in Eq. to change it to market liquidity. As a result, a positively significant coefficient indicates a manager's timing ability instead of illiquidity as a factor. Using Amihud (2002) measure of liquidity, this is the robustness of liquidity timing. A positive and significant correlation exists between all equity funds portfolios using a t-statistic of 3.39 (in parenthesis). There is a significant positive liquidity timing difference between funds with different sizes and styles at the 1% level. These results are similar to those of Foran and O'Sullivan (2017) and (Alam & Ansari, 2020). However, there is no evidence of liquidity timing in large-cap or sectoral

funds. Regardless of the alternate liquidity measure, the regression results support liquidity timing.

Table. 6 Liquidity Timing (Amihud)

	Conventional				Islamic			
Factors	Equity	Asset Allocation	Balance	ALL	Equity	Asset Allocation	Balance	ALL
MKT	.116***	.03*	.065***	.07***	.083***	.083***	.08*	.086***
	(.034)	(.017)	(.025)	(.025)	(.029)	(.028)	(.044)	(.029)
SMB	.354	.104	.191	.216	.249	.181	.16	.235
	(.325)	(.158)	(.234)	(.233)	(.271)	(.262)	(.497)	(.271)
HML	.24	.101	.144	.162	.244	.238	.138	.241
	(.272)	(.132)	(.195)	(.195)	(.226)	(.219)	(.355)	(.227)
MOM	-.339	-.205*	-.307*	-.284*	-.345*	-.359*	-.538	-.374*
	(.234)	(.114)	(.169)	(.168)	(.195)	(.189)	(.36)	(.196)
$\lambda_{m,t}$	.953**	.381*	.667**	.667**	.824**	.615*	6.692**	.715*
	(.443)	(.216)	(.319)	(.318)	(.369)	(.356)	(2.793)	(.37)
$\alpha_{i,t}$	.01	.005	.009*	.008	.009	.008	.029*	.009
	(.007)	(.003)	(.005)	(.005)	(.006)	(.005)	(.015)	(.006)
R^2	.149	.094	.126	.133	.148	.142	.19	.147

From January 2010 through June 2022, this Table provides equal-weighted portfolio returns for equity, asset allocation, and balanced funds for Islamic and conventional funds. The value of $\lambda_{m,t}$ Indicates the liquidity timing coefficient. MKT, SMB, HML, and MOM are the market, size, value, and momentum factors. Standard errors are in parentheses*** p<.01, ** p<.05, * p<.1

5.3. Volatility Timing

This study estimated the volatility timing abilities of both SCF and CF managers using Equation (8). Table 7 displays the results for volatility timing regression on SCF and CF for equity fund portfolios with various sizes and styles. A negative statistically significant coefficient indicates the timing ability of volatility, indicating that fund managers will down(up) fund exposure according to the rise(fall) of market volatility. The volatility timing coefficients $\delta_{m,t}$is negative and significant for the entire sample for both SCF and CF. These results are in line with the results of Busse (1999). SCF represents strong volatility timing compared to CF. As Busse (1999) reports, fund managers adjust portfolio exposure to the market in response to market volatility changes, consistent with the negative significance coefficient findings. Similarly, the study's result is also in line with (Mirza et al., 2022), who find volatility timing in various Islamic countries during a particular event of Covid-19. This study found that volatility timing significantly differs among funds with different objective categories, including equity, asset allocation, and balance funds for both classes. Earlier studies have found negative correlations between market volatility and liquidity (Pástor & Stambaugh, 2003). There is strong significance at a 1% level of significance for the negative significant volatility timing, which is in the same line as Busse (1999); fund managers have abilities to adjust fund exposures to the market following changes in volatility despite the positively significant coefficient findings.

Table 7: Volatility Timing (Busse. 1999)

Factors	Conventional Equity	Asset Allocation	Balance	All	Islamic Equity	Asset Allocation	Balance	All
MKT	.112***	.028*	.063***	.068***	.08***	.08***	.078*	.083***
	(.033)	(.016)	(.024)	(.024)	(.028)	(.026)	(.043)	(.027)
SMB	.231	.036	.126	.131	.166	.084	.084	.14
	(.311)	(.15)	(.229)	(.224)	(.263)	(.252)	(.488)	(.262)
HML	.188	.068	.121	.126	.214	.194	.185	.2
	(.258)	(.125)	(.19)	(.186)	(.218)	(.209)	(.343)	(.217)
MOM	-.315	-.197*	-.29*	-.267*	-.323*	-.345*	-.464	-.356*
	(.223)	(.108)	(.164)	(.161)	(.188)	(.18)	(.353)	(.188)
$\lambda_{m,t}$	-1.1***	-.545***	-.646***	-.764***	-.822***	-.806***	-1.037***	-.837***
	(.248)	(.12)	(.183)	(.179)	(.21)	(.201)	(.344)	(.209)
$\alpha_{i,t}$	.048***	.024***	.031***	.034***	.037***	.037***	.048***	.038***
	(.012)	(.006)	(.009)	(.009)	(.01)	(.01)	(.018)	(.01)
R^2	.227	.191	.171	.207	.203	.212	.225	.212

From January 2010 through June 2022, this Table provides equal-weighted portfolio returns for equity, asset allocation, and balanced funds for Islamic and conventional funds. The value of $\lambda_{m,t}$ Indicates the liquidity timing coefficient. MKT, SMB, HML, and MOM are the market, size, value, and momentum factors. Standard errors are in parentheses***

p<.01, ** p<.05, * p<.1 Standard error are in parentheses *** p<.01, ** p<.05, * p<.1

6. Conclusion

This study examines fund managers' timing abilities from liquidity and volatility and compares Islamic and conventional mutual funds these timing abilities. Based on the authors' knowledge, this study is the first to analyze Islamic fund managers' comprehensive timing capabilities compared to their traditional counterparts, which include return timing, liquidity timing, and volatility timing. Regarding liquidity timing ability, there are no significant differences between Islamic and conventional funds managed by Pakistani fund managers. This result is surprising, as Islamic fund managers have fewer investment opportunities, small in size and age. During the study period, the liquidity timing ability in the Islamic market was significant and positive. There appears to be substantial volatility and liquidity timing but weak return timing in Islamic equity funds compared to conventional funds. Besides measuring the timing ability of the fund managers at the aggregate level, we also measure it at the level of individual funds. These results confirmed except for the asset allocation fund categories.

According to our study findings, most fund categories indicate liquidity and volatility timing ability, as evidenced by portfolios and individual fund managers. The results do not support the assertion that fund managers' time market returns well. We can use the findings better to understand fund managers' decision-making process regarding asset allocation. Moreover, Islamic funds actively managed by professionals may help investors hedge their liquidity risks during periods of turbulence. However, fund managers cannot consistently beat the market, so general conclusions cannot be drawn. More fund categories, data, and methodology may give different and consistent results in other countries. It is essential to investigate, especially liquidity timing abilities among Islamic fund managers and their comparison with conventional fund managers' timing abilities. Finally, the evidence shows that market liquidity is essential to asset allocation decisions. Liquidity measurement is complex, and various methods exist to determine liquidity risk. Thus, alternative measures may result in different results.

The findings of this research will also assist in formulating policies regarding the market and its operations, which may be helpful to policymakers. It is also one of the main aims of the government plan to further develop the public sector. This development will also increase competition between various funds due to the growth of this sector. Hence, this will allow fund managers to assess a fund's timing behavior under varying economic conditions so that they can adjust their funds accordingly. Regulatory agencies can monitor mutual fund performance and take appropriate measures. Future investors interested in this industry will better understand its characteristics.

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