The better timer of Volatility and Style: Shariah-Compliant Mutual Funds or Conventional Mutual Funds

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Abstract

The active fund managers use market inefficiencies aiming to give maximum returns and minimal risks by practicing their timing abilities. Therefore, this study analyzes the timing abilities of Shariah-compliant funds by making a comparative analysis with conventional funds. Using Shariah-compliant equity funds and conventional equity funds of Pakistan, for the period 2012 to 2020, this study investigates the volatility timing abilities and style timing abilities of mutual funds. The literature does not cover any study investigating volatility timing ability for Shariah-compliant funds. Additionally, this research study examines the style timing ability for Shariah-compliant funds widely neglected for Shariah-compliant funds. Furthermore, these timing skills are not analyzed using daily return data of Shariah-compliant funds. The results conclude that conventional funds are a better timer of market volatility. However, style timing abilities are not evident for both types of funds confirming that fund managers lack the ability to time investment style. This study suggests that the fund managers incorporate the timing abilities to reduce the risk faced by the funds and therefore, can enhance the growth of the funds.

Keywords: Style timing; Volatility Timing; Shariah-compliant funds; Equity funds; Pakistan

1. Introduction

Socially responsible funds, commonly known as 'Ethical funds', are bound to invest in companies adhering to social, environmental and ethical beliefs (Kalev & Wallace, 2012). Hence, it is a mode of investment that streamlines the investors' financial goals with their preference towards a protected environmental, social and economic justice.

The investment decisions of these funds can be classified as primary and secondary objectives. Investing in funds leading to positively affecting the

environmental, social, and economic values is the primary objective of these investors and hence, profit-maximization comes at the second place. A special category of socially responsible funds is Religious funds or 'Shariah-compliant funds'. These are different from other socially responsible funds in the sense that they focus on 'negative screening strategy', forbidding funds from investing in 'Sin' stocks. For example, Islamic mutual funds are based on Islamic Shariah principles. The basic principles of Islamic doctrine state that the return earned from any investment should be justified against the inherent risk in addition to restricting investment in non-Shariah compliant activities, e.g. prohibition of Ribah (Interest), Gharar (Uncertainty), and Maysir (Gambling) (Shanmugam & Zahari, 2009).

In today's environment, non-interest revenues are hard to measure due to the complexities of financial markets, hence, leaving very few investment avenues for Shariah-compliant funds. This is a big challenge for Shariah-compliant funds to select the stocks that align their interests of satisfying their religious values and profit-making simultaneously. Keeping in view these issues, the Shariah scholars devise relaxing and balanced Islamic investment guidelines, named Shariah-compliant equity investment guidelines (Derigs & Marzban, 2008).

The increasing number of Shariah-compliant funds grabs the attention of researchers. The debate whether religious investors suffer some 'price', i.e. lower financial returns, of investing in Shariah-compliant funds in comparison to conventional funds come up with mixed results (Omri et al. 2018; Hayat & Kraeussl 2011).

However, volatility timing ability is not analyzed by many researchers. Researchers claim that predicting future market returns is difficult. However, as volatility remains to persist over a period of time, thus, volatility of future market returns is anticipated (Busse, 1999). Bollerslev et al. (1992) argue that volatility can be forecasted using empirical research work. Therefore, after 1990's, the researchers started exploring this new paradigm, i.e. anticipating volatility of the market termed as volatility timing. Researchers confirm the presence of volatility timing among fund managers (Busse, 1999; Holmes & Faff, 2004; Marquering & Verbeek, 2004). Within a sample of 221 hedge funds covering the time period of 1994-2005, Chen and Liang (2007) found timing volatility skill? Out of 2,780 mutual funds ranging from 1970-2010, Bodson et al. (2013) found that 13% of the sample funds possesses volatility timing ability. Few researchers (Busse, 1999; Marquering & Verbeek, 2004; Bodson et al. 2013) analyzed the volatility timing ability for conventional mutual funds but the literature is silent for Shariah-compliant funds.

Due to easy access to data, most of these studies targeted the developed counties (Busse, 1999; Chen & Liang, 2007; Bodson et al. 2013). Kiymaz and Simsek (2017) argue that the varying market characteristics, like market integrity, market liquidity, size, information symmetry and government regulations make emerging markets different from developed markets. Therefore, the application of statistical models to developed countries might bring different results when applied to emerging economies. This is the motive behind this article to investigate volatility timing for the mutual fund industry of Pakistan, an emerging market (Jayo & Lefen, 2019). As far as Pakistani mutual funds industry is concerned, few studies analyzing the volatility timing ability (Maroof & Javid 2016; Maroof et al. 2019) exist in the literature. However, these studies do not segregate the mutual funds into categories based on investment objectives. Hence, the literature fails to identify the funds with better volatility timing abilities. This paper fills the gap by investigating which type of funds can reduce their market exposure in anticipation of a high volatile market. This study is making a comparative analysis of conventional funds and Shariah-compliant funds of the Pakistan mutual fund industry over the period of 2012 to 2020.

The active management approach demands a manager to closely monitor the stocks, thereby, motivating an investor to choose a particular mutual fund. Hence for close monitoring, the fund manager needs to focus on particular market segments leading to the selection of a particular management style. This ability of fund managers to choose the best investment style will lead to high performance and is termed as style timing ability (Ferruz et al. 2012). The literature extensively covers the timing abilities of fund managers, however; few researchers investigate the timing abilities of fund managers concerning the investment styles. The active management approach demands a manger to closely monitor the stocks, thereby, motivating an investor to choose a particular mutual fund. Hence for close monitoring, the fund manager needs to focus on particular market segments leading to the selection of a particular management style.

Therefore, in addition to volatility timing ability, this study also analyzes the style timing abilities of the fund managers. There is scarce literature available regarding the style timing abilities (Swinkles & Tjoe, 2007; Muñoz et al., 2015; Yi & He, 2016). Many researchers confirmed that timing abilities are more strongly evident when high-frequency data is used (Busse, 1999; Tschanz, 2010), therefore, this study uses daily returns data for the analysis. To the best of the author's knowledge, no study is yet found which analyzed the style demining ability of Shariah-compliant equity funds using daily returns. This study is the first one which aims to conduct a comparative analysis to analyze the timing ability for Shariah-compliant equity funds and conventional equity funds using daily returns data.

The rest of the paper is structured as follows: Section II covers the literature review followed by section III covering the data and the methodology used for empirical analysis. The results of the study are discussed in Section IV followed by Section V summing up the conclusions, limitations, future research areas, and policy implications.

2. Literature Review:

This section covers the different studies regarding the timing abilities of conventional funds and Shariah-compliant funds. Omri et al. (2018) argued that Islamic funds outperformed their counterparts attributable to reduced market risk, low cash influx, low volatility and investors' loyalty to their funds. Naqvi et al. (2018) argued that Sharia-compliant funds were not different from the conventional funds. However, Hayat and Kraeussl (2011) claimed that Islamic funds underperformed conventional funds. They claimed that poor management, timing abilities, i.e. selectivity timing and market timing, were the main reasons behind the underperformance of the funds. Their result is also supplemented by Ferruz et al. (2012) who found negative selectivity timing and market timing for religious funds. Ferson and Mo (2016) claimed that the investment performance of portfolio managers was dependent on market timing, volatility timing as well as security selection. Liao et al. (2017) argued that timing measures were vital for investment-related decision-making processes, thus boosting investors' confidence. In this context, selectivity timing and market timing remain the focus of many researchers who find mixed results regarding these timing abilities.

As far as volatility timing abilities for mutual funds are concerned, Busse (1999) was the pioneer in confirming the presence of timing volatility among US mutual funds. Maroof and Javid (2016) confirmed the existence of volatility timing ability for the Pakistan mutual fund industry for a sample ranging from 2007-2014. Further, Maroof et al. (2019) confirmed the existence of volatility timing ability for bearmarket states only. However, these studies do not make a comparison of investigating the volatility timing abilities for conventional and Shariah-compliant funds.

Regarding style-timing abilities, Chen et al. (2002) found no evidence of style timing towards size and book-to-market. Analyzing the style timing abilities towards size, book-to-market, and momentum, Swinkels & Tjong-a-Tjoe (2007) concluded ambiguous results towards book-to-market and momentum timing and no evidence of timing towards the size factor. Yi and He (2016) found no style timing abilities for a dataset of 330 actively managed Chinese funds. They used daily returns for the period ranging from 2002- 2013.

Investigating volatility timing ability for UK funds, Foran and O'Sullivan (2017) reported that only 6% of funds possessed volatility timing abilities. However, these studies considered the conventional funds only. Analyzing the monthly data over 2000-2012, Leite and Cortez (2015) found little evidence of style timing abilities while conducting a comparative analysis of French sociallyresponsible investment funds and conventional mutual funds. To the best of our knowledge, the literature provides one study which analyzed the style timing abilities of religious mutual funds (Ferruz et al., 2012). In a comparative study of UK, religious equity funds and their conventional funds, Ferruz et al. (2012) did not find any significant evidence of style timing ability. However, they used monthly data for their sample. Maroof et al. (2019) did not report the presence of style timing abilities among mutual funds of Pakistan during the bull and bear market. However, the study did not take into account the Shariah-compliant funds.

3. Data and Methodology:

In 1962, Pakistan opened doors for mutual funds when National Investment Trust (NIT) was set up. Al-Meezan Investments, the pioneer Sharia-compliant asset Management Company introduced the first close-ended fund, Al-Meezan Mutual fund much later in 1995. In 2003, the first open-end Sharia-compliant fund was introduced by the same AMC with the name of Al-Meezan Islamic fund. Afterwards, a rapid increase in the growth of Islamic mutual funds was recorded. There are 207 open-ended mutual funds operating in Pakistan by 2019, comprising 31 equity funds and 25 Shariah-compliant equity funds. Total Net Assets of equity funds and Shariah-compliant equity funds increased to Rs.117 billion and Rs.50 billion by 2019¹. These statistics show rapid increase in the growth of Sharia-compliant equity funds (see Appendix I).

For this study, funds with objective Shariah-compliant equity and equity funds are extracted. This leaves with 8 Shariah-compliant equity funds and 18 conventional equity funds for the period ranging from 1st January 2012 to 31st January 2020. The funds are selected from the same period as the funds experience the same macro-economic time-series trend (Bollen, 2007). This sample period is selected as Karachi stock exchange (now Pakistan stock exchange) was declared as the best emerging market in the financial period 2011-12 (Sohail & Javid, 2014). Additionally, 14 equity funds of Pakistan were included in the world's top 100 best performing funds in 2012². The Net Asset value data is taken from the Mutual funds Association of Pakistan (MUFAP) official website and daily returns for the sample funds are then calculated. The market benchmark, PSX-100 index, data is taken from the Pakistan stock exchange.

¹ www.mufap.com.pk

² https://mufap.com.pk/pdf/pressreleases/topequityfunds2012.pdf

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Volatility timing ability for the first time was investigated by Busse (1999) for a sample of 230 funds for the period 1985-1995. Defining market beta as a linear function of variation between market volatility and its mean, Busse (1999) found the evidence for the counter-cyclical volatility timing ability, indicative of decreasing fund beta in anticipation of a rise in the volatility of the market and vice versa. Taking into account the linear function of market beta, he proposed an extension of the CAPM single index model, given as follows:

$$R_{pt}-R_{ft}=\alpha_p+\beta_{1p}(R_{mt}-R_{ft})+\gamma_p(\sigma_{mt}-\overline{\sigma}_{mt})(R_{mt}-R_{ft})+\varepsilon_{pt} \ \ (1)$$

 $R_{\text{p,t}}$ in the above model is representing the fund return R_{p} at period t, $R_{\text{f,t}}$ the risk-free rate at period t, $R_{\text{m,t}}$ is the market return at period t. The market volatility behavior can be captured by the linearity function of the variation between market volatility and mean. σ_{mt} and $\bar{\sigma}_{\text{mt}}$ measures the market volatility and the average period volatility during period 't' simultaneously. The coefficient γ_{p} measures the volatility timing ability, represented by a negative sign. The negative sign affirms the presence of volatility timing ability by confirming that in periods of high volatility, portfolio returns should act contrary to the market.

To select the best fitted autoregressive model, the study opts for different ARCH models³ and the Schwarz criterion (SBC) criteria finds EGARCH (1, 1) model as the most-suited model. Busse (1992) also employs EGARCH for measuring volatility timing ability. The model thus takes the following form:

$$R_{pt} - R_{ft} = \alpha_p + \beta_{1p}(R_{mt} - R_{ft}) + \beta_{2p}SMB_t + \beta_{3p}HML_t + \beta_{4p}MOM_t + \gamma_p(\sigma_{mt} - \overline{\sigma}_{mt}) + \varepsilon_{pt}$$

$$\log(h_t) = \gamma_0 + \theta\log(h_{t-1}) + u \left| \frac{\varepsilon_{t-1}}{\sqrt{h_{t-1}}} \right| + \gamma_i \frac{\varepsilon_{t-1}}{\sqrt{h_{t-1}}}$$
(1a)

Hence, successful market volatility timing is measured by γ_i < 0 in the above equation. The study uses Busse (1991) model to measure the volatility timing ability of mutual funds.

3.1 Style Timing Model

For measuring style timing abilities, the study uses the Lu (2009) model, an extension of the Carhart (1997) model, and Treynor & Mazuy (1966) timing model. Lu (2009) shows that the basic assumption of Treynor and Mazuy (1966) is a private signal, providing him information regarding future market returns and an independent noise term received by manger (yt), hence, given by:

$$Y_t = R_{m,t+1} + \eta_t \tag{2}$$

The above Treynor and Mazuy (1996) model can be explained on the basis of CAPM incorporating dynamic beta.

where
$$R_{p,t+1} - R_{ft} = \alpha_p + \widehat{\beta_p} R_{m,t+1} + \varepsilon_{p,t+1}$$
 (3)
$$\widehat{\beta_p} = \beta_p + \gamma_p (R_{m,t+1} + \eta_{t+1})$$
 (4)

^{3 [1]} GARCH (1,1), EGARCH (1,1) and EGARCH (2,2), Threshold GARCH (TGARCH), Asymmetric Power GARCH (APGARCH)

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Hence, a style timing model can be arrived at, derived from the Carhart-four factor (1997) model with dynamic betas, expressed as:

$$R_{pt} = \alpha_{pt} + \hat{\beta}_{1t}RMRF_t + \hat{\beta}_{2t}SMB_t + \hat{\beta}_{3t}HML_t + \hat{\beta}_{4t}MOM_t + \varepsilon_{pt}$$
(5)

Where:
$$\widehat{\beta_{1T}} = \beta_{1T} + \gamma_{\beta 1T} (RMRF_t + \eta_{\beta 1T,t})$$
 (6)

$$\widehat{\beta_{2T}} = \beta_{2T} + \gamma_{\beta 2T} \left(SMB_t + \eta_{\beta 2T,t} \right) \tag{7}$$

$$\widehat{\beta_{3T}} = \beta_{3T} + \gamma_{\beta 3T} (HML_t + \eta_{\beta 3T.t})$$
 (8)

$$\widehat{\beta_{4T}} = \beta_{4T} + \gamma_{\beta 4T} (MOM + \eta_{\beta 4T,t})$$
 (9)

The above equations (6-9) measured the change in a manager's responsiveness to a particular investment style. A manager capable of timing a particular investment style will increase his exposure to that particular style as the timing signal gives him the information about a particular investment style that leads to the best performance.

Substituting equation (5) into equation (4) and adding the noise term ' η ' in error term, we get equation (3), the Treynor and Mazuy (1966) model.

Also following Munoz (2015), incorporating the private signal into the Carhart model (1997) will lead to explore style timing abilities. The model thus takes the following form:

$$R_{pt} - R_{ft} = \alpha_p + \beta_1 (R_{mt} - R_{ft}) + \beta_2 SMB_2 + \beta_3 HML_3 + \beta_4 MOM_4 + \gamma_1 SMB_t^2 + \gamma_2 HML_t^2 + \gamma_3 MOM_t^2 + \varepsilon_{pt}$$
 (6)

Where γ_1 , γ_2 , and γ_3 represent the abilities measuring size timing, value timings, and momentum timing respectively. The size timing measures the managers' ability to select small/large cap in response to the timing signal regarding the size portfolio providing the best results. The ability to time book-to-market timing measures the managers' selection of growth/ value stocks in reaction to timing skill leading to the one providing best results. The momentum timing measures the manager's ability to opt for well-performers funds over the past 12 months over bad-performers.

4. Empirical Results and Findings:

Table 4.1 presents the summary statistics of an equally-weighted portfolio of Shariah-compliant and conventional funds. It reports the means and standard deviations of Shariah-compliant and conventional funds for the period 2012-2020 and illustrates that the conventional funds are offering a high rate of return as compared to Shariah-compliant funds.

Table 4.1: Summary Statistics of variables used based on a daily sample for the period January 2012 to February 2020

Variables	Definitions	Mean	Std. Dev	No. of	
				Funds	
R_{SC}	Return of SC Funds	0.023	0.014	8	
R_{C}	Return of	0.028	0.009	19	
	Conventional Funds	0.028	0.009		

Table 4.1 presents the mean and Standard Deviation of the equally weighted portfolio of Shariacompliant equity funds and conventional equity funds of Pakistan for the period 2012 to 2020.

To avoid the potential problem of multi-collinearity among the fund attributes, a correlation test is performed; results are reported in Table 4.2 This test shows the magnitude of relationships between the variables. A weak correlation is represented if the coefficient value is less than 0.4. As all the coefficients are less than 0.4, hence, confirming that the variables are weekly correlated.

Table 4.2: Correlation Matrix

	RP	MR	SMB	HML	WML	RM2	Vol
RP	1						
MR	0.191	1					
SMB	-0.087	-0.183	1				
HML	0.077	0.476	-0.345	1			
WML	0.005	0.072	-0.004	0.006	1		
RM2	-0.029	-0.274	-0.054	-0.023	0.009	1	
TV	0.05	-0.149	-0.029	-0.034	0.005	0.449	1

Note: Table 4.2 covers the correlation matrix results of variables used in the study for the time-period January 2012 to January 2020.

The domain of active management depends upon the forecasting abilities of fund managers. One such domain is the managers' responsiveness to changes in market volatility. The ability of fund managers to reduce exposure to a risky portfolio in anticipation of high market volatility is termed as volatility timing (Liao et al., 2017). Therefore, the study analyzes the volatility timing ability possessed by Shariah-compliant funds and their counterparts, conventional funds. Furthermore, the active management approach of managers focuses on detailed monitoring of the securities that will end up in the investor total portfolio of a particular mutual fund. Hence, a manager needs to focus on different market segments to undergo appropriate monitoring. Aiming to focus on one particular market segment leads to a particular management style of mutual funds (Ferruz et. al, 2012). The results are reported in Table 4.3

Table 4.3: Volatility Timing ability and Style Timing ability

Portfolio	α	β_1	β_2	β_3	β4	R ²
Shariah- Compliant	-0.037** (-3.175)	0.147** (-3.625)	0.153 (1.559)	-0.559 (-1.341)	-0.638 (-1.25)	0.74
Conventional	- 0.032** (-3.443)	-0.151*** (-14.459)	0.540 (0.692)	(-0.162) (-0.490)	-0.390 (-0.963)	0.81

Note: Table 4.3 reports the estimates of timing abilities of Shariah-compliant equity mutual funds and conventional equity funds for the Pakistan market. The coefficient α_p measures the performance while β_1 , β_2 , β_3 and β_4 represents the timing abilities towards volatility, size, book-to-market factor, momentum factor respectively. R^2 shows the explanatory power of the estimated model. The *** indicates significance at 1%, ** at 5% and * at 10%.

For alpha ' α ', representing the performance, both types of funds show a significant negative coefficient depicting that these funds underperform the market benchmark by $0.03\%^4$. The above-mentioned result is in line with the findings of Basu and Huang-Jones (2015) stating that emerging market funds underperform the benchmark. Our results are also in agreement with Hayat and Kraeussl (2011), who studied Islamic mutual funds from different markets concluded that Islamic equity funds underperformed their counterparts. Our findings support Derwall et al. (2011) that as Shariah-compliant funds use negative screening regarding their investments, they underperform the market and their conventional counterparts.

As far as volatility timing ability is concerned, represented by β_1 , both categories of funds show negative and significant coefficients. The negative coefficient β_1 confirms the existence of volatility timing ability, significant at 5% for Shariah-compliant equity funds and 1% for conventional equity funds.

Furthermore, the beta coefficient of volatility timing of Shariah-compliant funds is reported to be slightly lower and less significant than the conventional funds. Hence for conventional funds, the study finds stronger results as the coefficient is significant at 1%. Hence managers of conventional funds are in a better position to reduce exposure to portfolios when high market volatility is expected. These results are inconsistent with the findings of (Busse,1991; Huang, 2012; Maroof &

⁴ The negative performance is attributable to pervasive market timing ability rather than stock-selectivity ability. The market timing ability was significantly negative for conventional funds and Shariah-compliant funds at 1% and 5% respectively. We have not reported the results here. As our focus is to examine volatility timing ability and style timing abilities.

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Javid, 2016). The findings are consistent with In et al. (2014) who reported that funds provided a volatility hedge to the investors. This ability eases the losses, hence protecting the risk-averse investors. From the reported results, it can be further inferred that inferior volatility timing ability of Shariah-compliant funds could be rooted out to limited investment avenues available to these funds as a result of negative screening.

With regard to style timing abilities, the first row of Table 3 reports the results of the Shariah-compliant funds. The results reveal that Shariah-compliant funds fail to exhibit any style timing ability towards size, value, or momentum as non-significant coefficients are found (Chan et al., 2002; Swinkles & Tjoe, 2007). This result is in line with the findings of Ferruz et al. (2012). The second row of Table 3 reports the results of the conventional funds. The presence of insignificant Beta coefficients confirms the absence of style timing abilities for the conventional funds. Hence, this study confirms that mutual funds, whether Shariah-compliant funds or conventional funds, do not possess style timing ability towards size, value, or momentum. The results are in agreement with Maroof et al. (2019) who did not find style timing abilities for mutual funds of Pakistan under varying market states.

These results are also in line with the findings of Yi and He (2016). Analyzing the Chinese mutual funds market for the period 2002 to 2013, Yi and He (2016) concluded strong evidence regarding market return timing but failed to report style timing abilities for the sample. The authors claim that the existence of return timing is attributable to managers' better skills of anticipating the market rather than other timing abilities towards size, growth, and momentum. The insignificant coefficients of style timing abilities confirm that managers are not able to revise their investment strategies by utilizing the superior information they possess.

5. Conclusion:

Socially responsible funds have to be invested in stocks that could satisfy investors' adherence to benefits other than just looking at financial gain only. Shariah-compliant funds, a special category of socially responsible funds imply negative screening criteria; thus abstain from investing in Sin stocks. These funds have to comply with the Shariah-principles. The increasing number of Shariah-compliant funds attracts researchers to investigate whether they perform differently from their conventional counterparts or not?

The current study is adding to the existing literature in many ways. Although there is literature available on investigating the performance of the Shariahcompliant funds but very few studies target the funds of emerging markets. Emerging markets have different market characteristics, hence, the application of estimation models might bring different results when applied to these markets. The sample of the study comprises conventional funds and Shariah-compliant funds of an emerging market, Pakistan, for the period 2012-2020. The study also investigates the performance of Shariah-compliant funds and conventional funds using the Carhart (1997) model and finds that Shariah-compliant funds underperform the benchmark and conventional funds.

The main aim of this study is to investigate the timing abilities of Shariah-compliant funds and conventional funds. Primarily our focus is to investigate the volatility timing ability and style timing abilities using Busse (1999) model and Lu (2009) model respectively. To the best of our knowledge, the literature does not find any study investigating the volatility timing ability of Shariah-compliant funds. This is the first study investigating the volatility timing ability of Shariah-compliant funds. The results conclude that both types of funds possess volatility timing ability, however, conventional funds are a better timer of market volatility as it is significant at 1%.

Additionally, the study aims to investigate the style timing abilities of Shariah-compliant funds and conventional funds. As far as we know, this is the first study investigating the style timing ability of Shariah-compliant funds of the Pakistani market. The results confirm that both types of funds do not possess style timing abilities, i.e. these funds do not possess abilities to time size, growth and momentum. As no differential impact is found for style timing abilities, therefore, the study concludes that both funds are not timers of style timing.

In terms of implications, this study has implications for investors and fund managers. Although Shariah-compliant funds perform a little lesser than conventional funds, the investors being value-driven are prepared for these financial losses, as their primary motive is satisfying religious and personal goals.

The fund managers should improve their timing skills to reduce risks attached with the funds and thus, can increase the investors' base by providing maximum returns to the investors.

Appendix I: Equity funds and Shariah-Compliant Funds operating in Pakistan

Equity funds	Shariah-Compliant Funds
ABL Stock Fund	ABL Islamic Stock Fund
AKD Opportunity Fund	AKD Islamic Stock Fund
Golden Arrow Stock Fund	First Habib Islamic Stock Fund
First Habib Stock Fund	Al Meezan Mutual Fund
Alfalah GHP Alpha Fund	Meezan Energy Fund
Alfalah GHP Stock Fund	Meezan Islamic Fund
Atlas Stock Market Fund	Alfalah GHP Islamic Stock Fund
AWT Stock Fund	Atlas Islamic Stock Fund
Faysal Stock Fund	AWT Islamic Stock Fund
First Capital Mutual Fund	Faysal Islamic Stock Fund
HBL Energy Fund	HBL Islamic Equity Fund
HBL Equity Fund	HBL Islamic Stock Fund
HBL Growth Fund	JS Islamic Fund
HBL Investment Fund	Alhamra Islamic Stock Fund
HBL Stock Fund	NIT Islamic Equity Fund
JS Growth Fund	NBP Islamic Energy Fund
JS Large Cap Fund	NBP Islamic Stock Fund
JS Value Fund	Al Ameen Islamic Energy Fund
Lakson Equity Fund	Al Ameen Shariah Stock Fund
MCB Pakistan Stock Market Fund	
National Investment Unit Trust	
NBP Financial Sector Fund	
NBP Stock Fund	
UBL Financial Sector Fund	
UBL Stock Advantage Fund	

References:

- Bollerslev, T., Chou, R. and Kroner, K. (1992). ARCH modelling in finance, Journal of Econometrics, 52, 5-59.
- Busse, J. A. (1999). Volatility timing in mutual funds: Evidence from daily returns. The Review of Financial Studies, 12(5), 1009-1041.
- Chan, L. K., Chen, H. L., & Lakonishok, J. (2002). On mutual fund investment styles. *The Review of Financial Studies*, 15(5), 1407-1437.
- Chen, Y., & Liang, B. (2007). Do market timing hedge funds time the market? Journal of Financial and Quantitative Analysis, 42(4), 827-856.
- Bodson, L., Cavenaile, L., & Sougné, D. (2013). A global approach to mutual funds market timing ability. *Journal of Empirical Finance*, 20, 96-101.
- Ferruz, L., Munoz, F., & Vargas, M. (2012). Managerial abilities: Evidence from religious mutual fund managers. Journal of business ethics, 105(4), 503-517.
- Ferson, W., & Mo, H. (2016). Performance measurement with selectivity, market and volatility timing. *Journal of Financial Economics*, 121(1), 93-110.
- Foran, J., & O'Sullivan, N. (2017). Mutual fund skill in timing market volatility and liquidity. International Journal of Finance & Economics, 22(4), 257-273.
- Hayat, R., & Kraeussl, R. (2011). Risk and return characteristics of Islamic equity funds. Emerging markets review, 12(2), 189-203.
- Holmes, K. A., & Faff, R. W. (2004). Stability, Asymmetry and Seasonality of Fund Performance: An Analysis of Australian Multi-sector Managed Funds. *Journal of Business Finance & Accounting*, 31(3-4), 539-578.
- Joyo, A. S., & Lefen, L. (2019). Stock Market Integration of Pakistan with Its Trading Partners: A Multivariate DCC-GARCH Model Approach. Sustainability, 11(2), 303.
- Kalev, P. S., & Wallace, D. (2012). Performance of Socially Responsible Investment Funds. Contemporary issues in Sustainability accounting, assurance and reporting. Bingley: *Emerald Publishing Limited*, 43-70.
- Kiymaz, H., & Simsek, K. D. (2017). The performance of US-based emerging market mutual funds. Journal of Capital Markets Studies, 1(1), 58-73.
- Lu, J. (2009). What is the Wind Behind this Sail? Can Fund Managers Successfully Time Their Investment Styles?.
- Maroof, L., & Javid, A. Y. (2016). Evaluating the Management Effectiveness in Market and Volatility Timing of Mutual Funds in Pakistan. Journal of Business & Economics, 8(2), 147.
- Maroof, L., Javid, A. Y., & Mian, R. U.(2019). Performance and timing abilities of mutual funds during bull and bear market. Pakistan Business Review, Volume 21 (1), 196-215, (2019).

- Marquering, W., & Verbeek, M. (2004). The economic value of predicting stock index returns and volatility. *Journal of Financial and Quantitative Analysis*, 39(2), 407-429.
- Muñoz, F., Vicente, R., & Ferruz, L. (2015). Stock-picking and style-timing abilities: a comparative analysis of conventional and socially responsible mutual funds in the US market. *Quantitative Finance*, 15(2), 345-358.
- Naqvi, B., Rizvi, S. K. A., Mirza, N., & Reddy, K. (2018). Religion based investing and illusion of Islamic Alpha and Beta. *Pacific-Basin Finance Journal*, *52*, *82*-106.
- Omri, A., Soussou, K., & Ben Sedrine Goucha, N. (2019). On the post-financial crisis performance of Islamic mutual funds: the case of Riyad funds. *Applied Economics*, 51(18), 1929-1946.
- Sohail, A., & Javid, A. Y. (2014). The Global Financial Crisis and Investors 'Behaviour: Evidence from the Karachi Stock Exchange. PIDE Working Papers, 106(July).
- Swinkels, L., & Tjong-A-Tjoe, L. (2007). Can mutual funds time investment styles? Journal of Asset Management, 8(2), 123-132.
- Tschanz, S. (2010). The Timing Performance of Local versus Foreign Mutual Fund Managers: An Analysis of Market, Volatility and Joint Timing. Available at SSRN: https://ssrn.com/abstract=1537671 or https://dx.doi.org/10.2139/ssrn.1537671
- Yi, L., & He, L. (2016). False discoveries in style timing of Chinese mutual funds. *Pacific-Basin Finance Journal*, 38, 194-208.