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Idiosyncratic momentum anomaly and Shari'ah compliant stocks: A study on how firm-specific return patterns drives future returns in the US financial markets

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ABSTRACT

This study investigates the existence of idiosyncratic momentum (IMOM) profit in Shari'ah compliant stocks. The sample data includes all the common shares listed on the US equity markets from 1986 to 2020. This study used the GRS, Fama-MacBeth (1973) and factor-spanning tests employing the prominent asset pricing factor models. The empirical finding supports the existence of IMOM profit in Shari'ah compliant stocks for the US equity market. Further, these findings show that idiosyncratic momentum (IMOM) is a separate factor that expands the efficient frontier. Additionally, Fama MacBeth regressions results indicate that on a stand-alone basis, when both characteristics (IMOM and MOM) variables are included at the same time to the recent factor model, IMOM variable emerges stronger than the MOM. Our robustness analysis indicates IMOM returns are not sensitive to seasonal patterns (i.e., January effect) and IMOM returns remain persistent across the year. Therefore, this investment strategy offers higher profitability, less transaction costs and is more practically implementable.

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Introduction

After the seminal research finding of Jegadeesh and Titman (1993) - hereafter JT, momentum in stock returns challenge the financial markets rationality. momentum is the most persistent and long-lived asset pricing anomaly in finance literature. However, it is also the least systematic investment strategy in the sense that the formation of a momentum strategy is based on the more recent past performance of stocks (Jegadeesh and Titman, 1993; Rouwenhorst, 1998, 1999; Griffin et al., 2003). However, Kothari and Shanken (1992) and Grundy and Martin (2001) find that sorting portfolios based on past returns exhibit time varying significant exposures to the riskfactors. The momentum effect has been documented in many contexts[1], encompassing different time periods, geographies, and asset classes, including Islamic equities.

On the contrary, Gutierrez and Prinsky (2007) add a new discussion to the momentum literature by documenting two types of momentum: relative returns momentum and abnormal returns momentum[2]. The former is identical to JT's price momentum strategy. momentum strategy is decomposed into traditional momentum (MOM) strategy and idiosyncratic momentum (IMOM) strategy. Gutierrez and Prinsky (2007) find that relative momentum returns are based on profit that usually reverse in three to five years after the portfolio formation, which suggests an overreaction to the information. Second, abnormal return that follows corporate events, such as, stock repurchases and stock splits, changes in dividends policy, earnings surprises, and seasoned equity offerings. These events continue in the long run without reverting suggesting an under reaction to the firmspecific information. Further, Gutierrez and Prinsky (2007) find that as the profitability depends on the type of the momentum strategy, it is essential for momentum investors to understand whether the portfolio is formed on using the traditional momentum (MOM) strategy and idiosyncratic momentum (IMOM) strategy.

The abnormal momentum of Gutierrez and Prinsky (2007), also known as idiosyncratic momentum (IMOM) is recently gaining the attention of academic researchers and momentum investors. Gutierrez and Prinsky (2007); Blitz et al. (2011, 2020) explore the idiosyncratic momentum strategy for conventional stocks. Despite the tremendous growth in the Islamic finance industry, only a handful of studies have explored the momentum phenomenon in Islamic stocks. For instance, Ejaz and Polak (2014) investigate the existence of momentum strategy in the Middle East stock markets, and found its existence. Similarly, Narayan and Phan (2017) find the momentum effect in stocks listed on the Dow Jones US Islamic index. However, no study has provided evidence of the presence of IMOM in Shari'ah-compliant stocks.

Though, no study finds the existence of idiosyncratic momentum (IMOM) in Shari'ah

[1]Traditional momentum strategy generates profit in U.S and other markets as well as in other asset classes, such as in international and emerging equity markets, country indices, industry portfolio, commodities and bonds markets, and currencies markets (Barroso and Santa-Clara, 2015).

[2]However, Blitz et al. (2011, 2020) called it residual or idiosyncratic momentum respectively.

compliant stocks. The present study investigates the IMOM strategy in the US equity market. The US equity market is the largest financial market and offers various asset classes. Further, global Muslim investors consider the US stock market a desirable destiny to invest their wealth (Dewandaru et al., 2017). Besides, US equity markets offer Islamic Stocks and equity indexes for people to invest in the capital market who do not participate in conventional stocks that conflict with their beliefs or Shari'ah concerns against interest-based income. Further, the previous literature finds the mixed evidence of the profitability of Shari'ah and non-Shari'ah complaint stocks. Therefore, this study also compares profit Shari'ah compliant stocks with non- Shari'ah compliant stocks based on idiosyncratic momentum (IMOM).

The first hypotheses involve the testing of idiosyncratic effect in Shari'ah compliant stocks and then compares the profitability of IMOM strategy with non-Shari'ah compliant stocks. Besides, JT (1993) identify momentum in stock returns, that is, taking long position in previously winner stocks and short position in previously loser stocks over a medium-term, usually three- to 12-months horizon generates a risk-adjusted profit. The existence of momentum in stocks returns to challenge the efficiency market hypothesis. However, Kothari and Shanken (1992) and Grundy and Martin (2001) find that momentum strategy exhibits significant time-varying exposures to systematic riskfactors. For instance, in bull market the strategy generates the positive returns and the converse is happening in bear market. In contrast, Blitz et al. (2011), and Blitz et al. (2020) investigate IMOM strategy and find that it yields significant risk-adjusted profit. The presence of IMOM strategy in the context of Shari'ah compliant stock has not yet been explored. Therefore, such conjecture generates a testable hypothesis 1 as follows.

H1: Ceteris paribus, the idiosyncratic momentum (IMOM) strategy generates positive and significant risk-adjusted profits for both Shari'ah compliant stocks and non-Shari'ah compliant stocks.

Blitz et al. (2020) investigates that the IMOM is a distinct risk-factor and does not subsume by any of the asset pricing factor model even in the presence of MOM factor in the spanning tests. Therefore, the study expects that IMOM is a new asset pricing factor that could extend the efficient frontier literature, hence, I hypothesize 2 as follows:

H2: Ceteris paribus, IMOM risk-factor extends the efficient frontier in Shari'ah compliant stocks and non-Shari'ah compliant stocks.

Our study makes several significant contributions. First, this study finds the existence of idiosyncratic momentum strategy in Shari'ah complaint stocks. Second, we contribute to the literature by comparing IMOM profit in both types of stocks and find that Shari'ah complaint stocks perform better that its counterpart based in idiosyncratic momentum strategy. These insights may guide investors and fund managers to more effective investment strategies. Third, the existence of IMOM strategy in both types of stock challenge the efficient market hypothesis and enable policymakers to devise superior regulatory strategies. Finally, we contribute to the new generation of asset pricing factor models. This

study extends and confirms the findings of Blitz et al. (2020), as idiosyncratic momentum is a distinct risk factor.

The main results of this study are summarized as follows: First, IMOM strategy generates positive and statistically significant profit in Shari'ah compliant stocks. These results are aligned with Gutierrez and Prinsky (2007) and Blitz et al. (2020), who find the existence of IMOM profit in non-Shari'ah compliant stocks in the US equity markets. Additionally, factor-adjusted returns (i.e., alpha) are positive highly significant for both types of stocks.

Second, our findings show that Shari'ah decile portfolios generate more profit than the non- Shari'ah stocks. The possible reason for the better performance might be the screening criteria as most of the exposures to the market factor are eliminated in the qualitative and quantitative screening phases. Further, our findings indicate that the IMOM factor is not subsumed by any of the prominent risk-factor models. Hence, IMOM factor is a unique phenomenon that contributes to the enhancement of the efficient frontier. Further, Fama MacBeth regressions results indicate that on a stand-alone basis, when both characteristics (IMOM and MOM) variables are included at the same time to the five-factor model, IMOM variable emerges stronger than the MOM. Therefore, the present study concludes that the test of asset pricing does not reject the one factor in favor of another factor. However, the presence of IMOM return seems to pose an even a greater challenge to the asset pricing literature than the traditional momentum. Finally, our robustness findings show that the profit based on IMOM is not sensitive to the seasonality effect. Hence, IMOM profit is more persistent across the year for both stocks.

The reminder of the study is structured as: section 2 describes data sources and method used to carry this study; section 3 explains the empirical results and discuss the major implications; and section 4 concludes the study.

Data and methodology

Data overview

This subsection provides data overview used to carry out this study. The data are obtained from multiple sources: such as, all the domestic common shares listed on the US stock exchanges, such as, NYSE/AMEX, and NASDAQ (exchange code 1, 2, and 3) are included into the sample and excludes Islamic stocks listed on these exchanges. Only those firms are included into the final sample data that have stock price in t month and market capitalization data for month $t-1$. Data sample period starts from January1986 and ends February 2020[3]. The monthly share data (shares code: 10 and 11) extracted from

[3]The sample data begins from January 1986 till February 2020. To calculate lagged measure of investment (INV) and profitability (OP) variables used in cross-section regression. We follow Blitz et al. (2020) and used two year lagged measure of these variables. The selection of sample data due to the availability of data from CRSP

the Center for Research in Security Prices (CRSP). Therefore, the data obtained CRSP are non-compliant stock. In order to form the Shari'ah compliant stocks, this study follows Dow Jones Islamic Market United State index (DJIM) screening criteria consistent with Narayan and Phan (2017)[4].

To strengthen the validity of the study and to consider the practitioners' perspective, we employ some dynamic and static filters. For instance, the study only includes common stock. It excludes American Depository Receipts (ADRs), foreign stocks closed-end funds, unit trusts, real estate investment trusts (i.e., REITs) and similar investment vehicles from the analysis.

Being aware of the practical issues related to tiny stocks (i.e., penny stocks), we exclude those firms from the sample whose nominal stock price is below \$1 in month t. Further, micro-caps stocks: defines as the stocks that are listed on the US exchange having below market capitalization below the 20th percentiles. These stocks are also excluded from investing universe. As Fama and French (2008) argued that micro-capitalization stock represents around 60% of investing universe, but only constitute 3% of total market capitalization. Therefore, the study excludes these stocks to ensure that a tiny number of large stocks do not drive the results.

Market risk-factor data such as, three- and- five factor data along with the US T-Bills rate, which served as the proxy for risk-free rates are obtained from the webpage of Professor Kenneth French. Whereas, Q-factor data comes from Professor Lu Zhang. The four mispricing return series obtained from Professors Stambaugh and Yuan webpage. Finally, the accounting data is extracted from the Compustat fundamental files (both Annual and Quarterly).

Theoretical framework of asset pricing models

Standard finance is based on the proposition that the financial markets are efficient and rational. The initial rationality model is known as the capital asset pricing model (hereafter, CAPM) developed by Sharpe (1964); Lintner (1965). It postulates that securities are priced and expected return compensates investor for expected risk. This model serves as the birth of asset pricing theory. The basic intuition of model is that, not all risks are priced as there are two types of risk: systematic risk and nonsystematic risk, systematic risk also known as market risk that affects all the stocks and cannot be diversified away. On the contrary, unsystematic risk is associated with specific events related to individual firms and can be diversified away. Therefore, to compensate investor only systematic risk is calculated for expected returns.

database.

[4]The present study investigates IMOM from the most recent and large data set of stocks listed on the US equity markets. Previously, Narayan and Phan (2017) examined the momentum and use only those stocks that are listed on DJIM index.

Fama (1970) describes the Efficient Market Hypothesis (hereafter, EMH) as prices are correct and represents all available information, and markets are informationally rational. This means that no arbitrage opportunity exists. If arbitrage opportunity exists, the market would quickly respond to this opportunity until it vanishes and incorporates such news to prices. Therefore, the market becomes efficient again. The author further argue that investors are rational and they have access to all available information while making decisions regarding future prices.

In contrast, the researchers find and document many patterns in the average stock returns. These patterns are later referred to as market anomalies. Anomalies are the inconsistency or irregularities find in empirical results that are not explained captured by asset pricing models. The existence of anomalies in the cross-sectional average stock return is not explained by CAPM does not capture the anomalies find in the stock returns that leads to the development of multifactor asset pricing factor models. Therefore, various alternative models are developed could able to explain average return. Hence, Figure 1, shows the theoretical framework of the asset pricing factor models.

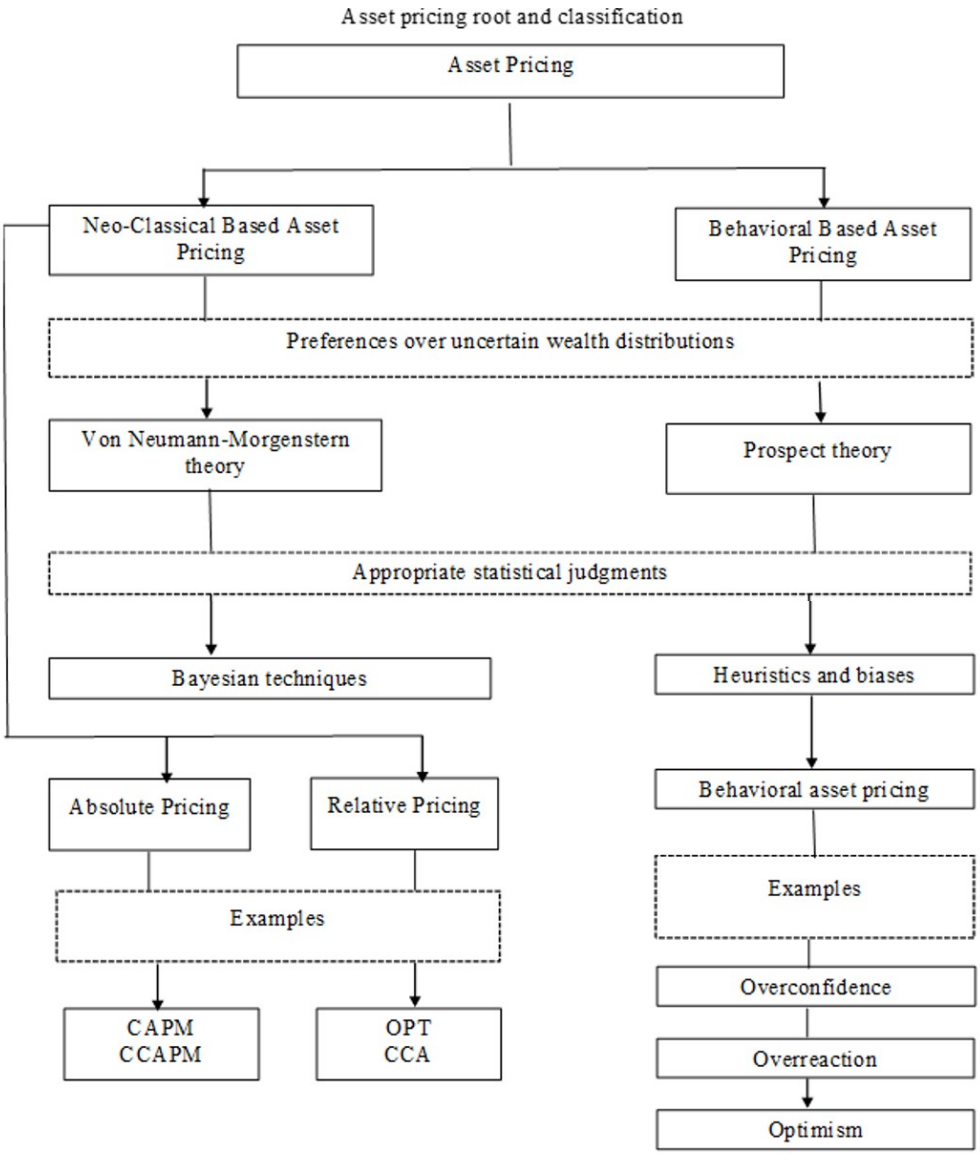

Figure 1: Shows an overview of asset pricing models broadly classified as neo-classical and behavioral asset pricing frameworks. These frameworks help in decision-making by providing preference over uncertain wealth distribution. Source: The above figure is obtained from (Celik, 2012).

Methodology

This subsection explains the method used to analyze the existence of IMOM returns in the context of Shari'ah compliant stocks. As discussed in the previous section that much of the anomalies find in the asset pricing literature is not explained by the CAPM that leads to the development of the multifactor models. Fama and French (1993) proposed a three-factor model that is capable to captured most of the anomalies find at that time. The three-factor model serves as the popular benchmark for analyzing the anomalous return patterns in stock returns Stambaugh and Yuan (2017). Since there is no consensus which multifactor model is better to explain cross-sectional variation in returns, therefore, we use the three-factor model Fama and French, consistent with momentum literature. One possible reason of using three-factor model is that it captures most of the variation in the cross-section of stock returns.

However, other factor models include: Fama and French (1993; 2015; 2018) three-fiveand-six factor model, Hou et al. (2015, 2018) Q-four and five factor model, Stambaugh and Yuan (2017) Mispricing four-factor model. These models differ in terms of their theoretical framework and factor constructions that show the deviation from the traditional method used in Fama and French models. Such as, Q four and five factor models have comparative advantage over the other factor models as they are built on theoretical foundation that rely on the investment. In contrast Fama and French (2018), Stambaugh and Yuan (2017) model is statistical in nature. Besides, Fama and French (2015) claim that their five-factor model is based on valuation theory. Hou et al. (2018) find that five factor model does not base on valuation theory.

Construction of variables and portfolios based on idiosyncratic momentum strategy

Following Blitz et al. (2020) method, we construct IMOM variable based on idiosyncratic returns in the multiple steps. First, we estimate time series regression in each month for individual stocks, using three-factor model from equation (1). We employ three years (i.e., 36-month) rolling window regression such as, $t-36$ to $t-1$ to estimate equation (1). The reason for using 36-month window regression is to have sufficient return series to obtain precise estimates for stock's exposure to the market, firm's size, and book value. Second, after obtaining the idiosyncratic return series from equation (1.1), we calculate the average IMOM returns over the past 12-2M[5] month, to avoid bid-ask spread the most recent month is skipped. Finally, we scale the average IMOM returns with the standard deviation of the same periods in equation (1.2). Blitz et al. (2011) argue that by scaling the mean IMOM returns with their standard deviations provide improved measure of IMOM

[5]Consistent with previous literature, see Blitz et al. (2011) employed 12 - 2-month idiosyncratic momentum measure. However, Novy-Marx (2015) used previous seven-to-12 month and two-to-six-month past momentum and found that previous seven-to -12 month is better measure in U.S. on the contrary Goyal and Wahal (2012) investigate the past two-to-six month and seven-to 12-month measures and found no significance difference in 35 out of 36 countries, with the only exception of U.S. Besides, 12-2month momentum is better measure that performs well in out of sample as well as across geographical location Asness et al. (2013).

returns. Further, Gutierrez and Prinsky (2007) also standardized the average idiosyncratic returns, and argue that standardizing the idiosyncratic returns by their standard deviation gives information to the firmspecific shocks as opposed to noise. Hence, standardizing IMOM returns give better interpretation that the shocks are related to firm-specific information as oppose to noise. Therefore, IMOM is defined as the past 12-2M standardized idiosyncratic returns estimated by orthogonal to the threefactor model, market, size and value factor over the past 36-month rolling window regression.

In order to construct the idiosyncratic momentum portfolio average IMOM returns from equation (2.2) are used to rank winner (W) and loser (L) stocks and are ranked in descending order, and then these ranked stocks (i.e., winner and loses) are assigned into mutually exclusive equalweighted decile portfolio over the formation period. Therefore, the portfolios are now being ranked based on IMOM returns, as oppose to total average MOM returns. hence, the top decile (D1 holds the worst performing past loser stocks and form the loser portfolio and the bottom decile (D10 contains past best performing winner stocks and form the winner portfolio. Finally, the zero-cost investment (winner minus loser, WML: D10-D1) strategy is formed based on IMOM returns. To do this, each decile portfolio is equally weighted and is based on IMOM returns using the overlapping method, we rebalanced these portfolios by taking long position in D10 portfolio and shorting D1 portfolio. The portfolio reforms monthly and holds stocks for one month. Therefore, the dependent variable is defined as equal-weight excess returns of portfolio based on IMOM returns for both types of stocks.

$$R_{i,t} - RF_t = \alpha_i + \beta_i(rMKT_t - RF_t) + \beta_i(rSMB)_t + \beta_i(rHML)_t + \epsilon_{i,t} \tag{1}$$

Second, idiosyncratic return series are obtained from equation (1), we calculate the average IMOM returns over the past 12-2M[6] months, excluding the most recent month. Finally, the mean IMOM returns are scaled by the standard deviation of the same periods as per equation (1.2).

IMOM return is estimated using model in Equation (1).

$$e_{i,t} = R_{i,t} - RF_t - \hat{\alpha}_i - \widehat{\beta MKT}_i(RMKT_t - RF_t) - \widehat{\beta SMB}_i(rSMB)_t - \widehat{\beta HML}_i(rHML)_t \tag{2}$$

[6]Consistent with previous literature, see Blitz et al. (2011, 2020), we employed 12 - 2-month idiosyncratic momentum measure. However, Novy-Marx (2015) used previous seven-to-12 month and two-to-six month past momentum and found that previous seven-to -12 month is better measure in U.S. On the contrary Goyal and Wahal (2012) investigate the past two-to-six month and seven-to 12 month measures and found no significance difference in 35 out of 36 countries, with the only exception of U.S. Besides, 12-2month momentum is better measure that performs well in out of sample as well as across geographical location Asness et al. (2013).

$$IMOM_{i,t} = \frac{\sum_{t-12}^{t-2} e_{i,t}}{\sqrt{\sum_{t-12}^{t-2} (e_{i,t} - \bar{e}_i)2}} \tag{3}$$

IMOM as separate risk-based factor

In order to determine whether idiosyncratic momentum is a new factor. To do this, the study performs the factor spanning test consistent with the momentum literature. The factor spanning test is more formal test that compares the dynamics of decile IMOM factor in another factor model. According to Fama and French (2015, 2018) this test is largely comparable with other asset pricing factor models. Barillas and Shanken (2017, 2018) argue that how each model is capable of pricing other factor is a paramount for such comparison. Besides, factor spanning test provides an informative and concise way to compare factors, more precisely, it determines which factor is redundant in the factor spanning test.

Blitz et al. (2020) investigate that the IMOM is a distinct risk-factor, that does not subsumed by any of asset pricing-factor models, even in the presence of MOM factor in the spanning test. The present study constructs IMOM factor, following the momentum construction approach of Fama and French. Hence, the IMOM factor defines as six size-IMOM sorted value-weight portfolios. The self-financing portfolio is formed by buying the IMOM sorted big and small winner portfolios and selling IMOM sorted big and small losers. These IMOM portfolios are formed monthly and hold for one month.

The following expression is used to construct the IMOM factor:

$$\begin{aligned} IMOM_t = & \frac{1}{2} \left(\text{Big Winner}(W)_{\text{idio}} + \text{Small Winner}(W)_{\text{idio}}\right) \\ & - \frac{1}{2} \left(\text{Big Loser}(L)_{\text{idio}} + \text{Small Loser}(L)_{\text{idio}}\right) \end{aligned} \tag{4}$$

Whereas, IMOM represents the idiosyncratic momentum factor; used in the factor spanning test.

Variables construction - Fama and MacBeth (1973) Cross-section regression

In order to examine whether the same set characteristics variable plays the same role in explaining the future returns in Shari'ah and non-Shari'ah compliant stocks based on idiosyncratic momentum strategy. To do this, the study employs the Fama and MacBeth (1973) cross sectional regression test. Although, Fama and MacBeth (1973) regression is

not an ideal tool for dealing with non-linearity and dynamics relationship among the explanatory variables, however, it still one of the most robust tool in asset pricing literature to provide useful insight about future returns in the crosssectional regression analysis. Therefore, each month stocks are regressed with a set of independent variables to obtain estimates and associated correspondingt-value. The control variables are: the market beta, the firms 'size ln(Me),the book-to-market ln($\frac{B}{M}$) ratio, operating profitability (OP), investment (INV), and momentum (UMD) variable. The two main control variables are IMOM and MOM used in Carhart (1997)'s model Blitz et al. (2020) also used these main control variables in cross- sectional regression analysis. Fama and French (2018)'s momentum UMD variable also serves as a control variable. All variables are winsorized at 1% and 99%, and corresponding tstatistics are reported using Newey and West (1987). To estimate market beta, we estimate univariate regression of excess returns on the market risk-factor over the most recent sixty months (i.e., 5 years) period. The firms' size $ln(Me)$ defines as the natural logarithm of market capitalization, (i.e., price of share times shares outstanding). Book value $\left(\frac{B}{M}\right)$ is log transformation and is constructed as the sum of the book value of shareholders' equity, balance sheet deferred taxes and investment tax credit minus the book value of preferred stocks. Further, to calculate the book value of preferred stocks, we use the liquidation, redemption and par value, and divide it with the book value of equity to the previous year's market capitalization to get book-to-market equity ratio. Operating profitability (OP) is measured as the annual revenue minus cost of goods sold, interest, selling, general and administrative expenses divided by the last year's book value. Investment (INV) variable defines as the percentage change in total assets from the two years ago. The MOM variable is defined as total past momentum return in 12-2M. Finally, IMOM variable is defined as 12-2M standardized idiosyncratic returns estimated by orthogonal to the three-factor over the past 36-month rolling window regression.

$$\begin{aligned} R_{i,t} - RF_{i,t} = \alpha_i &+ \beta_{1,\text{mkt}} \cdot \text{MKT}_t + \beta_{2,\ln(Me)} \cdot \ln(Me)_t \\ &+ \beta_{3,B/M} \cdot \left(\frac{B}{M}\right)_t + \beta_{4,\text{op}} \cdot OP_t + \beta_{5,\text{inv}} \cdot INV_t \\ &+ \beta_{6,\text{MOM}} \cdot MOM_t + \beta_{7,\text{IMOM}} \cdot IMOM_t + \beta_{8,\text{umd}} \cdot UMD_t + \epsilon_{i,t} \end{aligned} \tag{5}$$

Where, $R_{i,t} - RF_{i,t}$ is the excess return dependent variable for individual stocks at time t; the alpha is shown by the notion α_i, whereas, the factor loading for each independent variable is shown by beta(β); and $\epsilon_{i,t}$ is the error term.

Empirical findings

Descriptive statistics

Before explaining the economic significance of the main findings, this section begins by investigating the descriptive summary of dependent and independent variables used in this study. Table 1 presents the descriptive summary in two distinct panels, A and B

for both types of stock respectively. The mean returns of IMOM variable is presented in this table using a various assetpricing models. As shown that returns of IMOM variable in both types of stocks are positive and yields more mean return than the market (i.e., Mkt index). To simplify the comparison, we focus on the states using the Fama and French (1993) three-factor model based on IMOM returns, whereas, market excess return serves as the benchmark. In panel A of Table 1, several interesting observations emerge, for instance, regardless of the model specifications, IMOM returns for Shari'ah stocks are positive and exhibit relatively stable profits compared with the market excess returns. Next, IMOM strategy exhibits smaller minimum (Min) values and lower Maximum (Max). Finally, the distinct advantage of IMOM variable can be seen in negative skewness and lower kurtosis. Similarly, Panel B of Table 1 presents these states for non-Shari'ah compliant stocks, having less mean IMOM returns than the Shari'ah complaints stocks. As shown in this Table, both types of stocks exhibit less standard deviation than the benchmark variable. Besides, benchmark variable generates more skewness and kurtosis value. Skewness and kurtosis values of Shari'ah stocks are -0.429 and kurtosis of 3.349, and non-Shari'ah stocks are -0.519 and 3.831 respectively. These higher skewness and kurtosis values in non-Shari'ah indicate the occurrence of higher losses than Shari'ah compliant stocks. Therefore, these findings indicate that the IMOM strategy in Shari'ah compliant stocks exhibits less downside risk than the non-Shari'ah stocks.

Table 1: Descriptive Statistics of Sharīah-Compliant and Non-Sharīah-Compliant Stocks

Panel A: Sharīah-Compliant Stocks						
Variable	**Mean**	**S.D.**	**Min**	**Max**	**Skew.**	**Kurt.**
$IMOM-CAPM$	0.079	2.356	-10.07	13.61	-0.435	3.352
$IMOM-3\ Factor$	0.169	2.309	-9.08	16.54	-0.429	3.349
$IMOM-4\ Factor$	0.170	2.312	-9.16	16.80	-0.403	3.335
$IMOM-5\ Factor$	0.176	2.309	-8.70	17.07	-0.396	3.302
$IMOM-UMD\ Factor$	0.000	0.999	-7.83	3.11	-0.382	3.271
$IMOM-Q4\ Factor$	0.180	2.325	-8.93	18.08	-0.469	3.410
$IMOM-Q5\ Factor$	0.181	2.329	-8.60	18.82	-0.455	3.409
$IMOM-4\ MP\ Factor$	0.159	2.346	-8.26	15.84	-0.462	3.670
Market index	0.006	4.045	-0.23	0.125	-0.559	1.493
Panel B: Non-Sharīah-Compliant Stocks						
Variable	**Mean**	**S.D.**	**Min**	**Max**	**Skew.**	**Kurt.**
$IMOM-CAPM$	0.183	1.081	-10.09	34.78	-0.536	3.852
$IMOM-3\ Factor$	0.066	1.066	-9.80	29.31	-0.519	3.831
$IMOM-4\ Factor$	0.066	1.066	-9.59	29.58	-0.493	3.810
$IMOM-5\ Factor$	0.061	1.064	-8.88	29.60	-0.452	3.752
$IMOM-UMD\ Factor$	0.0004	0.947	-8.58	2.83	-0.439	3.749
$IMOM-Q4\ Factor$	0.059	1.065	-9.68	28.78	-0.568	3.862
$IMOM-Q5\ Factor$	0.059	1.065	-9.68	28.83	-0.557	3.831
$IMOM-4\ MP\ Factor$	0.088	1.063	-9.83	30.40	-0.532	3.884
Market index	0.006	4.045	-0.23	0.125	-0.559	1.493

Notes: This table shows the results of descriptive statistics, this includes: mean, standard deviation(S.D.), Minimum Min.) and Maximum (Max). The dependent is idiosyncratic momentum IMOM variable, using various asset pricing models. The IMOMCAPM indicates that the idiosyncratic momentum variable is calculated using CAPM (Sharpe, 1964) single factor model. Similarly, IMOM-3 Factor, IMOM-4 Factor, IMOM-5 Factor, UMD, IMOM-Q4 Factor, IMOM-Q5Factor and IMOM-4 MPFactor obtained using the Fama and French (1993) three-factor model, Carhart (1997) four-factor model, Fama and French (2015, 2018) five and six factor model, Hou et al. (2015, 2018) Q4 and Q5 factor model and Stambaugh and Yuan (2017) four mispricing factor model respectively. Moreover, Market index, is used an independent variable.

Profitability of idiosyncratic momentum strategy

The aim of this subsection is to investigate whether the IMOM profit in Shari'ah stocks. The main testable prediction is whether or not the IMOM strategy is profitable in Shari'ah compliant stocks. Therefore, the study conjectures that whether IMOM strategy works for Shari'ah compliant stocks or not. Gutierrez and Prinsky (2007) and Blitz et al. (2020) find a strong evidence of IMOM profit in conventional stocks in the US equity markets. This study extends their work by investigating IMOM strategy in the context of Shari'ah compliant stocks. More precisely, it examines whether the anomalous returns from IMOM

strategy are sensitive to the types of stocks. The results are reported in Table 2, in two distinct panels A and B for Shari'ah and non-Shari'ah compliant stocks respectively. The results of self-financing (i.e., D10-D1) idiosyncratic momentum strategy are also reported in Table 2. Moreover, the results of excess returns, Sharpe ratio, and factor-adjusted returns (i.e., alpha) for each decile portfolios are reported in Table 2 for both types of stocks.

The excess returns(ER), volatility (Vol) and Sharpe ratio (SR) of each decile portfolios' results are reported in Table 2. The ER as well as the SR are increasing monotonically from the loser (D1) portfolio to the winner (D10) portfolio in Table 2 for both types of stock respectively. In panel A, such as, D1 portfolio generates 0.36% excess return per month(i.e., 4.32% per annum), whereas, the D10 portfolio generates 1.47% excess return per month (i.e., 17.64% per annum). The self-financing (D10-D1) IMOM strategy yields 1.11% return per month((i.e., 13.32% per annum), with volatility 3.45 and Sharpe ratio is 0.32 per month of Shari'ah compliant portfolios. Similarly, panel B of Table 2 tells the same story for non-Shari'ah compliant decile portfolios. For instance, D1 and D10 decile portfolios generates 0.28% and 1.19% excess returns per month (i.e., 3.36% and 14.28% per annum) respectively. Self-financing IMOM strategy generates 0.91% returns per month (i.e., 2.28% per annum) with volatility 4.75 and Sharpe ratio is 0.19 per month for non-Shari'ah compliant portfolios. However, these results indicate that the self-financing IMOM strategy generates greater IMOM returns in Shari'ah compliant stocks than the non-Shari'ah compliant stocks.

To verify the performance of IMOM strategy risk-adjusted monthly returns (i.e., alpha) and corresponding (t-stat) are reported in Table 2, regardless of the model specification alpha value monotonically increases from D1 to D10 decile portfolios. For instance, using six-factor model, D1 decile portfolio of Shari'ah compliant stock deliver negative and statistically insignificant alpha, whereas, D1 decile portfolio of non-Shari'ah also exhibits negative but statistically significant alpha. Similarly, the decile D10 portfolio offers positive and statistically significant alpha for both types of stocks. Moreover, D10-D1 for both types of stocks generate 2.53% and 1.96% per month (i.e., 30.36% and 23.52% per annum) with associated (t-stat =2.20, 2.17) respectively. The greater alpha value is economically meaningful for Shari'ah compliant stocks than the non-Shari'ah compliant stocks. These results are also aligned with the previous findings that the ER and SR for Shari'ah complaint stocks are more than the non-Shari'ah complaint stocks. Additionally, Table 3 also presents the result of other alternative models such as, Q4 and Q5-factor models and four mispricing factor model. For instance, using Q5-factor model, D1 decile portfolio of both types of stocks yield negative and statistically significant alpha and IMOM self-financing strategy generates 2.88% and 2.83% per month alpha (i.e., 34.56% and 33.96 per annum) with associated (t-stat = 2.85, 2.35) respectively. For both types of stocks, the self-financing strategy yields positive and statistically significant alpha of 3.11% and 2.99% per month (i.e., 37.32% and 35.88% per annum) with (t-stat =5.33, 5.29) respectively.

In order to test whether IMOM decile portfolios jointly generate alpha of zero or not. To do this, we conduct the time series GRS test. This test jointly determines whether the asset

pricing models are perfectly explained the returns or not. Therefore, under the null hypothesis that the asset pricing models capture tested portfolio's returns perfectly or not. The GRS test results are reported at the bottom of Table 2 for each asset pricing model. In panel A of Table 2, focusing on the recent sixfactor model self-financing decile GRS test statistics reported as 7.35(p-val = 0.00), whereas, Q5- factor and 4-mispricing factor model is 8.05(p-val = 0.00), and 8.38 (p-val = 0.00) respectively. However, all the GRS test statistics related to other factor models are also presented at the bottom of Table 2. Similarly, GRS test statistics for six factor model is 5.71(p-val =0.00), and 7.42(p-val =0.00), and 7.61(p-val =0.00) for Q5-factor and 4-mispricing factor models.

These findings are summarized as follows: the study finds that IMOM strategy generates positive and statistically significant returns regardless of the types of stocks, consistent with the findings of Gutierrez and Prinsky (2007), Blitz et al. (2020) and Graef et al. (2025). On the other hand, these findings are inconsistent with efficient market hypothesis, the presence of IMOM anomaly indicates that the market is not efficient, the momentum investor exploits IMOM strategy and earns risk-adjusted profit. However, IMOM strategy is more pronounced in Shari'ah stocks than the non-Shari'ah compliant stocks. Finally, factor-adjusted returns (i.e., alpha) are positive and statistically significant for Shari'ah compliant and non-compliant stocks. All in all, These results show the existence of IMOM in Shari'ah compliant stocks. Therefore, momentum investors exploit this strategy and earn risk-adjusted return while making ethically investment decision in Shari'ah compliant stocks that are align with their belief. However, non-Shari'ah investors can also diversify their portfolio by adding Shari'ah stocks based on idiosyncratic momentum strategy (IMOM).

Table 2: Performance of Shari'ah and Non-Shari'ah Decile Portfolios using Fama and French Three-Factor Model (1986–2020)

Portfolio	**ER**	**Vol**	**S.R**	α_{CAPM} **(t)**	α_{3FF} **(t)**	α_{4FF} **(t)**	α_{5FF} **(t)**	α_{UMD} **(t)**
Panel A: Shari'ah Compliant Decile Portfolios								
D1	0.36	4.50	0.08	-1.12 (-11.2)	-1.18 (-4.66)	-1.20 (-3.69)	-1.15 (-1.13)	-1.13 (-0.96)
D2	0.48	4.48	0.10	-1.16 (-4.70)	-1.29 (-13.5)	-1.32 (-11.6)	-1.28 (-7.59)	-1.32 (-7.14)
D3	0.57	4.45	0.12	-0.74 (-4.50)	-0.83 (-13.5)	-0.85 (-11.7)	-0.79 (-7.53)	-0.81 (-7.13)
D4	0.62	4.42	0.14	0.46 (2.83)	0.45 (9.48)	0.42 (7.67)	-0.44 (-5.47)	-0.42 (-4.80)
D5	0.68	4.39	0.15	0.25 (6.75)	0.24 (5.69)	0.21 (4.11)	-0.36 (-5.09)	0.32 (4.18)
D6	0.75	4.37	0.17	0.03 (3.17)	0.02 (0.44)	0.38 (-0.08)	0.13 (1.78)	0.11 (1.40)
D7	0.79	4.32	0.18	0.21 (3.33)	0.25 (4.15)	0.40 (3.85)	0.32 (3.13)	0.35 (3.16)
D8	0.88	4.25	0.20	0.54 (3.20)	0.56 (5.99)	0.59 (5.30)	0.52 (3.27)	0.55 (3.14)
D9	1.10	4.01	0.27	1.21 (3.35)	1.37 (7.69)	1.45 (6.32)	1.01 (3.13)	0.95 (2.68)
D10	1.47	3.88	0.37	1.45 (3.85)	1.40 (3.48)	1.53 (2.94)	1.50 (3.16)	1.40 (2.83)
D10–D1	1.11	3.45	0.32	2.57 (4.23)	2.58 (3.39)	2.73 (2.40)	2.65 (2.27)	2.53 (2.20)
GRS				8.22 (p = 0.00)	8.18 (p = 0.00)	8.12 (p = 0.00)	7.85 (p = 0.00)	7.35 (p = 0.00)
Panel B: Non-Shari'ah Compliant Decile Portfolios								
D1	0.28	5.98	0.04	-1.32 (-6.16)	-1.31 (-3.87)	-1.28 (-3.54)	-1.23 (-2.22)	-1.17 (-2.30)
D2	0.31	5.86	0.05	-1.21 (-2.00)	-1.64 (-11.8)	-1.44 (-8.73)	-1.73 (-7.17)	-1.43 (-5.37)
D3	0.32	5.73	0.05	-0.83 (-2.30)	-0.98 (-12.3)	-1.02 (-10.8)	-1.02 (-7.67)	-1.05 (-7.26)
D4	0.36	5.68	0.06	0.54 (4.95)	0.12 (8.63)	0.17 (6.48)	0.21 (3.74)	0.20 (2.80)
D5	0.49	5.60	0.08	0.58 (21.8)	0.28 (8.36)	0.29 (7.22)	0.26 (5.28)	0.24 (4.89)
D6	0.54	5.54	0.09	0.73 (9.68)	0.41 (2.68)	0.38 (2.41)	0.35 (1.14)	0.37 (2.11)
D7	0.69	5.50	0.12	0.76 (4.03)	0.58 (3.56)	0.42 (3.29)	0.40 (2.02)	0.42 (2.04)
D8	0.76	5.48	0.13	0.80 (13.3)	0.72 (7.13)	0.53 (5.36)	0.49 (4.83)	0.48 (3.88)
D9	0.87	5.41	0.16	0.86 (14.9)	0.83 (6.13)	0.80 (4.34)	0.79 (4.09)	0.61 (3.25)
D10	1.19	5.32	0.22	0.92 (5.34)	0.89 (3.29)	0.83 (3.03)	0.80 (3.78)	0.79 (2.26)
D10–D1	0.91	4.75	0.19	2.24 (2.50)	2.20 (2.48)	2.11 (3.33)	2.03 (2.25)	1.96 (2.17)
GRS				7.85 (p = 0.00)	7.80 (p = 0.00)	7.73 (p = 0.00)	5.70 (p = 0.00)	5.71 (p = 0.00)

Table 3: Performance of Shari'ah and Non-Shari'ah decile portfolios using other factor models (Continued)

Panel A: Shari'ah Compliant Portfolios	**AlphaQ4**		**AlphaQ5**		**AlphaMP**	
	Alpha	t-stat	Alpha	t-stat	Alpha	t-stat
D1	-2.20	(-6.49)	-2.19	(-2.35)	-2.22	(-7.01)
D2	-1.06	(-9.30)	-1.05	(-13.9)	-1.12	(-21.4)
D3	-0.76	(-3.50)	-0.76	(-17.9)	-0.71	(-22.0)
D4	0.27	(2.15)	0.24	(16.4)	0.30	(3.56)
D5	0.32	(2.30)	0.27	(9.10)	0.30	(3.45)
D6	0.38	(2.31)	0.35	(1.32)	0.40	(5.78)
D7	0.47	(7.09)	0.42	(6.45)	0.53	(6.49)
D8	0.54	(4.75)	0.50	(9.24)	0.55	(11.0)
D9	0.67	(3.71)	0.63	(9.29)	0.65	(12.1)
D10	0.85	(3.53)	0.69	(2.52)	0.89	(12.1)
D10-D1	3.05	(5.61)	2.88	(2.85)	3.11	(5.33)
GRS	8.18	p-val 0.00	8.05	p-val 0.00	8.38	p-val 0.00
Panel B: Non-Shari'ah Compliant Portfolios	**AlphaQ4**		**AlphaQ5**		**AlphaMP**	
D1	-2.03	(-4.62)	-2.05	(-3.26)	-2.10	(-4.35)
D2	-0.99	(-13.6)	-0.94	(-9.16)	-1.15	(-12.7)
D3	-0.77	(-19.5)	-0.78	(-14.7)	-0.80	(-18.8)
D4	0.57	(22.4)	0.50	(17.9)	0.58	(18.8)
D5	0.38	(16.0)	0.37	(12.2)	0.37	(15.2)
D6	0.45	(7.23)	0.43	(5.38)	0.11	(4.96)
D7	0.52	(2.55)	0.48	(1.72)	0.06	(2.19)
D8	0.60	(7.04)	0.56	(4.32)	0.38	(9.25)
D9	0.77	(7.23)	0.65	(6.84)	0.64	(7.27)
D10	0.81	(5.51)	0.78	(4.27)	0.89	(5.89)
D10-D1	2.84	(5.47)	2.83	(2.35)	2.99	(5.29)
GRS	7.58	p-val 0.00	7.42	p-val 0.00	7.61	p-val 0.00

Notes: This table presents the decile portfolio performance of Shari'ah compliant stocks. Decile portfolios of stocks are constructed as univariate sort based on idiosyncratic momentum strategy. The sample includes all the common stocks listed on NYSE/AMEX and NASDAQ exchanges. The sample period starts from January 1986 to February 2020. The NYSE above 20th percentile listed stocks are included, stocks with below $1 share prices are excluded to dismiss the microstructure concerns. The idiosyncratic momentum returns of Shari'ah stock is calculated as 12-2 month idiosyncratic returns scaled by the its volatility estimated by using Fama and French (1993) three- factor model. For each decile portfolio, excess return over the risk-free rate (ER ¿, volatility (Vol), ex-post Sharpe ratio (SR), and the risk adjusted returns (i.e., alpha) CAPM, Three-Five- Six factors alpha (intercept). The table also reports Q4 and Q5 and Mispricing factor (MP) alpha (intercept) and corresponding t-statistics. For each asset pricing model, GRS test statistics for each type of decile portfolio are reported. These decile portfolios are equal-weighted and rebalanced monthly. The monthly results of each decile portfolio as well as self-financing portfolio (D10-D1).

Separate asset pricing Factor-Idiosyncratic momentum (IMOM)

Previous results show that idiosyncratic momentum strategy generates profit in both types of stocks. Although the existence of idiosyncratic anomalous returns challenges the efficient market hypothesis. Besides, this study explores that whether idiosyncratic momentum can be a new factor that may enhance efficient frontier. Therefore, we hypothesized that whether idiosyncratic momentum (hereafter; IMOM) is a new asset pricing factor. To test this hypothesis, this study performs factor-spanning test and Fama and MacBeth (1973) test. According to Fama and French (2015), these tests are performed jointly as these tests jointly provide a unique perspective that would complement each other. Therefore, this study first discusses the results of factor spanning test and then the crosssectional regression results. Table 3 reports factor spanning test results in two distinct panels A and B for Shari'ah and non-Shari'ah compliant stocks respectively. Panels Aand B of Table 3 presents results, where, we regress returns of IMOM factor on(i) Fama and French (1993) three-factor, (ii) Carhart's (1997) (iii) factor, Fama and French (2015, 2018) five- and-six factors. Next, we reverse the position of MOM and IMOM factor. Similarly, we regress IMOM factor on Q4 and Q5 factor models and mispricing factor models, however, these models are also unable to explain the IMOM factor, though they explained the MOM factor.

As shown in Table 3 IMOM factor alpha and its corresponding (t-value). First and the foremost, IMOM factor returns are regressed on factor models and we next reverse the position and regress the MOM factor's return to estimate the MOM factor alpha. For instance, in Panel A, in five factor model we added the MOM factor this generates IMOM alpha of 0.94% per month with associated (t-value = 2.22). Similarly, in five factor model we added UMD momentum factor that generates the IMOM alpha of 0.90% per month with associated (t-value = 2.20). On the other hand, the five factor model augmented with IMOM factor this brings the alpha of MOM to 0.50% per month with (t-value = 1.68), and the five factor model along with UMD factor generates MOM alpha 0.40% per month with associated (t-value = 1.66). Additionally, we repeat the analysis for non-Shari'ah compliant stocks, as shown in panel B, the addition of MOM factor to five factor model, generates the IMOM alpha 0.84% per month with associated (t-value = 1.98). However, UMD added to the five-factor model generates IMOM alpha 0.81% per month with associated (tvalue = 1.78). On the other hand, the five–factor model along with IMOM factor brings the alpha of MOM to 0.41% per month with (t-value = 1.68), and , the five factor model with UMD factor generates MOM alpha 0.35% per month with associated (t-value = 1.60).

Similarly, IMOM factor's returns are estimated for Q4 and Q5 factor model, as well as mispricing factors. These results are shown in Table 3 for both types of stocks in two distinct panels A and B respectively. Table 3 shows that Q4-factor model yields the IMOM alpha 2.43% per month with (t-value=5.61), whereas, Q5-factor model yields IMOM alpha 2.42% per month with t-value = 4.65). The four-mispricing factor model yields IMOM alpha of 1.15% per month with (t-value =3.33). Similarly, we repeat the analysis for non-Shari'ah

compliant stocks in panel B of Table 3. For instance, the Q4-factor model yields the IMOM alpha 2.18% per month with (t-value = 4.47), however, Q5-factor model yields the IMOM alpha 2.07% with (t-value =3.15) and the fourmispricing factor model yields IMOM alpha 3.11% per month with (t-value= 4.29) respectively. These results indicate that none of factor spanning test explained subsumed the superiority of IMOM even when the MOM is present.

Notwithstanding, simple regressions results indicate that the market beta is negative and insignificant in Shari'ah and non-Shari'ah compliant stocks regardless of the model specification in Panel A and B of Table 3. Besides, SMB, it is negative and statistically significant to both types of stocks in panel A and B of Table 3 respectively. The negative and statistically significant relation of SMB to both types of stock corroborate the finding of small-size effect introduced by Banz (1981). Whereas, the situation is different with other factor variables. Such as, HML is negative and insignificant for Shari'ah stocks, whereas, HML is negative and statistically significant in non- Shari'ah stock. This suggests that non- Shari'ah stocks are more value oriented relative to Shari'ah stocks. The MOM factor is positive and statistically significant to both types of stocks. However, MOM effect is weak probably lower credit-risk in the Shari'ah stocks than the non-Shari'ah stocks. Besides, RMW is positive and statically significant in Shari'ah stocks, whereas, it is not existent in in non- Shari'ah stock. The presence of RMW indicates a visible gross profitability premium is Shari'ah Stocks. In addition, CMA and UMD have expected similar sign and magnitude, such as, UMD momentum in Shari'ah stock exhibits weak momentum effect to that of non- Shari'ah compliant stocks, probably due to low credit risk Islamic market. Therefore, these findings indicate that none of asset pricing factor model able to price IMOM factor, however, they yields positive and statistically significant alpha, further, the same factors behave differently in this sample for these types of stocks.

Table 3: Factor spanning tests using Fama and French three factor model (1986–2020)

Panel A: Shari'ah compliant stocks

	Alpha	MKT–RF	SMB	HML	MOM	RMW	CMA	UMD	IMOM
(i)	0.99	-0.03	1.67	-1.22					
	(1.75)	(-2.55)	(0.66)	(-0.43)					
(ii)	0.97	-0.02	1.63	-1.17	0.15				
	(2.27)	(-2.52)	(0.65)	(-0.42)	(7.37)				
(iii)	0.94	-0.01	3.57	-0.12	0.12	0.10	0.19		
	(2.22)	(-2.26)	(1.22)	(-0.03)	(10.5)	(5.31)	(2.17)		
(iv)	0.90	-0.01	3.50	-0.11		0.42	-0.78	0.47	
	(2.20)	(-2.27)	(1.12)	(-0.03)		(2.31)	(-0.17)	(2.30)	
(v)	0.50	-0.02	1.66	-1.09		0.32	0.25		1.35
	(1.68)	(-2.47)	(0.66)	(-0.29)		(4.31)	(3.04)		(11.51)
(vi)	0.40	-0.01	3.56	-0.14		0.12	0.19	0.32	1.23
	(1.66)	(-3.28)	(1.35)	(-0.04)		(2.29)	(2.16)	(2.29)	(9.10)

Panel B: Non-Shari'ah compliant stocks

	Alpha	MKT–RF	SMB	HML	MOM	RMW	CMA	UMD	IMOM
(vii)	0.93	-0.09	1.25	-0.04					
	(1.88)	(-2.50)	(1.36)	(-6.04)					
(viii)	0.92	-0.08	1.31	-0.26	0.35				
	(2.19)	(-2.41)	(1.42)	(-5.21)	(25.92)				
(ix)	0.84	-0.08	0.12	-0.49	0.30	0.06	0.15		
	(1.98)	(-2.36)	(0.10)	(-4.28)	(18.02)	(0.13)	(3.61)		
(x)	0.81	-0.07	0.08	-0.58		0.49	-0.81	0.45	
	(1.78)	(-2.20)	(0.04)	(-3.42)		(0.47)	(-2.00)	(2.23)	
(xi)	0.41	-0.06	1.17	0.43		0.32	0.25		0.96
	(1.68)	(1.02)	(1.24)	(2.26)		(1.49)	(2.55)		(20.32)
(xii)	0.35	-0.05	0.03	-0.61		0.25	0.27	0.19	1.05
	(1.60)	(-1.23)	(0.09)	(-3.35)		(1.58)	(5.25)	(1.79)	(2.37)

Table 4: Factor spanning tests using other models for both stocks (Continued)

Panel A: Factor spanning tests – Shari'ah compliant stocks								
Model	Alpha	MKT	ME	AI	ROE	EG	MGMT	PERF
xiii	2.43	0.003	0.03	0.07	0.03			
	(5.61)	(3.02)	(5.59)	(8.50)	(10.4)			
xiv	2.42	0.10	0.04	0.07	0.05	-0.13		
	(4.65)	(1.44)	(4.74)	(0.47)	(9.46)	(-2.01)		
xv	1.15	0.004	0.02				0.03	0.12
	(3.33)	(1.02)	(3.17)				(11.3)	(10.9)
Panel B: Factor spanning tests – Non-Shari'ah compliant stocks								
Model	Alpha	MKT	ME	AI	ROE	EG	MGMT	PERF
xvi	2.18	1.36	0.18	0.54	2.01			
	(4.47)	(1.62)	(3.18)	(0.27)	(1.39)			
xvii	2.07	1.22	0.30	0.64	2.34	-1.24		
	(3.15)	(1.38)	(2.28)	(0.31)	(1.49)	(-3.54)		
xviii	3.11	0.46	1.07				0.18	0.88
	(4.29)	(0.5)	(1.87)				(4.01)	(5.25)

Fama and MacBeth (1973) - Cross-sectional regression

Each month stocks are regressed with a set of independent variables to obtain estimates and associated corresponding (t-value). The control variables are: the market beta, ln (firm's size), ln (the book-to-market ratio), operating profitability (OP), investment (INV), and momentum (UMD) variable. The two main control variables are IMOM and MOM used in Carhart (1997)'s model Blitz et al. (2020) also used these main control variables in cross- sectional regression analysis. Fama and French (2018)'s momentum UMD variable serves as a control variable. All variables at 1% and 99%, are winsorized and corresponding t-statistics are reported using the Newey and West (1987).

To simplify the comparison, Table 4 reports the results using three-factor model for both types of stock in two distinct panels,A and B respectively. In Table 4 the intercept is positive and statistically significant in both stocks regardless of the models used. The present study first examines the results of main explanatory variables and investigates whether, IMOM, MOM, and UMD plays a same role in both types of stocks respectively. The result contained in Table 4 leads to a similar conclusion as for the factor spanning tests. For instance, in Panel A, as the MOM variable is added to the five-factor model yields a positive intercept of 1.72% per month with corresponding (tvalue = 2.20). Whereas, IMOM variable combined with a five-factor model brings the intercept to 1.67% per month with (t-value=2.13). When the two explanatory variables such as, IMOM and MOM variables are added at the same time to the five-factor model, IMOM variable emerges as a stronger variable (i.e.,0.83% with higher (t-value = 4.02) to predicts the future returns than the

MOM variable and yields the intercept 1.64% with (t-value =2.31). Additionally, IMOM and UMD are combined with a five-factor model that leaves an alpha 1.58% per month (t-value =2.40) and again IMOM variable emerges as stronger than the UMD .

We repeat the analysis for non- Shari'ah compliant stocks and the results shown in panel B of Table 4. For example, the addition of the to the five-factor model generates alpha 1.70% per month with (t-value =1.95) for non-Shari'ah compliant stocks. On the other hand, the addition of IMOM variable to the five-factor model earns alpha 1.71 and (t-value = 2.68). When the two explanatory variables such as, IMOM and IMOM variables are added at the same time to the fivefactor model, IMOM variable emerges as a stronger variable (i.e.,0.61 with higher (t-value = 4.52) to predicts the future returns than the MOM variable and yields the intercept 1.72% with (t-value =3.62). Additionally, IMOM and UMD are combined with five-factor model that leaves an alpha 1.45% per month (t-value=2.01) and again IMOM variable emerges as stronger (i.e.,0.62 with higher tvalue = 6.41) than the UMD. In Table 4 the regression results show that the market beta is negative and statistically significant in both stocks. Besides, the firm size ln(Me) is negatively related to the idiosyncratic future returns in both types of stocks, confirming the existence of the firm size effect introduced by Banz (1981). In addition, $ln\left(\frac{B}{M}\right)$ ratio is a significant predictor in non- Shari'ah compliant stocks, whereas, it is not present in Shari'ah compliant stocks. However, this difference in behavior could be link to the lower credit-risk in Shari'ah compliant stocks, which is considered as one of the important drivers of the value premium (Avramov et al., 2013; Zaremba et al., 2018; Simlai, 2025). In addition, the profitability effect (OP), positively related to the idiosyncratic future returns, which are visible in Shari'ah compliant stocks and not in non-Shari'ah compliant stocks. In addition, INV and UMD have expected similar sign and magnitude, such as, the Fama and French momentum (UMD), in Shari'ah stock exhibits weaker momentum effect than non-Shari'ah compliant stocks, low credit risk Islamic market. The MOM effect is weakened in Shari'ah compliant stocks, which is probably due to the lower credit market. This is due to the fact that during the screening process all those firms are excluded from the investment universe those with high debt ratio. Because of this reason the Shari'ah complaint stocks are less volatile during the turmoil period and have low credit risk. These findings exhibit different behavior that might play a role in asset pricing and efficiency of a wide range of factor models.

These results summarize as follow: First, the addition of IMOM factor to Fama and French five factor model reduces alpha value and associated (t-value),however, the converse is not true, when MOM factor is added to Fama and French five factor models. Second, on a stand-alone basis, when both characteristics (IMOM and MOM) variables are included at the same time to the five-factor model, IMOM emerges stronger than the MOM having higher t-statistics as shown in panels A and B of Table 4 respectively. These results are in align with the work of Blitz et al. (2020). The crosssectional regression results lead to conclude that there is an information about the average returns in IMOM variable that is not contained in the MOM. Finally, these initial results indicate that this wide range of

asset pricing factor models behaves differently in Shari'ah compliant stocks than to the non-Shari'ah compliant stocks.

Table 5: Fama and MacBeth (1973) Cross-Section Tests Using the Fama and French Three-Factor Model (1986–2020)

Panel A: Shari'ah-Compliant Stocks

	Intercept	β	ln(Me)	ln(B/M)	OP	INV	IMOM	MOM	UMD	R^2	N
Coeff	1.70	-0.01	-1.66	0.01						5.20	151,691
t-stat	(2.54)	(-0.10)	(-4.96)	(0.15)							
Coeff	1.72	0.01	-1.67	0.01				0.72		5.35	151,691
t-stat	(2.27)	(0.14)	(-5.00)	(0.18)				(2.76)			
Coeff	1.75	0.01	-1.62	0.01			0.98			5.63	151,691
t-stat	(1.99)	(0.98)	(-4.85)	(0.97)			(5.96)				
Coeff	1.78	-0.01	-1.70	0.01			0.53	0.40		6.10	151,691
t-stat	(2.09)	(-0.16)	(-5.07)	(1.17)			(3.54)	(3.47)			
Coeff	1.72	0.01	-1.52	0.02	0.75	-0.55		0.45		6.25	151,691
t-stat	(2.20)	(0.94)	(-4.40)	(1.50)	(4.01)	(-8.38)		(2.93)			
Coeff	1.67	-0.01	-1.45	-0.01	0.73	-0.54	0.85			5.99	151,691
t-stat	(2.13)	(-2.76)	(-4.24)	(-1.28)	(3.01)	(-8.47)	(3.02)				
Coeff	1.71	-0.01	-1.50	0.01	0.78	-0.53			0.48	5.87	151,691
t-stat	(3.31)	(-2.89)	(-4.38)	(1.43)	(3.01)	(-8.33)			(2.34)		
Coeff	1.67	-0.01	-1.46	0.01	0.77	-0.52	0.83	0.43		6.28	151,691
t-stat	(2.31)	(-2.77)	(-4.27)	(1.25)	(4.01)	(-8.44)	(4.02)	(3.80)			
Coeff	1.58	-0.01	-1.55	0.01	1.25	-0.59	0.78		0.41	6.46	151,691
t-stat	(2.40)	(-2.99)	(-4.51)	(1.52)	(3.01)	(-9.13)	(5.72)		(3.37)		

Panel B: Non-shari'ah stocks

	Intercept	β	ln(Me)	ln(B/M)	OP	INV	IMOM	MOM	UMD	R^2	N
Coeff	1.65	-0.001	4.86	0.01						6.30	87,567
t-stat	(2.50)	(-0.20)	(3.51)	(4.72)							
Coeff	1.67	-0.01	4.86	0.006				0.75		6.42	87,567
t-stat	(2.51)	(-0.20)	(3.54)	(4.75)				(3.02)			
Coeff	1.68	-0.002	4.34	0.006			0.94			6.41	87,567
t-stat	(2.23)	(-0.88)	(3.17)	(4.41)			(4.44)				
Coeff	1.69	-0.001	4.91	0.01			0.49	0.39		6.49	87,567
t-stat	(2.17)	(-0.52)	(3.58)	(-5.14)			(6.44)	(3.80)			
Coeff	1.70	-0.002	4.31	0.007	0.80	-0.26		0.48		7.54	87,567
t-stat	(1.95)	(-1.91)	(3.03)	(4.43)	(1.54)	(-5.90)		(2.28)			
Coeff	1.71	-0.002	3.80	0.01	0.87	-0.22	0.78			7.52	87,567
t-stat	(2.68)	(-2.46)	(2.66)	(4.08)	(1.57)	(-6.05)	(4.51)				
Coeff	1.73	-0.002	4.37	0.01	0.89	-0.26			0.57	7.51	87,567
t-stat	(2.89)	(-1.87)	(3.02)	(4.44)	(1.53)	(-5.90)			(2.85)		
Coeff	1.72	-0.002	3.79	0.007	0.80	-0.26	0.61	0.56		7.55	87,567
t-stat	(3.62)	(-2.47)	(2.65)	(4.08)	(0.57)	(-6.05)	(4.52)	(3.77)			
Coeff	1.45	-0.002	4.48	0.01	0.86	-0.31	0.62		0.39	7.57	87,567
t-stat	(2.01)	(-2.16)	(3.15)	(4.82)	(0.47)	(-6.28)	(6.41)		(3.17)		

Robustness Test-seasonality effect (January effect)

In the robustness test, we examine the seasonal patterns in Shari'ah compliant stocks based on idiosyncratic momentum strategy. Jegadeesh and Titman (1993) find the strong evidence of seasonal effect based on momentum strategy in conventional stocks. Thus, we expect to find no seasonal patterns in Shari'ah compliant stocks based on IMOM strategy. Traditional MOM strategy exhibits a seasonal pattern in returns, Jegadeesh and Titman (1993, 2011) find that MOM strategy generates positive and statistically significant returns in all months except January. In other words, MOM yields negative returns in January. The authors argue that the fund managers, in order to keep their portfolios equal to benchmark portfolios sell small-cap loser stocks in December this generate downward pressure on stock returns, due to tax loss selling followed by correction in the next month, which is January. Hence, MOM strategy short in small-cap stocks generate significant positive return in December and large negative returns in January.

On the contrary, Blitz et al. (2011) find that sorting portfolio based on IMOM strategy does not yield negative returns in January. The authors argue that IMOM strategy size neutral strategy and does not exhibit seasonality in any month throughout the year. Therefore, this study expects the January effect to have a less or negligible effect of IMOM strategy's performance in the context of Shari'ah compliant stocks. To test the hypothesis that whether IMOM returns are sensitive to January effect) in Shari'ah and non-Shari'ah compliant portfolios. To do this, the current study divides the full-sample average returns based on IMOM strategy into January and non-January months. These results are presented in Table 5. To simplify comparison, Table 5 presents the results of loser (D1) portfolio, the winner (D10) portfolio, as well as the self-financed (D10-D1) portfolio returns sorted on IMOM using the Fama and French (1993) three-factor model.

Shari'ah and non-Shari'ah compliant decile portfolios results are presented in two A and B in Table 5. Panel A of Table 5 reports the alpha of D1, D10 and self-financing (D10-D1) strategy. The alpha is positive and statistically significant in January for Shari'ah complaint stocks regardless of the asset pricing factor model used, however, with the only exception of mispricing factor's alpha, which is insignificant. Similarly, non-January alphas are also positive and statistically significant for Shari'ah compliant stocks. Similarly, Panel B of Table 5 presents alpha returns for non-Shari'ah complaints stocks are positive and statistically significant in January and non-January months. Therefore, this study finds no evidence of January effect in both types of stocks. These results align with the work of Gutierrez and Prinsky (2007) and Blitz et al. (2011). Based on these findings, the present study rejects the null hypothesis on the most conservative significance level and concludes that IMOM strategy yields profit that is not sensitive to the seasonality effect. Hence, IMOM profits are more substantial and persistent across the year for both Shari'ah compliant and non-Shari'ah compliant stocks. These results have exciting investment implications for investors and portfolio managers. Unlike the MOMstrategy, the IMOM profits do not vary across different months of the year. Hence, an investment strategy based on idiosyncratic momentum does not need adjustment to avoid losses because of

the reversal in January. This will result in lower transaction costs, higher profitability, and a more practically implementable investment strategy.

Table 6: Table 5: Performance of Shari'ah and Non-Shari'ah Decile Portfolios Using Fama and French Three-Factor Model – Seasonality Effect (1986–2020)

	January			Non–January		
	D1	D10	D10–D1	D1	D10	D10–D1
Panel A: Shari'ah stocks						
AlphaCAPM	1.71	2.33	0.62	1.52	3.26	1.74
	(2.83)	(3.00)	(4.70)	(3.69)	(4.14)	(3.45)
Alpha–3 Factor	1.60	2.30	0.70	1.33	2.80	1.47
	(2.06)	(4.39)	(6.60)	(3.44)	(2.53)	(3.09)
Alpha–4 Factor	1.56	2.28	0.72	1.29	2.75	1.46
	(4.87)	(0.13)	(5.48)	(2.47)	(3.28)	(2.81)
Alpha–5 Factor	1.41	2.25	0.84	1.25	2.08	0.88
	(8.59)	(5.40)	(4.50)	(2.18)	(2.34)	(3.18)
Alpha–UMDFactor	1.39	2.15	0.76	1.19	2.00	0.81
	(5.27)	(3.75)	(3.85)	(2.05)	(2.30)	(2.25)
Alpha–Q 4 Factor	2.19	2.40	0.21	2.30	3.46	1.16
	(9.44)	(7.36)	(5.14)	(4.31)	(4.70)	(3.39)
Alpha–Q5 Factor	2.15	2.38	0.23	3.06	3.42	0.36
	(3.28)	(4.61)	(5.21)	(4.05)	(4.07)	(4.02)
Alpha–4 MPFactor	2.40	2.63	0.28	3.45	3.58	0.13
	(0.81)	(2.96)	(5.10)	(3.24)	(3.35)	(5.11)
Panel B: Non-Shari'ah stocks						
AlphaCAPM	1.63	2.09	0.46	2.08	2.86	0.78
	(7.25)	(2.50)	(4.47)	(5.70)	(4.32)	(10.00)
Alpha–3 Factor	1.50	2.02	0.52	2.62	2.78	0.16
	(5.91)	(2.55)	(3.24)	(5.20)	(4.07)	(6.27)
Alpha–4 Factor	1.48	1.76	0.28	2.57	2.72	0.15
	(5.23)	(3.34)	(3.81)	(4.90)	(4.06)	(5.96)
Alpha–5 Factor	1.32	1.60	0.26	2.47	2.70	0.23
	(4.25)	(2.97)	(2.71)	(2.80)	(3.03)	(2.83)
Alpha–UMDFactor	1.23	1.55	0.32	2.15	2.68	0.53
	(4.64)	(1.99)	(2.67)	(5.86)	(3.03)	(6.89)
Alpha–Q 4 Factor	2.19	2.28	0.09	2.28	2.73	0.45
	(9.44)	(7.36)	(5.14)	(2.40)	(2.85)	(3.45)
Alpha–Q5 Factor	2.09	2.30	0.15	2.36	2.88	0.32
	(3.28)	(4.12)	(5.20)	(2.30)	(3.11)	(2.81)
Alpha–4 MPFactor	2.48	2.57	0.18	2.45	2.53	0.35
	(3.81)	(2.96)	(5.08)	(2.75)	(3.66)	(4.91)

Conclusion

This study investigates the idiosyncratic momentum strategy in Shari'ah compliant decile portfolios using all the common shares (share code 10 and 11) listed on NYSE/AMEX and NASDAQ exchanges. It provides evidence that IMOM strategy exists in Shari'ah compliant portfolios and it also shows that IMOM is a separate factor that could expand efficient frontier of already established a wide range of asset pricing factor models, even if the traditional momentum factor is present in the asset pricing factor models. Moreover, this study also provides evidence that IMOM strategy delivers positive anomalous profit throughout the year, including January unlike the momentum strategy that generates negative and statistically significant returns in January, that exhibits seasonal patterns in its returns.

Recently, Islamic finance has gained much attention among academic professionals and practitioners. Moreover, rapid growth in Islamic industry makes it now worth of trillion-dollar, offering thousands of Islamic mutual funds and various equity and Sukuk investing vehicles worldwide. Besides, there is still a debate over the performance of Islamic investing compared to traditional investing. The previous literature has provided mixed evidence on the performance of both types of stocks. The primary objective of this study is to bring some empirical evidence on the performance of Shari'ah and non-Shari'ah compliant stocks of the US equity market based on a recently developed momentum investing based on IMOM.

Previous studies have documented the strong evidence of IMOM in non-Shari'ah compliant stocks. Whereas, Dewandaru et al. (2017) argue that Islamic equity is considered as a separate asset class, owing to its screening criteria based on its qualitative and quantitative screening criteria. The empirical findings show that Shari'ah and non-Shari'ah compliant equities are indeed largely segmented markets. Therefore, to the author's knowledge, this is the first study that examines the IMOM strategy in Shari'ah compliant stocks. Furthermore, compared with profit of non-Shari'ah compliance stocks, this study adds that Shari'ah yields greater return than its counterpart, therefore, the findings imply to momentum investors to allow their insights into the advantage that they receive while investing in IMOM that is more align with their religious belief as well as have a social ethical benefit.

Another key contribution is that it provides evidence that the IMOM is a separate factor that extends the efficient frontier based on wide range of already established factor asset pricing models, even in the presence of traditional momentum (i.e., MOM). Further, Fama MacBeth, cross-sectional regressions results indicate that on a stand-alone basis, when both characteristics (IMOM and MOM) variables are included at the same time to the five-factor model, IMOM variable emerges stronger than the MOM. The findings also imply that the factor investors earn risk-adjusted profit based on idiosyncratic momentum also enhance their efficient frontier as none of the prominent factor models able to explain the IMOM factor in factor spanning test as well as in cross-sectional regression

test. These findings are useful not only for the Shari'ah compliant investors but also for non-Shari'ah investors, as they may take advantage by diversify their portfolio while investing in Shari'ah compliant stocks based on idiosyncratic momentum. Besides, these results also imply that momentum investors can earn throughout the year, unlike momentum strategy that generates negative returns in the month of January.

Finally, this study provides useful insight related to the on-going debate in the momentum literature regarding the performance of Shari'ah and non-Shari'ah compliant stocks. Highlighting the two contrasting perspective on the performance of both types of stocks, given evidence that idiosyncratic momentum strategy exists in Shari'ah compliant stocks and the strategy outperform in Shari'ah compliant stocks than the non-Shari'ah. Besides, these findings also provide evidence that both types (i.e., Shari'ah and non-Shari'ah compliant) equities are indeed largely segmented markets. Therefore, these results imply that policymakers and practitioners must consider the different characteristics of Islamic equity owing to its stringent screening criteria that may play a role in the asset pricing discrepancies that exist Shari'ah and non-Shari'ah market segmentation.

The research design in the study attempts to minimize some of the problems of the data limitation associated with Shari'ah compliant stocks as well as with IMOM strategy. Whereas some of the problems are not to be eliminated, and these are presented as the limitations of this study. The first and foremost limitation is that the sample size of Shari'ah compliant stock data is small, therefore, this study applies screening criteria that constitutes sample data for empirical analysis. Second, the asset pricing data is region specific. Besides, the investment model (i.e., Q4 and Q5 factor model) data as well as the mispricing data are only for US equity markets. Finally, the accounting data used for constructing several variables in cross sectional regression analysis is not available is not available, similarly stock price data is also not available for analysis due to this limitation the chosen time frame for this study is started from January 1986 to February 2020. The future research may be conducted whether the anomalous profit differences also present within the Islamic asset classes and Shari'ah compliant fixed income securities. Next, the sub-sample analysis would be investigated based on IMOM strategy.

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