

CALENDAR ANOMALIES WITHIN SHARIAH-COMPLIANT MALAYSIAN STOCK MARKET

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Abstract: *This study delves into calendar anomalies within the Shariah-compliant Malaysian stock market with a focus on the day-of-the-week (DOW), month-of-the-year (MOY), turn-of-the-month (TOM), and turn-of-the-year (TOY) effects starting from 22 January 2007 until 31 October 2023. The study aims to ascertain the presence of anomalies and their implications towards the overall stock market efficiency. Notably, the study confirmed the significant DOW effect in the FBM EMAS (FBMEMS) and FBM Hijrah (FBMHS) Shariah-compliant indices, characterized by negative returns on Mondays, even after accounting for volatility. In contrast, monthly effects (MOY) exhibit variability in both indices, specifically in April, July, October, and December, posing challenges for investors attempting to strategically plan their portfolios. However, the absence of significant TOM and TOY effects suggests potential efficiency in these aspects of the Shariah-compliant indices. The existence of calendar anomalies, particularly the DOW Effect, suggests that the Malaysian Shariah-compliant indices are not weak form efficient as per the Efficient Market Hypothesis. These findings can help policymakers avoid excessive stock market fluctuations by helping them understand the various patterns in the market over time while examining their policies. It also tells fund managers, traders and individual investors about specific quirks or unusual behaviours and suggests they might need to adjust their investment strategies accordingly to exploit the market opportunities.*

Keywords: *Calendar Anomalies, Shariah-Compliant Indices, Market Efficiency*

Introduction

Calendar anomalies are abnormalities that occurred through a time-varying characteristic or events. The phenomena have a close connection to the discovery of anomalous behaviour in a timely basis, such as a daily, monthly, or annual pattern in stock returns. It specifically refers to small returns, either positive or negative, on specific days or months of the year that correspond to the Gregorian or Islamic calendar (Aslam, Hunjra, Tayachi, Verhoeven, & Mohmand, 2022). The existence of calendar anomalies poses a challenge to the Efficient Market Hypothesis (EMH), which was first introduced by Fama (1965). The theory claimed that the stock prices should not include any information from the past, which allows them to move at random. It is impossible for anyone to predict future stock prices using historical data, and it is even more difficult to earn abnormal returns. The financial market is completely efficient.

However, researchers have begun to notice a few unusual trends in the stock markets of many different countries worldwide. Jumintang and Utami (2022) stated that there is one factor that really works against the EMH, which is the stock market anomalies. The factor does not support the concept of the efficient market, whereby investors may obtain abnormal returns since stock prices do not correspond to existing information and technically able to create a pattern.

Another explanation could be associated with the field of behavioural finance, which examines the decisions and behaviours of investors. It questions the three assumptions of Fama (1995), which state that rational investors and arbitrage are not valid, independent deviation from rationality is not supported, and investors are eventually responsible for stock market anomalies (Woo, Mai, McAleer, & Wong, 2020).

The fact that there have been differing opinions regarding EMH makes it an intriguing topic and a very important new area for finance researchers in such a way to examine the existence of stock market anomalies.

While considering Malaysia as one of the world's leading Islamic finance hubs, Islam is the most widely professed religion in Malaysia with the proportion of 63.5%, as of MyCensus 2020 (DOSM, 2023). A few restrictions apply to all Muslim investors, such as the prohibition on engaging in any companies that involve core activities relating to interest-related activities (*riba*), gambling (*mysir*), or severe uncertainty (*gharar*). Having said that, Shariah-compliant stocks become priority over the conventional stock market.

In fact, the Shariah-compliant stocks are outperforming the conventional stocks in many ways such as having higher investor trust, stability in returns, and informational efficiency (Raza, Said, & Elshahat, 2023), higher than average size, greater profitability and size-related marginal changes, a low book-to-market ratio, and lower investment rates (Sukor & Abdul Halim, 2022), less uncertainty and volatility in assets (Mehmood, Mohd-Rashid, Tajuddin, & Saleem, 2021). As a result of these advantages, the efficiency levels of the two types of stocks may vary from one another.

Many studies have investigated the various types of stock market anomalies found in the Shariah-compliant index. The studies were specifically created to look into the profitability of momentum trading and the effectiveness of technical trading strategies from the perspectives of conventional and Shariah-compliant stocks (Li, Ee, & Rashid, 2016; Ling, Abdul Rahim, & Said, 2020) and in most cases with a focus on the Ramadan effect (Lai & Windawati, 2017;

Rokhim & Octaviani, 2020; Yaş, Aysan, & Mohd Rasid, 2022). Even though the previously mentioned studies focus on Shariah complaint stocks, none of them particularly addressed calendar anomalies beyond of the Ramadan Effect.

As such, this study contributes to the literature by examining certain noteworthy calendar anomalies over the Malaysian Shariah compliant indices. According to FTSE Russell factsheet as 31 October 2023, the first is FTSE Bursa Malaysia EMAS Shariah Index (FBMEMS, hereafter), a Shariah index that was introduced on 22 January 2007, and was created to give investors a wide benchmark for investments that adhere to Shariah principle. It was incorporated with 211 constituents that went through screening to comply with the Shariah Advisory Council (SAC, hereafter) screening protocol as established by the Malaysian Securities Commission.

The second is FTSE Bursa Malaysia Hijrah Shariah Index (FBMHS, hereafter), which launched on 21 May 2007, is a tradable index that is screened for compliance with international Shariah regulations. The SAC and Yasaar Ltd., the leading global Shariah consultancy, monitor each of the 30 companies in the index using a predetermined set of guidelines. If these Shariah-compliant indices exhibit the calendar effect, Muslim investors may choose to strategically allocate their investments to achieve anomalous returns.

The main objective of this study is to examine the existence of calendar anomalies within the Shariah-compliant indices of Malaysian stock market. Based on Figure 1, this study focused on the day-of-the-week (DOW, hereafter), month-of-the-year (MOY, hereafter), turn-of-the-month (TOM, hereafter) and turn-of-the-year (TOY, hereafter) effect, which represent the calendar anomalies that act as stock market anomalies in effecting stock market efficiency (Shariah compliant indices). Noted that the existence of calendar effect indicates the Malaysian stock market is not yet efficient, as shown by recent study of Aggarwal and Jha (2023) on the seasonality of stock returns in emerging Asian countries, which includes Malaysia.

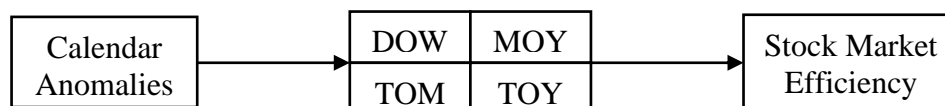


Figure 1: Conceptual Framework for Stock Market Efficiency.

This study proceeds as follows. The next section discusses the literature review from prior researches. Section 3 explains the data and methods used in the study. Section 4 presents the regression results and Section 5 concludes the paper.

Literature Review

In the 1960s, Fama (1965) developed the concept of the EMH, and in the 1970s, Fama (1970) furthered this theory. The main idea of the EMH is that all information and expectation about an asset is reflected in its present and historical prices for securities. According to Nguyen and Parsons (2022), investors would not be capable of consistently beat the market by taking advantage of mispriced assets because the price of financial assets already fully incorporates all available information.

However, despite being in the same market, many researchers still came up with contradictory ideas that related with the existence of market inefficiency as the stock market anomalies can

be great opportunities for investors since they can be used to identify patterns in price movement that will allow them to generate above-average return. Among the most well-known calendar anomalies that have defied the EMH are the DOW, MOY, TOM and TOY Effects.

Definition of DOW Effect

The DOW Effect was prominent as returns were negative on Monday and positive on Friday and the existence of this effect has received significant support from a wide body of research. However, it appears that recent studies conducted in Malaysia have found no significant evidence of the DOW Effect on returns and volume in the Malaysian stock market. One such study by Mohamad Shariff and Yusof (2021) examined the DOW Effect on the Malaysian stock market from 2015 to 2018, found no significant DOW effect on returns and for every analysed anomaly, the returns exhibit a sustained volatility shock. This could mean that the market becomes more unpredictable or experiences larger price swings for an extended period.

Similarly, another study by Khan, Aqil, Alam Kazmi and Zaman (2021) found that while the lowest daily returns were observed on Monday and the highest returns on Thursday, the results were not statistically significant. Though Monday recorded with the highest turnover in Malaysia, but the lowest average volume traded was on Tuesday. Besides, recent research examining the effect of non-pharmaceutical interventions in response to COVID-19 on stock market volatility and returns in Malaysia (Rowland, Chia, & Liew, 2023). The majority of the regression model's key findings hold true even after including the DOW effect as an additional control variable, indicating that the study was unable to find any evidence of the DOW Effect on stock performance. These findings suggest that the DOW effect does not appear to have a significant impact on the Malaysian stock market in recent years.

Definition of MOY Effect

For the MOY Effect, it shows a higher return in the first month of the year, usually January, also known as the January Effect, and a lower return in the last month of the year, usually December, in comparison to the other remaining months. In spite of that, Lean, Smyth and Wong (2007) and Keong, Yat and Ling (2010), did not discover a January Effect because the January returns did not outperform any of the non-January months and vice versa. In the meantime, the study of Munir and Sook Ching (2019) can only offer a small amount of evidence for the January effect because certain stocks in the Malaysian finance stock market show a positive average return in January and a negative average return in December, while the remaining stocks show a positive average return in December. This suggests that the January effect may not be the only monthly effect.

For instance, Mohamad Shariff and Yusof (2021) that investigated the MOY effect during year 2015 to 2018, found a significant monthly effect that did not affect returns from January but rather from May. The May effect could be caused by investors' perceptions of policy uncertainties brought on by Malaysia's surprising victory in the country's elections in May 2018. As a result, these studies believe there is monthly seasonal effect in the Malaysian stock market, but for some reason not in January.

In contrast, as the sample period extended to November 2020, Aggarwal and Jha (2023) found a positive significant January effect in Malaysia. The study claimed that it gives strong support for the tax-loss selling hypothesis, which suggests that investors engage in selling stocks with losses at the end of the tax year in December to offset capital gains and reduce tax liabilities.

Thus, the January effect may still be applicable to recent years, or it may simply illustrate the TOM Effect.

Definition of TOM Effect

The TOM Effect, which shows the phenomenon of a rise in return at the end of the month, before turning to the next month, as well as at the beginning of the next month, should not be considered a market myth because numerous studies have found a strong persistence of TOM Effect from various countries. For example, Plastun, Sibande, Gupta and Wohar (2019) found the TOM Effect for a long period of time in the US stock markets, Tadepalli, Jain and Metri (2021) discovered a strong persistence of the TOM Effect in the small-cap and mid-cap indices of Indian stock markets and among the seven stock markets in the GCC countries, Gharaibeh (2021) found strong evidence of the TOM Effect for the Oman stock market. Nevertheless, there was not much written about the TOM Effect on the Malaysian stock market.

Definition of TOY Effect

Furthermore, the TOY Effect, that indicates of an unusual rise in stock returns during the final few weeks of the year and the first few weeks of the new year, received the least attention from recent literature. Caporale and Plastun (2017) have analysed the TOY Effect in the Ukrainian stock market by adopting methods quite different from those used by prior researchers. The empirical findings for the TOY effect give actual evidence that it exists in the Ukrainian stock market for the PFTS index. Conversely, Plastun et al. (2019) used a variety of statistical methods as well, but find no evidence for the TOY Effect in the US stock markets.

Calendar Anomalies in Shariah-Complaint Stock Market

In Malaysia, there are limited research that specifically address calendar anomalies in Shariah-complaint indices other than the Ramadan Effect (Lai & Windawati, 2017; Rokhim & Octaviani, 2020; Yaş et al., 2022). However, it has been done in a few other countries. For example, Aslam et al. (2022) discovered some positive January Effect for the Moroccan Islamic stock market and a slight negative Monday Effect for the Islamic stock markets in Bangladesh and Pakistan. Additionally, the study conducted by Hasan, Hassan, Rashid, Ali and Hossain (2022) examined various calendar anomalies in the Islamic stock market indices of the Dhaka Stock Exchange. The findings indicated the existence of all the anomalies except for the Ramadan Effect, which included the Weekend Effect, MOY, January Effect, and Eid Effect. This indicates that, other than to the conventional stock market, the Shariah-compliant stock market may not be entirely efficient due to calendar anomalies.

In summary, recent research on the DOW Effect in the Malaysian stock market contradicts the well-established negative returns on Mondays and positive returns on Fridays, while the January Effect's consistency remains uncertain due to varied findings across different periods and hypotheses like tax-loss selling or the TOM Effect influencing stock returns in specific months. Moreover, there's limited exploration of the TOM and TOY Effects in the Malaysian stock market and even less on the Shariah-compliant stock market. Therefore, more extensive research is needed before it can be concluded if it still exists or has completely disappeared.

Methodology

Data

For the purposes of this study, the sample period includes all stock prices on working weekdays from 22 January 2007 to 31 October 2023, excluding Saturdays, Sundays, and public holidays.

All secondary data are collected from Refinitiv Eikon DataStream, and EViews 11 and Microsoft Excel are used to analyse the data. The dependent variable is the return of stock market indices and dummy variables are used as the independent variables for the model to calculate the returns of the stock market indices on different types of anomalies. Development of hypothesis will be based on the main research objective which is to examine the existence of calendar anomalies (i.e., DOW, MOY, TOM, TOY) within the Shariah-compliant indices (i.e., FBMEMS, FBMHS) in Malaysian stock market and the following individual hypothesis is formed.

H1: There is no DOW Effect within Malaysian Shariah indices in determining a stock market efficiency

H2: There is no MOY Effect within Malaysian Shariah indices in determining a stock market efficiency

H3: There is no TOM Effect within Malaysian Shariah indices in determining a stock market efficiency

H4: There is no TOY Effect within Malaysian Shariah indices in determining a stock market efficiency

The stock price sample has been transformed into a return series. This study uses the method applied by Caporale and Zakirova (2017), in which the stock returns are computed by deducting the initial stock price from the current stock price and then dividing the result by the initial stock price. The outcome is multiplied by 100 to report it as a percentage. The formula for the equation can be expressed as follows:

$$R_t = \frac{P_t - P_{t-1}}{P_{t-1}} \quad (1)$$

where R_t is the return at the time t , P_t and P_{t-1} are closing prices at time t and $t-1$ respectively.

Then, the basic traits of the returns were defined using descriptive statistics, which offered brief summaries of the data set and the measurements (Keong et al., 2010). In this study, the measurement included mean, standard deviation, skewness, kurtosis and Jarque-Bera.

Ordinary Least Square (OLS) Regression Model

The OLS regression model is used to examine the seasonal factor effect on stock returns. Additionally, this study employs a regression model with dummy variables, or artificial variables with values of 0 or 1, to look into the presence of calendar anomalies. In OLS analysis, dummy variables are frequently employed to differentiate between various results of the observed data (Karanovic & Karanovic, 2018). For the DOW and MOY effect, Singh and Yadav (2018) and Wuthisatian (2022) recommended using the regression model without an intercept term to avoid the issue of the dummy variable trap and the equation can be expressed as follows.

$$\text{DOW: } R_t = \beta_{Mon} D_{Mon,t} + \beta_{Tue} D_{Tue,t} + \beta_{Wed} D_{Wed,t} + \beta_{Thu} D_{Thu,t} + \beta_{Fri} D_{Fri,t} + \varepsilon_t \quad (2)$$

where $\beta_{Mon}, \dots, \beta_{Fri}$ is the average daily return for each DOW, D_{Mon}, \dots, D_{Fri} are the dummy variables that take the value of 1 if the average daily return occurs on that DOW, and 0 otherwise.

$$\text{MOY: } R_t = \beta_{Jan} D_{Jan,t} + \beta_{Feb} D_{Feb,t} + \beta_{Mar} D_{Mar,t} + \beta_{Apr} D_{Apr,t} + \beta_{May} D_{May,t} + \beta_{Jun} D_{Jun,t} + \beta_{Jul} D_{Jul,t} + \beta_{Aug} D_{Aug,t} + \beta_{Sep} D_{Sep,t} + \beta_{Oct} D_{Oct,t} + \beta_{Nov} D_{Nov,t} + \beta_{Dec} D_{Dec,t} + \varepsilon_t \quad (3)$$

where $\beta_{Jan}, \dots, \beta_{Dec}$ is the average daily return for each MOY, D_{Jan}, \dots, D_{Dec} are the dummy variables that take the value of 1 if the average daily return occurs on that MOY, and 0 otherwise.

$$\text{TOM: } R_t = \alpha + \beta_{TOM} D_{TOM,t} + \varepsilon_t \quad (4)$$

where α is an intercept term that represent the average return attained in days not at the TOM, β_{TOM} is the average return obtained in days from the TOM, the dummy variables, D_{TOM} , is equivalent to 1 when trading occurs on the month's last day up to the next month's third day and 0 otherwise.

$$\text{TOY: } R_t = \alpha + \beta_{TOY} D_{TOY,t} + \varepsilon_t \quad (5)$$

where α is an intercept term that represent the average return attained in days not at the TOY, β_{TOY} is the average return obtained in days from the TOY, the dummy variables, D_{TOY} , is equivalent to 1 when trading occurs on the last week of December and the first two weeks of January and 0 otherwise.

Autoregressive Moving Average (ARMA) and Generalized Autoregressive Heteroskedastic (GARCH) Model

Even though the OLS regression model is simple, it falls short in addressing the issues of autocorrelation and heteroskedasticity. This is a concern due to the substantial amount of evidence showing the presence of volatility clustering in the return series (Rossi & Gunardi, 2018). This study follows Yuan and Gupta (2014), Wasiuzzaman and Al-Musehel (2018) and Samaniego, Salgado and Pérez (2022) that used the ARMA and GARCH models to handle the autocorrelation and the heteroskedasticity present in the data, respectively.

Within the ARMA (1,1)-GARCH (1,1) model, the autoregressive, moving average, ARCH, and GARCH components are all evaluated using only the term that comes directly before (lag 1). In some ways to the stock market, it offers an early warning signal in catastrophic events and extremely volatile markets, and it is a modification over current models for assessing stock market risk exposure during times of distress (Chang, Hu, Kao, & Chang, 2015). As per Wasiuzzaman and Al-Musehel (2018), the ARMA (1,1)-GARCH (1,1) model stands as the most frequently employed within scholarly finance literature and is deemed the most suitable choice. The model structure is created by integrating dummy variables that correspond to specific anomalies in the stock market, which can be represented as equations below:

$$R_t = \sum_{i=1}^m \zeta_i D_i + \varepsilon_t \quad (6)$$

where $\varepsilon_t \square N(0, \sigma_t^2)$

$$\sigma_t^2 = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 \sigma_{t-1}^2 \quad (7)$$

Equation (6) is the mean equation, shows that R_t is the returns at time t and an error term (ε_t). D_i is the dummy variables that represent each calendar effect. Equation (3.8) illustrates a GARCH process in which the conditional variance (σ_t^2) is formulated as a linear combination of the intercept term (α_0) with the squared residuals from the previous period (ε_{t-1}^2) and the

previous conditional variance (σ_{t-1}^2). Here, the parameters α_1 and β_1 are the estimated coefficient that capture the existence of heteroskedasticity in the index return dataset.

Results and Discussion

Table 1 below illustrates the descriptive statistics for both Shariah-compliant indices return, FBM EMAS and FBM Hijrah Shariah Index. Both indices exhibit low means and are negatively skewed, indicating a tendency towards lower values. The standard deviations suggest moderate variability in the data. High kurtosis values imply heavy tails in the distributions. The Jarque-Bera tests yield extremely low probabilities, signalling a departure from a normal distribution. These statistics collectively depict the non-normal and asymmetric nature of these Shariah-compliant indices.

Table 1: Descriptive Statistics for Shariah-Compliant Indices Return

Shariah-Complaint Index	FBMEMS	FBMHS
Mean	0.0001	0.0001
Median	0.0003	0.0002
Std. Dev.	0.0080	0.0082
Skewness	-1.0873	-0.7155
Kurtosis	17.6054	15.6106
Jarque-Bera	37431.4200	27053.9800
Probability	0.0000	0.0000
Observation	4120	4031

Table 2 shows basic summary statistics for each calendar effects of the indices. The mean returns for Monday of both indices are negative which is like other previous studies. The standard deviation for Monday is the highest among all the other days. A possible explanation for this large Monday standard deviation is due to the “Monday Effect”, which is visible in a bad news environment and influences on Mondays (Lim, Mun Ho, & Dollery, 2010). As a result, the returns on Monday as the first day of the week, are lower or negative, whereas the returns on Friday as the last trading day before the weekend, are positive.

Both indices exhibit April effect, that is, positive returns in April and also positive October effect. However, there is also negative March effect for both indices. This result indicates contradict views as traditionally, the returns should be more volatile in January and less volatile in December. While the remaining months exhibits no significant results. Both indices indicate positive TOM and TOY mean returns and literally small value of standard deviation. Such result implies that the returns are temporarily increase at the end of the current month and at the start of the next month and gives an unusual rise at the final few weeks of the previous year and at the beginning of the new one.

Table 2: Descriptive Statistics for Specified Seasonal Effects in Shariah-Compliant Indices Return

Shariah-Complaint Index	Mon	Tue	Wed	Thu	Fri	Jan	Feb	Mar
FBMEMS								
Mean	-0.0012	0.0002	0.0002	0.0005	0.0005	- 0.0080	0.0042	-0.0037
Std. Dev.	0.0098	0.0071	0.0075	0.0076	0.0076	0.0283	0.0225	0.0434
Jarque-Bera Probability	20325.1800	636.1396	407.9642	471.1186	2897.6340	1.5136	0.4796	7.9756
	0.0000	0.0000	0.0000	0.0000	0.0000	0.4692	0.7868	0.0185
FBMHS								
Mean	-0.0010	0.0003	0.0001	0.0004	0.0005	- 0.0096	0.0016	-0.0039
Std. Dev.	0.0096	0.0075	0.0078	0.0078	0.0083	0.0282	0.0254	0.0380
Jarque-Bera Probability	18493.6300	409.3977	577.3315	460.9445	2832.7750	0.7741	1.3665	14.2000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.6791	0.5050	0.0008

Table 2: Descriptive Statistics for Specified Seasonal Effects in Shariah-Compliant Indices Return (Contd.)

Shariah-Complaint Index	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOM	TOY
FBMEMS											
Mean	0.0224	- 0.0034	- 0.0066	0.0206	- 0.0150	- 0.0092	0.0077	- 0.0073	0.0172	0.0003	0.0019
Std. Dev.	0.0403	0.0458	0.0328	0.0401	0.0394	0.0383	0.0561	0.0233	0.0231	0.0051	0.0025
Jarque-Bera Probability	8.8440	1.1039	4.2640	0.6626	0.8811	1.0964	20.0451	0.1954	2.0844	256.3356	0.3799
	0.0120	0.5758	0.1186	0.7180	0.6437	0.5780	0.0000	0.9069	0.3527	0.0000	0.8270
FBMHS											
Mean	0.0174	- 0.0050	- 0.0085	0.0163	- 0.0108	- 0.0085	0.0101	- 0.0047	0.0187	0.0002	0.0015
Std. Dev.	0.0351	0.0470	0.0350	0.0450	0.0401	0.0417	0.0550	0.0212	0.0258	0.0047	0.0030
Jarque-Bera Probability	11.5427	0.7969	2.6886	0.6767	0.3878	0.2923	16.4779	0.0777	0.1582	41.6318	5.9202
	0.0031	0.6714	0.2607	0.7130	0.8238	0.8640	0.0003	0.9619	0.9240	0.0000	0.0518

Table 3 below presents the empirical result of OLS for the Shariah-compliant indices, FBM EMAS and FBM Hijrah Shariah Index, across different weekdays. The coefficients represent the estimated impact of each index on the respective weekday, while the t-statistics assess the significance of these coefficients. Both indices exhibit a very strong statistically significant with negative coefficients on Monday and positive coefficients on Tuesday through Friday. This indicates that the Monday effect appears in all reason and the returns for both indices have to take into account the volatility of stock return.

A positive coefficient on Friday, on the other hand, indicates that the underlying announcement will continue into the weekend, giving more time for the information to get settled. Investors would sell the stocks or right away discount stock prices throughout the week as they would come to expect the disclosure of bad information on weekends. Since all the p-value is below the significant level, the null hypothesis is rejected, suggesting that the DOW Effect exists in the Shariah-compliant Malaysian stock market indices.

Table 3: OLS Result for DOW Shariah-Compliant Indices Return

Shariah-Complaint Index	Mon	Tue	Wed	Thu	Fri
FBMEMS					
Coefficient	-0.0012***	0.0014***	0.0014***	0.0017***	0.0017***
t-statistics	-4.1400	3.5664	3.5409	4.3265	4.2886
FBMHS					
Coefficient	-0.0010***	0.0013***	0.0011***	0.0014***	0.0015***
t-statistics	-3.5156	3.1765	2.7661	3.4563	3.7134

***, **, * imply significant level at 1%, 5% and 10% respectively.

The OLS result for each month of each index is shown in Table 4. Both indices exhibit a positive significant April, July, and December effect with no sign of a January Effect. The positive December Effect is previously found in GCC stock market by Ariss, Rezvanian and Mehdiian (2011), which is contrary to the January Effect documented in Western countries. Since there is no significant negative month effect, investors cannot anticipate which month to purchase stocks that have decreased in value before a sell-off at the end of December to generate tax losses on Shariah-compliant stocks. Meanwhile, Table 5 below shows the empirical result for TOM and TOY Effect. Based on the provided results, the TOM and TOY variables do not appear to have statistically significant impacts on FBM EMAS and FBM Hijrah Shariah Index. It implies that there is no TOM and TOY effect in Malaysian stock market across these two Shariah-compliant indices between 2007 and 2023.

Table 5: OLS Result for TOM and TOY Shariah-Compliant Indices Return

Shariah-Complaint Index	TOM	TOY
FBMEMS		
Coefficient	0.0003	0.0019
t-statistics	0.5355	0.9587
FBMHS		
Coefficient	0.0002	0.0016
t-statistics	0.3777	0.7723

***, **, * imply significant level at 1%, 5% and 10% respectively.

Table 4: OLS Result for MOY Shariah-Compliant Indices Return

Shariah-Complaint Index	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
FBMEMS												
Coefficient	-0.0080	0.0122	0.0043	0.0305**	0.0046	0.0014	0.0286**	-0.0070	-0.0012	0.0157	0.0008	0.0252*
t-statistics	-0.8511	0.9276	0.3318	2.3237	0.3491	0.1056	2.1824	-0.5309	-0.0919	1.2005	0.0566	1.8943
FBMHS												
Coefficient	-0.0096	0.0112	0.0057	0.0270**	0.0046	0.0011	0.0260*	-0.0012	0.0012	0.0197	0.0049	0.0283**
t-statistics	-1.0165	0.8351	0.4288	2.0151	0.3456	0.0864	1.9683	-0.0884	0.0873	1.4927	0.3674	2.1137

***, **, * imply significant level at 1%, 5% and 10% respectively.

Table 7: GARCH (1,1) Result for MOY Shariah-Compliant Indices Return

Shariah-Complaint Index	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
FBMEMS												
Coefficient	-0.0028	0.0123	0.0079	0.0147	-0.0062	0.0047	0.0190*	-0.0074	0.0017	0.0139	-0.0091	0.0139
z-statistics	-0.3800	1.1197	0.8811	1.2611	-0.6415	0.4752	1.7809	-0.7323	0.1376	1.2360	-0.7724	1.2959
FBMHS												
Coefficient	-0.0056	0.0108	0.0138	0.0127	-0.0050	0.0060	0.0174	0.0005	0.0031	0.0190*	-0.0061	0.0195**
z-statistics	-0.8372	1.0153	1.3954	1.1616	-0.5185	0.6101	1.6906	0.0539	0.2605	1.7807	-0.5080	1.9758

***, **, * imply significant level at 1%, 5% and 10% respectively. Result of variance equation are excluded.

Following these results, Tables 6 through Table 8 display the parameter estimates from the GARCH (1,1) with conditional variance equation. This study uses this approach to assess volatility and examines how the calendar effect affects stock return and its variation.

From Table 7, Monday Effect in the FBM EMAS Shariah Index remain significant in the GARCH (1,1) estimation and this means that the effect is not due to the varying volatility in the market returns, but not applicable for the FBM Hijrah Shariah Index. Furthermore, it is surprising that the empirical findings of the Monday Effect do not align with certain previous studies that provide evidence for the existence of the DOW Effect (Khan et al., 2021; Mohamad Shariff & Yusof, 2021). To sum up, it seems that the DOW Effect has been a significant impact on the Malaysian stock market in recent years.

For MOY Effect, the GARCH (1,1) result shows a significant positive return in certain months, whereas July Effect on FBM EMAS Shariah Index and October and December effect on FBM Hijrah Shariah Index. Then, this indicates that the January Effect does not exist in Shariah-compliant stock indices, which goes contrary to research by Aggarwal and Jha (2023) that found a positive, significant January Effect in Malaysia that provides strong support for the tax-loss selling hypothesis.

Table 8: GARCH (1,1) Result for TOM and TOY Shariah-Compliant Indices Return

Shariah-Complaint Index	TOM	TOY
FBMEMS		
Coefficient	0.0005	0.0012
z-statistics	0.9124	0.5031
FBMHS		
Coefficient	0.0003	0.0013
z-statistics	0.5060	0.3214

***, **, * imply significant level at 1%, 5% and 10% respectively.

Furthermore, even after considering the conditional variance in GARCH (1,1), there was still no evidence of the TOM and TOY Effect occurring. Therefore, in Shariah-compliant indices, investors do not need to take the TOM and TOY Effect into consideration.

Conclusion

The findings of the study reveal the existence of the DOW Effect in the FBM EMAS and FBM Hijrah Shariah Index, which exhibit a significant coefficient at any significant level. The DOW effects exist with negative returns on Monday in both indices even when the volatility of the returns is factored in via the GARCH (1,1) model.

The Monday Effect exist because investors are more likely to trade less on Mondays while more on Fridays (Plastun et al., 2019). Although not all investors will behave in such manner, the

majority are doing so since Monday is the first working day after a two-day break. This is referred to as the "Monday blues," a depressed mood that some people may experience at the start of a week. The same applies to having a good mood on Friday because it marks the end of the work week before the weekend. As a result, the stock market has a return pattern of Monday's decline and Friday's gain.

However, the empirical results show variability of Monthly Effect, MOY, in both Shariah-compliant indices, with effects occurring in April, July, October, and December. Because of this, it is challenging for investors to plan their portfolio in a way that an abnormal return can be obtained by determining when to buy or sell stocks based on the MOY results of GARCH (1,1) model.

Since all significant month effect shows positive returns, investors only know when to sell, meaning that investors will buy in any other month and sell during considerably profitable months to increase their chances of making a profit. On the other hand, investors are unaware of the significant negative months that should alert investors to a buy signal. Meanwhile, there is no significant TOM and TOY Effects, which investors may consider the Shariah-compliant indices is efficient toward TOM and TOY Effects.

Overall, these findings can help policymakers avoid excessive stock market fluctuations by helping them understand the various patterns in the market over time while examining their policies. Since this study discovered that some stock market anomalies exist in different calendar effects, it implies that the Malaysian stock market's Shariah-compliant indices are not weak form efficient and that the DOW Effect is still one of the anomalies that the EMH is unable to explain. With that fund managers, traders, and individual investors can create strategies to leverage the anomalies found in this study to generate additional returns from these markets.

Lastly, there is a limitation to this study since the transaction cost is not considered when calculating stock returns, even though exclusion of the transaction costs may lead to distorted results. As mentioned by Yat, Keong and Ling (2011), transaction costs might exceed the potential returns, making the transaction not profitable, particularly if it is a small one. Furthermore, as the study investigates stock market anomalies within indices that comply with Shariah, further study is needed to determine the other sort of calendar anomalies like Eid Effect. Also, by analysing trading data at the individual investor level, it could be possible to identify the mechanism behind the market anomalies present in the Malaysian stock market.

References

- Aggarwal, K., & Jha, M. K. (2023). Stock Returns Seasonality in Emerging Asian Markets. *Asia-Pacific Financial Markets*, 30(1), 109-130.
- Ariss, R. T., Rezyvanian, R., & Mehdian, S. M. (2011). Calendar Anomalies in the Gulf Cooperation Council Stock Markets. *Emerging Markets Review*, 12(3), 293-307.
- Aslam, F., Hunjra, A. I., Tayachi, T., Verhoeven, P., & Mohmand, Y. T. (2022). Calendar Anomalies in Islamic Frontier Markets. *SAGE Open*, 12(2), 1-16.
- Caporale, G. M., & Plastun, A. (2017). Calendar Anomalies in the Ukrainian Stock Market. *Investment Management and Financial Innovations*, 14(1), 104-114.
- Chang, C. C., Hu, T. C., Kao, C. F., & Chang, Y. C. (2015). Early Warning Signals using AVaRs of Infinitely Divisible GARCH models—Evidence from Stock Index Markets. *Applied Economics*, 47(43), 4630-4652.

- DOSM. (2023). *Kawasanku*. Retrieved 2 April 2024 from <https://open.dosm.gov.my/dashboard/kawasanku>
- Fama, E. F. (1965). The Behavior of Stock-Market Prices. *The Journal of Business*, 38(1), 34-105.
- Fama, E. F. (1970). Efficient Market Hypothesis: A Review of Theory and Empirical Work. *Journal of Finance*, 25(2), 28-30.
- Fama, E. F. (1995). Random Walks in Stock Market Prices. *Financial Analysts Journal*, 51(1), 75-80.
- Gharaibeh, O. K. (2021). Calendar Anomalies in the GCC Equity Markets. *Jordan Journal of Business Administration*, 17(2), 161-176.
- Hasan, M. B., Hassan, M. K., Rashid, M. M., Ali, M. S., & Hossain, M. N. (2022). Calendar Anomalies in The Stock Markets: Conventional Vs Islamic Stock Indices. *Managerial Finance*, 48(2), 258-276.
- Jumintang, F., & Utami, K. (2022). Analysis of Efficient Market Anomaly on Stock Returns on Indonesia's Composite Stock Price Index and Global Stock Price Index. *International Journal of Business Ecosystem & Strategy*, 4(1), 57-67.
- Karanovic, G., & Karanovic, B. (2018). The Day-of-The-Week Effect: Evidence From Selected Balkan Markets. *Scientific Annals of Economics and Business*, 65(1), 1-11.
- Keong, L. B., Yat, D., & Ling, C. (2010). Month-of-The-Year Effects in Asian Countries: A 20-Year Study (1990-2009). *African Journal of Business Management*, 4(7), 1351-1362.
- Khan, B., Aqil, M., Alam Kazmi, S. H., & Zaman, S. I. (2021). Day-of-The-Week Effect and Market Liquidity: A Comparative Study from Emerging Stock Markets of Asia. *International journal of finance & economics*, 28(1), 544-561.
- Lai, Y. W., & Windawati, A. (2017). Risk, Return, and Liquidity during Ramadan: Evidence from Indonesian and Malaysian Stock Markets. *Research in International Business and Finance*, 42, 233-241.
- Lean, H. H., Smyth, R., & Wong, W. K. (2007). Revisiting Calendar Anomalies in Asian Stock Markets using A Stochastic Dominance Approach. *Journal of Multinational Financial Management*, 17(2), 125-141.
- Li, B., Ee, M. S., & Rashid, M. (2016). Is Momentum Trading Profitable from Shariah Compliant Stocks? *Review of Financial Economics*, 31, 56-63.
- Lim, S. Y., Mun Ho, C., & Dollery, B. (2010). An Empirical Analysis of Calendar Anomalies in The Malaysian Stock Market. *Applied financial economics*, 20(3), 255-264.
- Ling, P. S., Abdul Rahim, R., & Said, F. F. (2020). The Effectiveness of Technical Strategies in Malaysian Shariah vs Conventional Stocks. *ISRA International Journal of Islamic Finance*, 12(2), 195-215.
- Mehmood, W., Mohd-Rashid, R., Tajuddin, A. H., & Saleem, H. M. N. (2021). Shariah-Compliance and IPO Underpricing: Evidence from Pakistan Stock Exchange. *International Journal of Islamic and Middle Eastern Finance and Management*, 14(5), 1081-1098.
- Mohamad Shariff, N. S., & Yusof, N. A. (2021). Stock Market Anomalies: A Case of Calendar Effects on The Malaysian Stock Market. *Malaysian Journal of Computing (MJoC)*, 6(1), 772-777.
- Munir, Q., & Sook Ching, K. (2019). Revisiting Calendar Effects in Malaysian Finance Stocks Market: Evidence from Threshold GARCH (TGARCH) Model. *Communications in Statistics-Theory and Methods*, 48(6), 1377-1400.
- Nguyen, J., & Parsons, R. (2022). A Study of Market Efficiency in Emerging Markets Using Improved Statistical Techniques. *Emerging Markets Finance and Trade*, 58(7), 2004-2016.
- Plastun, A., Sibande, X., Gupta, R., & Wohar, M. E. (2019). Rise and Fall of Calendar Anomalies Over A Century. *The North American Journal of Economics and Finance*, 49,

181-205.

- Raza, M. W., Said, B., & Elshahat, A. (2023). COVID-19 and Informational Efficiency in Asian Emerging Markets: A Comparative Study of Conventional and Shariah-compliant Stocks. *International Journal of Islamic and Middle Eastern Finance and Management*, 16(3), 576-592.
- Rokhim, R., & Octaviani, I. (2020). Is There A Ramadhan Effect on Sharia Mutual Funds? Evidence from Indonesia and Malaysia. *International Journal of Islamic and Middle Eastern Finance and Management*, 13(1), 135-146.
- Rossi, M., & Gunardi, A. (2018). Efficient Market Hypothesis and Stock Market Anomalies: Empirical Evidence in Four European Countries. *Journal of Applied Business Research (JABR)*, 34(1), 183-192.
- Rowland, R., Chia, R. C. J., & Liew, V. K.-S. (2023). Do Non-Pharmaceutical Policies in Response To COVID-19 Affect Stock Performance? Evidence From Malaysia Stock Market Return and Volatility. *Plos one*, 18(1), e0277252.
- Samaniego, J. D. V., Salgado, R. J. S., & Pérez, M. A. L. (2022). Are There “Day-of-the-Week” and “Holiday” Anomalies in the Mexican Stock Market? *Contaduría y administración*, 67(3), 5.
- Singh, S., & Yadav, S. S. (2018). Calendar Anomaly: Unique Evidence from the Indian Stock Market. *Journal of Advances in Management Research*, 15(1), 87-108.
- Sukor, M. E. A., & Abdul Halim, A. (2022). Theory and Evidence of the Impacts of Shariah Debt Screening on Firm Behaviour. *Journal of Islamic Accounting and Business Research*, 13(8), 1137-1154.
- Tadepalli, M. S., Jain, R. K., & Metri, B. A. (2021). An Enquiry into the Persistence of Turn-of-the-Month Effect on Stock Markets in India: Insights and Perspectives on a Seasonal Anomaly. *Business Perspectives and Research*, 10(1), 9-26.
- Wasiuzzaman, S., & Al-Musehel, N. A. (2018). Mood, Religious Experience and the Ramadan Effect. *International Journal of Emerging Markets*, 13(1), 290-307.
- Woo, K. Y., Mai, C., McAleer, M., & Wong, W.-K. (2020). Review on Efficiency and Anomalies in Stock Markets. *Economies*, 8, 1-51.
- Wuthisatian, R. (2022). An Examination of Calendar Anomalies: Evidence From The Thai Stock Market. *Journal of Economic Studies*, 49(3), 422-434.
- Yaş, M., Aysan, A. F., & Mohd Rasid, M. E. S. (2022). Are Religious Investors Financially Smart? Evidence from Equity Funds. *Journal of Asset Management*, 23, 33-45.
- Yat, D. N. C., Keong, L. B., & Ling, C. H. (2011). Sectoral Analysis of Calendar Effects in Malaysia: Post Financial Crisis (1998-2008). *African Journal of Business Management*, 5(14), 5600-5611.
- Yuan, T., & Gupta, R. (2014). Chinese Lunar New Year Effect in Asian Stock Markets, 1999–2012. *The Quarterly Review of Economics and Finance*, 54(4), 529-537.