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Existence of the Day-of-the-week Effect in FTSE Bursa Malaysia

(Kesan hari-dalam-minggu di FTSE Bursa Malaysia)

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ABSTRACT

This paper investigates the existence of day-of-the-week effect for ten FTSE Bursa Malaysia indices. Standard procedure of determining calendar anomaly with additional GARCH related models are employed to determine the significance of the day-of-the-week effect. Results suggest that the day-of-the-week effect only exist for the FTSE Bursa Malaysia MESDAQ Index. However, the effect might be due to changing volatility since the negative and lowest Monday return does not appear to be significant in the EGARCH model.

ABSTRAK

Kajian ini mengkaji kewujudan kesan hari-dalam-minggu bagi sepuluh indeks FTSE Bursa Malaysia. Prosedur piawai bagi penentuan keganjilan kalendar beserta tambahan model berkaitan GARCH telah digunakan untuk menentukan kesignifikanan kesan hari-dalam-minggu. Hasil kajian mencadangkan bahawa kesan hari-dalam-minggu hanya wujud bagi indeks MESDAQ FTSE Bursa Malaysia. Walau bagaimanapun, kesan tersebut mungkin disebabkan oleh perubahan kemeruapan kerana pulangan pada hari Isnin yang negatif dan terendah adalah ternayta tidak signifikan dalam model EGARCH.

INTRODUCTION

It is well-known that stock prices fluctuates and changes all the time. Hence, question about the existence of any anomalies that affects the behaviour of stock prices has raised concern among the academics and practitioners. Calendar effect is found to be one of the anomalies which may occur in stock market and thus violates the efficient market hypothesis. A market is said to be inefficient if there exist any anomalies that will enable investors to take advantage of it and earn abnormal profit.

The day-of-the-week effect is one of calendar effect that is popular among academics and market participants. Day-of-the-week effect is said to exist if the average return on Monday is significantly less than the average return during the other days of the week. Furthermore, the returns on Friday are expected to be higher. The negative returns on Monday happen because usually the unfavourable news appears during the weekend. Consequently, these unfavourable news might influence the majority of investors negatively, causing them to sell their stocks on the following Monday, when the stock market reopens.

This paper aims to investigate the presence of day-of-the-week effect for the newly established FTSE Bursa Malaysia indices. Many studies have examined the day-of-the-week effect for different financial markets in the world. For Malaysia, besides Yong and Ibrahim (1999) who employed all major KLSE indices, many have only used a single index mainly the Kuala Lumpur Composite Index in the study (Davidson & Peker 1996; Kok & Wong 2004; Chia *et al*. 2006). Wong *et al*. (1990) used six indices but they investigated on monthly effect only. The main contribution of this paper, to our knowledge, this is the first paper to examine calendar anomalies in particular the day-of-the-week effect with FTSE Bursa Malaysia data. Moreover, we test for all indices including Islamic, second board, small cap etc. cover all sectors of Malaysian stock market to serve different needs of various market participants. As FTSE Bursa Malaysia index series is a new index series launched in mid 2006, many investors and fund managers are still not familiar with it. They are also lacking of confident to treat this index series as the benchmark of Malaysian stock market. The findings of this study may shed some lights to the investors and fund managers as well as the management of the listed companies for better understanding on the market efficiency and portfolio management.

REVIEW OF RELATED STUDIES

The day-of-the-week patterns have been studied extensively for different markets either as a group of markets or individual market. The documentation about the existence of day-of-the-week or Monday effect has been widely published by various authors such as Rogalski (1984), Yong and Ibrahim (1999), Kiymaz and Berument (2003), Kenourgios and Samitas (2008) etc.

Rogalski (1984) found that Monday returns for S&P 500 and Dow Jones Industrial Average are negative and the highest returns are recorded on Wednesday. Lakonishok and Smidt (1988), Dubois and Louvet (1996), Berument and Kiymaz (2001) findings also supported the presence of the day-of-the-week effect in US. Lately, the day-of-the-week effect is also present in the volatility equation. The highest and the lowest volatility are observed on Friday and Wednesday respectively in the US markets by Berument and Kiymaz (2001).

Day-of-the-week effect is not limited to US stock markets as many authors have published studies for other markets around the world. Among them, Bayar and Kan (2002) investigated the presence of this anomaly in nineteen developed countries in the East and the West. They found higher returns occurred in the middle of the week while lower pattern is observed on Thursday and Friday. Kiymaz and Berument (2003) showed the presence of the day-of-the-week effect in five developed markets for both return and volatility equations. The highest volatility is also observed on Monday. Chiaku (2006) showed the presence of the day-of-the-week effect for fifteen European financial markets. Majority markets experienced the greatest volatility on Monday. Kenourgios and Samitas (2008) tested the existence of day-of-the-week effect for Athens Stock Exchange and reported strong evidence in both return and volatility equations.

Besides the Western countries, researches have been done for Asian countries as well. Balaban (1994) indicated daily seasonality is not constant in direction through different time periods for Turkey. Poshakwale (1996) found out that the average returns are different for each day of the week in India. Moreover, the Fridays return is higher compared to the other days of the week. Besides that, the significant existence of daily affects on the Chinese stock markets has been documented by Gao and Kling (2005). Friday is found to be profitable while Monday is weak trading day compare to the rest of the week.

On the contrary, Aly *et al*. (2004) could not find evidence to support the existence of any daily seasonal patterns in the Egyptian stock market. Apolinario *et al*. (2006) suggested that the anomaly is not evident in the returns in major European markets. Chandra (2006) also reported that there exist no day-of-the-week effect in Australia, Japan and Korea.

However, some recent studies mainly using data for the 1990s reveal a weakening and/or disappearance of calendar effects. For example, Kok and Wong (2004) found out that the presence of day-of-the-week effect disappeared during the Asian Financial Crisis period in several ASEAN countries. Basher and Sadorsky (2006) also reported the anomalies disappeared after market risk has been adjusted in some emerging stock markets. Similar to other studies, Chia *et al*. (2008) documented that negative Monday and positive Friday effects are noticed in Hong Kong, Taiwan and Singapore. However, after the equity risks have been adjusted only the Friday effect in Taiwan is sustainable.

For Malaysia, Choudhry (2000) and Chan *et al*. (1996) found strong day-of-the-week effect but not for Goh and Kok (2004). On the other hand, Kok and Wong (2004) and Chia *et al*. (2006) investigated the Kuala Lumpur Composite Index. Consistent with previous studies, a negative Monday effect and positive Wednesday and Friday effect are observed in the pre-crisis period. However, the effect disappeared during the Asian Financial Crisis period. Although the Monday effect remains significant, the positive Friday become insignificant after capturing the volatility effect.

In summary, there exist mixed evidence about the significance of day-of-the-week effect in the stock markets all around the world including Malaysia. The anomaly is not persistent and might be different depending on different behavior of index. Hence, there is no specific trading rule can be exploited to generate abnormal returns.

DATA

Daily data for ten FTSE Bursa Malaysia indices are used in this study. The starting date and identifier of each index is summarized in Table 1. The data are obtained from the *Datastream* database. FTSE Bursa Malaysia Index Series was officially launched on 26 June 2006. This new series of equity index for Malaysian stock market is the co-operation between FTSE Group and Bursa Malaysia. There are four tradable indices namely the FTSE Bursa Malaysia Large 30 Index, FTSE Bursa Malaysia Mid 70 Index, FTSE Bursa Malaysia 100 Index and FTSE Bursa Malaysia Hijrah Shariah Index; and six benchmark indices which are FTSE Bursa Malaysia Small Cap Index, FTSE Bursa Malaysia EMAS Index, FTSE Bursa Malaysia Fledgling Index, FTSE

TABLE 1. List of FTSE Bursa Malaysia index

Index Description	Index Identifier	Period
FTSE Bursa Malaysia Large 30 Index	FBM30	26th June 2006 – 30th June 2008
FTSE Bursa Malaysia Mid 70 Index	FBM70	26th June 2006 – 30th June 2008
FTSE Bursa Malaysia 100 Index	FBM100	26th June 2006 – 30th June 2008
FTSE Bursa Malaysia Small Cap Index	FBMSCAP	26th June 2006 – 30th June 2008
FTSE Bursa Malaysia EMAS Index	FBMEMAS	26th June 2006 – 30th June 2008
FTSE Bursa Malaysia Fledging Index	FBMFLG	26th June 2006 – 30th June 2008
FTSE Bursa Malaysia EMAS Shariah Index	FBMSCAP	22nd January 2007 – 30th June 2008
FTSE Bursa Malaysia Hijrah Shariah Index	FBMHS	21st May 2007 – 30th June 2008
FTSE Bursa Malaysia MESDAQ Index	FBMMES	10th September 2007 – 30th June 2008
FTSE Bursa Malaysia Second Board Index	FBM2B	10th September 2007 – 30th June 2008

Bursa Malaysia Emas Shariah Index, FTSE Bursa Malaysia MESDAQ Index and FTSE Bursa Malaysia Second Board Index. The base value of all FTSE indices is 6000 and 31 March 2006 has been selected as the base date.

FTSE Bursa Malaysia Emas Index (FBMEMAS) represents all the ordinary securities which are listed on the Main Board of the Bursa Malaysia that qualified for the rules of eligibility, free floating as well as liquidity. FTSE Bursa Malaysia Large 30 Index (FBM30) consists of 30 largest companies in Bursa Malaysia by market capitalisation while FTSE Bursa Mid 70 Index (FBM70) comprises the next 70 companies that meet the stated eligibility requirements. In addition, FTSE Bursa Malaysia 100 Index (FBM100) comprises the constituents of FBM30 and FBM70. FTSE Bursa Malaysia Hijrah Shariah Index (FBMHS) is a tradable index which comprises of 30 largest companies by market capitalisation which is screened by both Yasaar (UK-incorporated company provides international Shariah screening and pre-eminent independent value-added Shariah compliance solutions to the global Islamic banking, finance and insurance industry) and the Securities Commission's Shariah Advisory Council. Furthermore, the FBMHS is designed to meet additional International Shariah requirements. As for the FTSE Bursa Malaysia Emas Shariah Index (FBMS), it comprises the Shariah-compliant constituents of the FBMEMAS that meet the screening requirements of the Securities Commission's Shariah Advisory Council only. Eligible companies within the top 98% of the Bursa Malaysia Main Board with the exception of constituents of the FBM100 are comprised in FBMSCAP. The remaining 2% stocks which have smaller market capitalisation are listed in the FTSE Bursa Malaysia Fledging Index (FBMFLG) without any liquidity screening. Eligible companies which are listed in FTSE Bursa Malaysia Second Board (FBM2B) and FTSE Bursa Malaysia MESDAQ Index (FBMMES) do not need any liquidity screening. Those companies which are listed in these two indices are required to meet the eligibility criteria of free float and must have a reliable price.

METHODOLOGY

A few common and standard statistics methodologies are required to investigate the presence of the-day-of-the-week effect. Similar to other studies, several simple statistical methodologies such as descriptive statistics, time series plot as well as unit root test are used to provide some initial views on how the variables behave. After the stationarity of the indices are determined, the existence of day-of-the-week effect can be identified by estimating the regression formula as shown in Equation 1:

$$R_t = a_0 + \alpha_M M_t + \alpha_T T_t + \alpha_H H_t + \alpha_F F_t + \sum_{i=I}^{n} \alpha_i R_{t-i} + \varepsilon_t \quad (1)$$

where R_t represents the returns on a selected index, M_t, T_t, H_t and F_t are the dummy variables for Monday, Tuesday, Thursday and Friday at time *t*, and *n* is the lag order. Wednesday's dummy variable has been excluded from the equation in order to avoid dummy variable trap (Kiymaz & Berument 2003). The similar equation is also applied by Kenourgios and Samitas (2008). According to Kenourgios and Samitas (2008), the standard Ordinary Least Squares (OLS) regression has two drawbacks. First, the lagged values of the return variable $\left(\sum_{i=I}^{n} \alpha_i R_{t-i}\right)$ have been included to overcome the problem that might exist due to error terms may not be white noise due to autocorrelation and heteroskedasticity problems. The second drawback is that the error variances may not be constant over time, thus, the variances of errors are allowed to be time dependent to include a conditional heteroskedasticity that captures time variation of variance in stock return.

Furthermore, GARCH-related models are employed in this study in order to capture the time-varying volatility of the series. It is important to disclose a specific volatility pattern in returns and to understand whether a high daily return is attributed to the corresponding high volatility. This useful information may benefit the market participants in their risk and portfolio management. Bollerslev (1986) suggested a way to deal with large lag value by extending the ARCH model to GARCH (p,q) by introducing the idea of the influence of previous conditional variance in the conditional variance equation. *p* and *q* represent the lagged term of squared error term and observation of past conditional variance respectively. The equation for GARCH (p,q) modeling can be written as:

$$R_t = a_0 + \alpha_M M_t + \alpha_T T_t + \alpha_H H_t + \alpha_F F_t + \sum_{i=I}^{n} \alpha_i R_{t-i} + \beta\sigma_t + \varepsilon_t \quad (2)$$

$$\alpha_t^2 = \alpha_0 + \alpha_1 \sigma_{t-1}^2 + \beta_1 \varepsilon_{t-1}^2 .$$

In this study, the model which will be used is set to be the GARCH (1,1) model which refers to first-order GARCH and ARCH terms. It is noted that GARCH model generally imposes symmetry effect of shocks on the volatility. However, many empirical studies have documented asymmetric behaviour in financial data whereby falls which can be interpreted as bad news usually contribute more to the increase in volatility than an increase (interpreted as good news) in the equity returns. This phenomenon that is better known as the leverage effect implies that the volatility tends to decline as the returns rise and to increase when the returns fall. Therefore, to cope with this problem, Nelson (1991) has developed the exponential GARCH or EGARCH to allow for asymmetric shock to volatility and the variance equation can be written as shown in Equation 3.

$$\log\sigma_t^2 = \alpha_0 + \alpha_1 \log\sigma_{t-1}^2 + \left|\frac{\varepsilon_{t-1}}{\sigma_{t-1}}\right| + \gamma\frac{\varepsilon_{t-1}}{\sigma_{t-1}} \quad (3)$$

where the term log represents the conditional variable. Thus, this implies that the leverage effect is exponential rather than quadratic. Moreover, the forecasts of the conditional variance are guaranteed to be nonnegative. The presence of leverage effect can be known by testing the hypothesis of $\gamma > 0$. If the result found to be $\gamma \neq 0$, the impact is asymmetric. A negative $\gamma(\gamma < 0)$ implies that a bad news in the market will increase the volatility more than a good news of an equal magnitude.

Furthermore, this study also apply Threshold ARCH (TARCH) which was introduced independently by Glosten *et al*. (1993) and Zakoian (1994). The specification for the conditional variance can be written as:

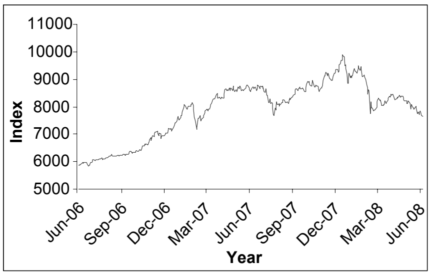
$$\sigma_t^2 = \alpha_0 + \alpha_1\sigma_{t-1}^2 + \beta_1\varepsilon_{t-1}^2 + \gamma\varepsilon_{t-1}^2 d_{t-1} \quad (4)$$

where $d_t = 1$ if $\varepsilon_t < 0$, and 0 otherwise. In this model, good news occur if $\varepsilon_t > 0$ and bad news happen when $\varepsilon_t < 0$. Different news has differential effects on the conditional variance. Good news have impact of α while bad news have impact of $(\alpha + \gamma)$. If $\gamma > 0$, it can be said that the leverage effect exists when bad news increase the volatility. In addition, if $\gamma \neq 0$, the news is asymmetric. GARCH model as a base of conditional variance model is employed besides the two extended GARCH models as robustness check and comparison. We note that in the literature there are papers (Chia *et al*. 2006; Chia *et al*. 2008) used more than one GARCH methods.

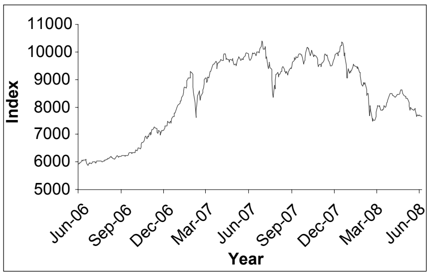
RESULTS AND DISCUSSIONS

Time series plots for each FTSE Bursa Malaysia index are shown in Figure 1(a) to Figure 1(j). Possible trend and seasonal variation of the series might be explained by the plots and results suggest that the indices are not stationary. In general, all the indices show fluctuation all the time and have almost the same pattern of price movements. The stock prices rise at different rates with minor corrections along the way.

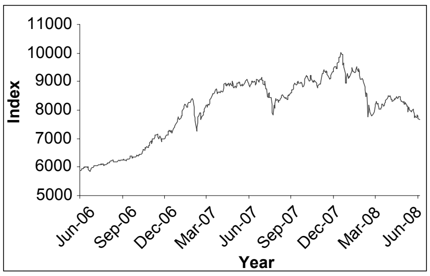
Common tests to determine the stationarity of the series namely Augmented Dickey Fuller (ADF) and Phillip and Perron (PP) tests have been carried out. The series are tested by using the closing price as well as the return of each series. The tests are implemented with time trend at lag 12. As shown in Table 2, it can be suggested that all the stock indices are non-stationary as the null hypothesis of unit root cannot be rejected at 10% level of



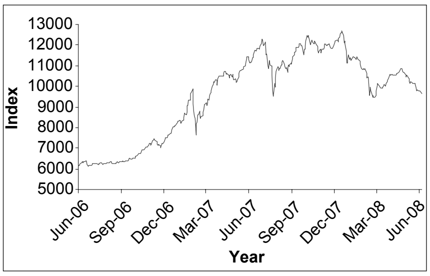
(a) FBM30



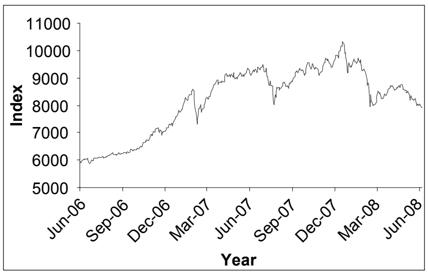
(b) FBM70



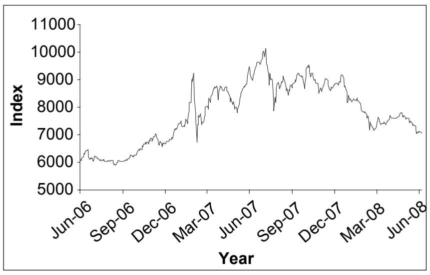
(c) FBM100



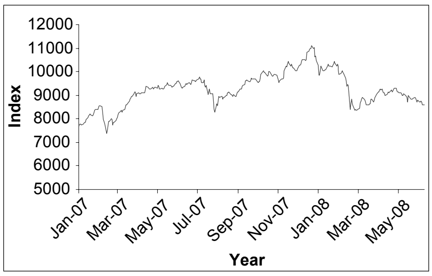
(d) FBMSCAP



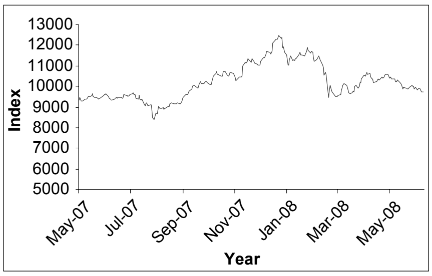
(e) FBMEMAS



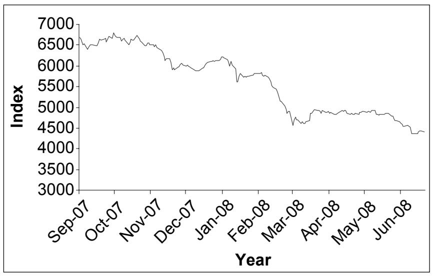
(f) FBMFLG



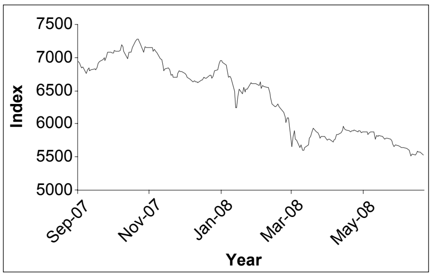
(g) FBMS



(h) FBMHS



(i) FBMMES



(j) FBM2B

Source: Datastream

FIGURE 1(a) – 1(j). Time series plot of FTSE Bursa Malaysia index

TABLE 2. Unit root tests results for the FTSE Bursa Malaysia index

Index	Level		1st Differenced	
	ADF	P P	ADF	P P
FBM30	-0.853	-0.770	-6.611***	-21.561***
FBM70	-0.682	-0.646	-6.414***	-19.404***
FBM100	-0.767	-0.679	-6.533***	-20.815***
FBMSCAP	-0.650	-0.590	-6.367***	-20.564***
FBMEMAS	-0.695	-0.616	-6.512***	-20.607***
FBMFLG	-0.945	-1.178	-7.090***	-22.320***
FBMS	-1.790	-1.877	-5.631***	-17.253***
FBMHS	-1.431	-1.427	-4.867***	-15.761***
FBMMES	-2.893	-2.490	-3.546**	-14.472***
FBM2B	-3.133	-2.664	-4.006**	-14.052***

*** and ** denotes significant at 1% and 5% level.

significance. However, the series become stationary after they are being transformed into return series. Therefore, the return series will be used in determining the existence of day-of-the-week effect.

Table 3 represents the descriptive statistics for returns of each FTSE Bursa Malaysia index. The mean, standard deviation, skewness and kurtosis measures of each market are as displayed. The calculation has been carried out for the entire all days as well as for each day of the week. It can be seen that the average returns are positive for all indices with the exception of FBMMES and FBM2B. Moreover, the results provide early evidence for the existence of day-of-the-week effect in FTSE Bursa Malaysia since the results show that Monday has the lowest and negative mean for all indices. This result is consistent with Yong and Ibrahim (1999). Meanwhile, the highest returns are observed on Friday for all the indices excluding FBM30 and FBM2B where the highest returns are recorded on Thursday and Tuesday respectively.

Moreover, most of the standard deviation on Monday is higher than the other days of the week except FBMMES where the standard deviation on Tuesday is slightly higher. This result is also consistent with Yong and Ibrahim (1999) who employed the KLSE indices. In terms of risk, this suggests that Monday is a day with the highest risk to investors. The implication is Monday appears to be not a suitable day to invest as the mean return is the lowest while the risk is the highest. Hence, fund managers and the management of listed companies in the sector can utilise this information for their portfolio and financial management as well as investment decision.

Prior to the risk-related analysis, lowest return with highest value of standard deviation is recorded on Monday in all the FTSE Bursa Malaysia indices with the exception of FBMMES. Meanwhile, only three indices namely FBM30, FBMHS and FBM2B do not exhibit evidence of the highest return with the lowest risk condition in any day of the week. Hence, the results indicate that some of the FTSE Bursa Malaysia indices are risk related stocks. Table 3 also exhibits the result for skewness and kurtosis for the return of each index. Majority of the return distributions are negatively skewed which implies that they are non-symmetric. The high level of kurtosis as recorded by most of the distributions also indicates that they have thicker tails than the normal distribution of returns. Thus, GARCH-type models are better representing the distribution than the OLS model.

Analysis has been extended to investigate the existence of day-of-the-week effect using various

TABLE 3. Descriptive statistics for FTSE Bursa Malaysia index

	All Days	Monday	Tuesday	Wednesday	Thursday	Friday
FBM30						
Mean	0.0511	-0.1368	0.1211	-0.0268	0.1492	0.1489
Std Dev	1.0560	1.4309	0.8887	1.0295	0.9229	0.8965
Skewness	-2.0317	-3.3347	-0.3200	-1.0124	-0.7600	0.3146
Kurtosis	17.4132	22.7574	4.2373	2.6456	2.5204	0.4035
FBM70						
Mean	0.0486	-0.1906	0.0842	0.0095	0.1534	0.1863
Std Dev	1.2218	1.6485	1.1415	1.2071	1.1148	0.8430
Skewness	-1.9492	-2.5415	-1.5062	-0.7200	-1.1296	-0.6700
Kurtosis	13.0765	14.5717	7.6810	2.2458	6.9789	1.3234
FBM100						
Mean	0.0512	-0.1481	0.1115	-0.0176	0.1509	0.1591
Std Dev	1.0635	1.4565	0.9110	1.0417	0.9430	0.8379
Skewness	-2.1378	-3.2148	-0.7000	-0.9800	-0.8900	0.0519
Kurtosis	17.3258	21.2448	4.9265	2.4231	3.5399	0.4249
FBMSCAP						
Mean	0.0860	-0.1669	0.1231	0.0284	0.2022	0.2432
Std Dev	1.3853	1.8261	1.4544	1.3119	1.2476	0.9129
Skewness	-1.6579	-2.3130	-0.7500	-0.2300	-1.8389	-0.4700
Kurtosis	14.1556	14.2017	11.1156	3.3680	13.3771	3.5173
FBMEMAS						
Mean	0.0555	-0.1499	0.1124	-0.0116	0.1571	0.1697
Std Dev	1.0748	1.4776	0.9467	1.0485	0.9543	0.8101
Skewness	-2.1530	-3.0714	-0.8500	-0.9900	-1.0489	-0.1200
Kurtosis	16.7377	19.6976	5.3756	2.4442	4.7385	0.4887
FBMFLG						
Mean	0.0293	-0.1910	0.0807	-0.0274	0.1084	0.1756
Std Dev	1.6281	1.9464	1.8938	1.6556	1.3501	1.1546
Skewness	-0.8800	-2.2188	-0.9100	1.4578	-0.7800	-0.0770
Kurtosis	14.3079	14.3185	15.2050	10.1607	6.9175	3.3464
FBMS						
Mean	0.0300	-0.2147	0.1117	-0.0506	0.1333	0.1702
Std Dev	1.2686	1.8365	1.0228	1.1938	1.0933	0.9948
Skewness	-2.3910	-3.2080	-1.2222	-0.7100	-1.0454	0.3831
Kurtosis	18.1944	18.1427	6.5371	1.1642	3.5343	0.8965
FBMHS						
Mean	0.0144	-0.2463	0.1050	-0.0635	0.1170	0.1597
Std Dev	1.3531	1.8857	1.0652	1.2340	1.2054	1.2250
Skewness	-1.9589	-3.2673	-0.5700	-0.7300	-0.7000	0.9168
Kurtosis	16.0137	18.8730	5.5767	1.9848	1.7149	2.5276
FBMMES						
Mean	-0.1986	-0.6068	-0.1009	-0.1726	-0.2058	0.0934
Std Dev	1.1183	1.3521	1.3562	1.0150	1.0025	0.6355
Skewness	-1.5087	-2.8674	-0.6600	-0.6600	-0.4400	0.2808
Kurtosis	9.1084	13.6598	5.2492	0.4605	1.4557	0.2565
FBM2B						
Mean	-0.1100	-0.5100	0.0922	-0.1900	-0.0120	0.0871
Std Dev	0.9879	1.3900	1.0656	0.7799	0.8250	0.5970
Skewness	-2.2022	-3.2279	-1.1171	-0.1900	0.5439	0.3785
Kurtosis	15.6639	15.2968	5.7311	-0.6900	2.6985	1.8602

models such as the conventional OLS and GARCH-related models. In particular, a fixed GARCH(1,1), EGARCH(1,1) and TARCH(1,1) are used to investigate the existence of this calendar anomaly. The results are displayed in Table 4.

Based on the results, Monday dummy for all indices are negative with the OLS model. However, only for FBMMES, the estimated coefficient of the Monday dummy variable is significant at 10% level of significance which is contradicted with Chia *et al*. (2006). This indicates that the Monday returns are smaller than those of Wednesday with the OLS model. The contradiction may be due to Chia *et al*. (2006) used KLCI only and the analysis is done for different sample period.

TABLE 4. Estimated results

Index	Variable	OLS	GARCH	EGARCH	TARCH
FBM30	M	-0.1119	-0.0117	0.0162	-0.0111
	T	0.1454	-0.0108	-0.0278	-0.0192
	TH	0.1735	0.1445	0.1190	0.1438
	F	0.1747	0.1233	0.1204	0.1295
			0.0344***	-0.2628***	0.0571***
			0.2419***	0.3329***	0.1273***
			0.7632***	0.9300***	0.7358***
				-0.1195***	0.2105***
FBM70	M	-0.2021	0.0023	0.0107	0.0270
	T	0.0695	-0.0118	-0.0620	-0.0400
	TH	0.1411	0.1393**	0.1623**	0.1502**
	F	0.1753	0.1848**	0.1972**	0.1854**
			0.0150	-0.3933***	0.0297**
			0.3504***	0.5121***	0.2159***
			0.7244***	0.9272***	0.6984***
				-0.1627***	0.2765***
FBM100	M	-0.1325	-0.0191	0.0178	-0.0217
	T	0.1263	-0.0584	-0.0730	-0.0715*
	TH	0.1660	0.1510*	0.1349	0.1438
	F	0.1757	0.1212	0.1185	0.1182
			0.0241**	-0.2997***	0.0438***
			0.2656***	0.3723***	0.1476***
			0.7580***	0.9294***	0.7334***
				-0.1235***	0.2096***
FBMSCAP	M	-0.1926	-0.1603	-0.1463	-0.0960
	T	0.0910	-0.1118	-0.1893**	-0.1205
	TH	0.1752	0.1366*	0.1307	0.1933**
	F	0.2170	0.1958*	0.1826*	0.2524**
			0.0476***	-0.3599***	0.0612***
			0.4124***	0.5201***	0.2245***
			0.6738***	0.9180***	0.6537***
				-0.1439***	0.4121***
FBMEMAS	M	-0.1404	-0.0030	0.0184	-0.0041
	T	0.1204	-0.0584	-0.0945	-0.0753
	TH	0.1659	0.1702**	0.1672**	0.1534*
	F	0.1801	0.1411	0.1423	0.1366
			0.0199**	-0.3299***	0.0565***
			0.2893***	0.4089***	0.1295**
			0.7502***	0.9289***	0.7011***
				-0.1262***	0.2843***
FBMFLG	M	-0.1646	-0.1220	-0.1557	-0.0941
	T	0.1022	0.1092	0.0497	0.1152
	TH	0.1347	0.0685	0.0672	0.0940
	F	0.2029	0.2653*	0.2555*	0.2027
			0.1145***	-0.3493***	0.1345***
			0.3613***	0.5376***	0.3046***
			0.6528***	0.9133***	0.6182***
				-0.0119	0.1945**

FBMS	M	-0.1645	0.0436	0.0376	0.0655
	T	0.1576	-0.0010	0.0195	0.0394
	TH	0.1833	0.0847	0.1160	0.1748
	F	0.2205	0.2568	0.2288	0.2888*
			0.1569***	-0.1812***	0.2299***
			0.2983***	0.2762***	-0.0406
			0.6332***	0.8307***	0.6019***
				-0.2577***	0.5634***
FBMHS	M	-0.1915	-0.0217	-0.0602	-0.0273
	T	0.1394	-0.0228	-0.0007	0.0267
	TH	0.1688	0.0075	0.0158	0.1046
	F	0.2179	0.2652	0.2169	0.2882
			0.1865**	-0.1489***	0.2556***
			0.2396***	0.2659***	-0.0245
			0.6773***	0.8672***	0.6595***
				-0.2217***	0.4357***
FBMMES	M	-0.4429*	-0.4353***	-0.2963	-0.3707**
	T	0.0741	-0.0422	-0.0068	-0.0814
	TH	-0.0367	-0.3632**	-0.0995	-0.2089
	F	0.2595	0.0447	0.2420	0.1743
			0.1696**	-0.0997*	0.1183***
			0.4388***	0.1188*	-0.0712*
			0.5046***	0.8977***	0.7461***
				-0.2604***	0.4556***
FBM2B	M	-0.3097	-0.1716	-0.1583	0.0167
	T	0.3009	0.1486	0.0873	0.1787
	TH	0.1902	-0.0270	-0.0361	0.0727
	F	0.2844	0.3570**	0.3689*	0.5315***
			0.0962**	-0.3432***	0.2713***
			0.5351***	0.3887**	0.0556
			0.4833***	0.8667***	0.1648
				-0.2323**	1.7368***

Note: ***, ** and * denotes significant at 1%, 5% and 10% level.
Value in parenthesis indicates the standard errors of the coefficient.

However, after the varying volatility of the market returns is taken into account, the Monday coefficient for FBMMES become insignificant with the EGACRH model which is consistent with Davidson and Peker (1996). Thus, it can be implied that the day-of-the-week effect as identified by the OLS model is due to the leverage effect. On the contrary, the coefficient for Monday dummy remains significant although the volatility effect has been captured using the GARCH and TARCH models.

The sum of the ARCH and GARCH terms as symbolized by α_1 and β_1 for FBMMES is close to one (but less than one) and this suggests that the shocks to the volatility have highly persistent effect and the high volatility decays at a slow pace. The leverage effect term, γ in the TARCH output is found to be positively significant at 1% level of significance and this indicates that there appears to be an asymmetric effect in the model as well as the presence of leverage effect.

Both FBM30 and FBMHS do not exhibit any existence of day-of-the-week anomalies in their returns equations even after the time varying volatility has been captured into the model. Therefore, the result suggests that the investors will not be able to use the day-of-the-week information to make any extra profit or to avoid and reduce the risk when investing in stocks for FBM30 and FBMHS. As for the other FTSE Bursa Malaysia indices, a mixture of findings and anomaly are found after the time-varying volatility is taken into account as some of the daily dummies become significant. For instance, the positive Friday effect is found to be present in FBM70, FBMSCAP, FBMFLG and FBM2B after the volatility is captured while FBM70, FBMSCAP and FBMEMAS show evidence of positive Thursday effect.

CONCLUSION

This study examines the day-of-the-week effect for the newly FTSE Bursa Malaysia's stock indices by employing OLS and GARCH-related models. Monday dummy for all indices except FEMMES are negative but not significant. Overall, the implication is FTSE Bursa Malaysia excluding MESDAQ sector exhibits evidence of weak form efficiency. Thus, market participants are not able to make any abnormal returns by exploiting this calendar anomaly.

The day-of-the-week effect is found to exist in the MESDAQ sector of FTSE Bursa Malaysia only. This might due to the MESDAQ sector consists of high growth and technology companies that are being influenced by the trading pattern of foreign countries. As the day-of-the-week effect is found to be present in the developed countries such as US, similar trading strategy might be used by the investors. However, this anomaly might be due to the leverage effect as suggested by the result of EGARCH model. Furthermore, the lower price of stock index will encourage more trading to be carried out. In line with Kok and Wong (2004) suggestion that long term investors may adopt the buy-and-hold strategy while investing to avoid the risk faced by applying the day-of-the-week information.

It is believed that the existence of significant daily patterns for mean returns and volatility has useful implications for trading strategies as well as the investment decision. The presence of this anomaly might enable the investors and fund managers to take advantage of relatively regular market shifts by designing trading strategies which account for the day-of-the-week effect. The implication of the results is that investors may not gain any excess return from FTSE Bursa Malaysia except for the MESDAQ sector by utilising the day-of-the-week anomaly. The non-existence of this anomaly may indicate the improvement in market efficiency especially since mid 2006 when this new index series begin.

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