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Calendar Effects in 5 ASEAN Stock Markets

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ABSTRACT: *This study examines the calendar effects in five major ASEAN countries, namely Malaysia, Singapore, Thailand, Indonesia and the Philippines. Using the daily stock return series for data set ranging from 2011 to 2015, the study employs the OLS method to investigate the presence of month-of-the-year and day-of-the-week effects. The results suggest the presence of certain trend in the stock returns for all five countries. January effect was found in the Philippines while Malaysia and Singapore demonstrate the evidence that is consistent with the Monday effect. The presence of calendar effects in each country, though violates the very basic premise of EMH, cannot be construed as an avenue to exploit the market for possible abnormal profit since the transaction cost is not taken into consideration. Perhaps, the significant return will disappear once the transaction cost is incorporated in the study.*

Keywords: *calendar effect, day-of-the-week, month-of-the-year, ASEAN, EMH*

I. INTRODUCTION

Thisstudy examines the presence (or not) of calendar effects in five ASEAN stock markets, namely Malaysia, Singapore, Thailand, Indonesia, and the Philippines. The study tests for day-of-the-week and month-of-the-year effects the daily stock prices from 2011 to 2015, in an attempt to provide the latest finding on the issues. This study is motivated by the effort to transform the ASEAN countries into a single market, which facilitates a freer flow of capital into and within the region, as a result of the establishment of ASEAN Economic Community (AEC) recently. The five countries are chosen since they are the founding members of ASEAN and each country has a well-developed stock market. Table 1 summarizes the basic description about the respective stock market.

Table 1: Summary description of five major ASEAN stock markets

	Malaysia	Singapore	Thailand	Indonesia	Philippine
Main index	KL Composite Index	Straits Times Index	Stock Exchange Thai	Jakarta Composite Index	PSE Composite Index
Symbol	KLSE	STI	SET	JKSE	PSEI
Stock Exchanges	Bursa Malaysia	Singapore Exchange	Stock Exchange of Thailand	Indonesia Stock Exchange	Philippine Stock Exchange
Foundation	1986	1966	1975	1977	1992
Constituents	30	30	584	468	30
Type	Large cap	Large cap	Stock exchange	Stock exchange	Large cap
Market Cap	$123,748 million	$190,210 million	$385,931 million	$383.77 million	$275 billion

From the perspective of the efficient markets hypothesis (EMH), any evidence of calendar effect would indicate the violation of the theory as stock prices are believed to move freely at random (Fama, 1965). This stems from the assumption that stock prices would respond to the arrival of new information with enters the market at random.As such, one can expect no trend in the stock returns. Any predictable trend in the stock price movements will provide an opportunity for market participants to exploit the market for possible abnormal profits and this goes against the very fundamental principle of EMH.

Nonetheless, evidence of calendar effects have been documented in the past which suggests the presence of certain trends in the movement of stock prices. For instance, Compton, et al. (2013) observed significant high return in Russian stock market on Fridays; Patel (2008) found that Indian markets have significantly higher returns for the months of November and December; Wong and Lim (2016) detected Malaysian markets perceive significant higher returns around Christmas and Chinese New Year. Brooks and Persand (2001) define calendar effects as "the tendency of financial asset returns to display systematic patterns at certain times of the day, week, month, year, or around market closure".

The day-of-the-week effect was first discovered by Cross (1973) who measure the stock market returns between the closing prices on Friday and the closing prices on the following Monday. He concludes that the mean market return on Friday is higher than that on Monday.Similar findings were observed by French (1980) who extends the work of Cross (1973) and finds that stock market returns of the day are not randomly generated. He notices significant negative mean returns on Monday over the sample period of US S&P 500

Index from 1953 to 1977, and significant positive mean return for Wednesday through Friday. This finding gives rise to what is known as the Monday effect. Further studies on the same subject by other researchers reveal that stock marketsdo not only produce significant negative mean return on Mondaybut also on other weekday (Lim et. al., 2007; Kenourgios et. al., 2008). Some researchers even found strong evidence of weekday seasonality, which is not confined to Monday effect alone (Compton et. al., 2013) which leads to the concept of day-of-the-week effect. This effect has been proven by Kenourgioset. al. (2008) in their analysis of Athens stock market.Kenourgios and Samitas detect significant losses on Tuesday and significant return on Friday for the period of 1995 to 2000, and significant losses on Monday for the period of the year 2001 to 2005. Friday effect was also identified in Indian market by Ash Narayan Sah (2009).

On the same note, the January effect is another known calendar effects that receives a lot of attention from finance scholars. It occurs when returns in January are systematically higher than in other months of the year (Rozeffand Kinney, 1976). However, January effect has not always been observed in all markets. Patel (2008) reject the January effect based on his study on the Indian stock market for the period of 1999 to 2007. Instead of January effect, Patel observesa different patterns of calendar effects in the Indian stock market, where significant higher returnsduring the month of November and December are observed, and significant higher loss are registed during the month of March to May. Also, based on Depenchuket. al. (2010) research, there is no evidence of January effect in the Ukrainian and US stock markets, which suggests that the January effect may not always prevail in the stock market.

II. DATA AND METHODOLOGY

In this study, the daily close-to-close stock indices for the five ASEAN stock markets, i.e. Malaysia, Singapore, Thailand, Indonesia, and the Philippines, are employed. The data are confined to five year period, starting from January 2011 to December 2015 and they were obtained from http://finance.yahoo.com.

For each composite index, a series of daily, continuously returns are calculated in the usual manner. The daily return R_t is calculated as follows:

$$R_t = log\left(\frac{P_t}{P_{t-1}}\right) \times 100 \quad (1)$$

Where P_t and P_{t-1} are index closing prices on days t and t – 1, respectively.

To test the month-of-the-year effect, the OLS regression analysis is performed based on the following equation:

$$R_t = \beta_1 D_{1t} + \beta_2 D_{2t} + \beta_3 D_{3t} + \ldots + \beta_{11} D_{11t} + \beta_{12} D_{12t} + \varepsilon_t \quad (2)$$

Where R_t is the return of market, $\beta_1 \ldots \beta_{12}$ are the mean daily return of each month, $D_1 \ldots D_{12}$ are the dummy values consist of 1 and 0 only. It will be 1 if the mean daily return occurs in that particular month being tested, and takes the value of 0 otherwise. The ε_t is simply the error term. The null hypothesis is tested at 10% significance level. The hypotheses are as follows:

H_0: The returns across the months of the year are equal.

H_1: Differences exist in the returns across the months of the year.

To test for the day-of-the-week effect, the OLS regression based on the following equation is performed:

$$R_t = \beta_1 D_{1t} + \beta_2 D_{2t} + \beta_3 D_{3t} + \beta_4 D_{4t} + \beta_5 D_{5t} + \varepsilon_t \quad (3)$$

Where R_t is the return of market, $\beta_1 \ldots \beta_5$ are the mean daily return of each day, $D_1 \ldots D_5$ are the dummy values consist of 1 if the mean daily return occurs in that particular day being tested, and 0 otherwise. The ε_t is an error term. The null hypothesis is tested at 10% significance level. The hypotheses are as follows:

H_0: The returns across the days of the week are equal.

H_2: Differences exists in the returns across the days of the week.

For both equations (2) and (3), rejection of the null hypothesis indicates the present of calendar effects in the form of month-of-the-year and day-of-the-week.

III. EMPIRICAL RESULTS

Table 2 presents the descriptive statistics for the daily return series for the study period for five major ASEAN stock markets. The average daily return for Singapore was found to be negative (-0.0049%), while other countries registered positive returns ranging from 0.0098% to 0.0541%, with the lowest registered in Malaysia and highest is in the Philippines. In terms of volatility, Malaysia and Singapore being the most stable market, which recorded standard deviation of less than 1%; while other countries are slightly volatile with 1.039% to 1.2038%. Thailand seems to be the most volatile during the period under study.

Table 2: Descriptive statistics

		Malaysia	Singapore	Thailand	Indonesia	Philippine
Descriptive	Mean	0.0098%	-0.0049%	0.0418%	0.0239%	0.0541%
	Min	-2.701%	-4.296%	-5.720%	-8.880%	-6.750%
	Max	3.378%	3.344%	6.498%	4.759%	5.698%
	Std. Dev.	0.5945%	0.7877%	1.2038%	1.1555%	1.0390%
	N	1231	1264	992	1218	1007

*, **, *** denote significance at 10%, 5% and 1% respectively.

Table 4 shows the result for month-of-the-year effect. For all five countries, the null hypothesis of equal return for all months is rejected. This is evidence by the presence of significant returns, both positive and negative, throughout the year. For Malaysia, the month of August has produced significant negative return while significant positive return is recorded in the month of October. Likewise, significant negative return is also recorded in the month of August while the month of October produces significant positive return. The similar pattern of significant returns recorded in these two countries could be attributed to the geographical proximity between the two nations which implies the interrelatedness of stock trading between the two markets.

As for Thailand, the significant negative return was found in the month of May. In fact that is the only month that produces significant result. Similarly in the case of Indonesia, significant negative return was only registered in the month of August. This is unlike the Philippines where, just like Malaysia and Singapore, two months have produced significant returns. Significant positive return was found in the month of January, consistent with the claim of January effect. The significant positive return is also recorded in the following month, i.e. the month of February. The month of August registered significant negative return just like in Malaysia, Singapore and Indonesia. In general, the presence of significant returns, be it positive or negative, in the five ASEAN stock market indicate the violation of EMH and gives hope for possible market exploitation for abnormal profit and/or avoidance of possible loss.

Table 3: Results for month-of-the-year effect

	Malaysia		Singapore		Thailand		Indonesia		Philippines	
	Mean	T-Stat	Mean	T-Stat	Mean	T-Stat	Mean	T-Stat	Mean	T-Stat
January	-0.0748%	-1.4687	0.0865%	1.2488	0.0230%	-0.1595	0.0243%	0.0039	0.2806%	2.0628**
February	0.0666%	0.9353	0.0039%	0.1146	0.2473%	1.5713	0.1879%	1.4496	0.2361%	1.6346*
March	0.0796%	1.2844	0.0822%	1.2023	0.1702%	1.0352	0.1630%	1.2844	0.1085%	0.5011
April	0.0097%	-0.0023	0.0627%	0.9138	0.1780%	0.9969	0.0074%	-0.1512	0.0867%	0.2863
May	0.0138%	0.0715	-0.1013%	-1.3231	-0.1796%	-1.7056*	-0.0347%	-0.5313	-0.0598%	-1.0495
June	0.0093%	-0.0089	-0.0550%	-0.6730	-0.0171%	-0.4655	-0.0586%	-0.7528	-0.0160%	-0.6283
July	0.0044%	-0.0994	0.0931%	1.3531	0.1266%	0.6747	0.0861%	0.5682	0.0481%	-0.0563
August	-0.1474%	-2.7955***	-0.2448%	-3.3227***	-0.1286%	-1.3568	-0.2369%	-2.3073**	-0.1842%	-2.0530**
September	-0.0271%	-0.6440	-0.0722%	-0.9145	-0.0087%	-0.4043	-0.0505%	-0.6895	0.0653%	0.1027
October	0.1416%	2.3926**	0.1353%	1.9469**	0.1472%	0.8494	0.1704%	1.3811	0.1196%	0.6152
November	-0.0613%	-1.2484	-0.0752%	-0.9506	-0.0033%	-0.3612	-0.0792%	-0.9409	-0.0497%	-1.0229
December	0.0933%	1.4985	0.0229%	0.3755	-0.0433%	-0.6410	0.0946%	0.6315	0.0147%	-0.3831
Total	0.0098%		-0.0049%		0.0418%		0.0239%		0.0541%	

*, **, *** denote significance at 10%, 5% and 1% respectively.

Table 4 shows the result for day-of-the-week effect. Similar to the result presented in Table 3, the presence of significant returns were found in all five countries. In the case of Indonesia, Monday and Wednesday have produced significant negative and positive returns respectively. The significant negative return found on Monday is consistent with the presence of Monday effect. While the other four countries only produce significant return only for one day. In the case of Malaysia, Singapore and Thailand, they all demonstrate the presence of Monday effect, just like in Indonesia, where significant negative returns were reported. Once again, the result for Malaysia and Singapore is almost identical which supports the close relationship in terms of stock trading between the countries.

Table 3: The result of day-of-the-week effect.

	Malaysia		Singapore		Thailand		Indonesia		Philippine	
	Mean	T-Stat	Mean	T-Stat	Mean	T-Stat	Mean	T-Stat	Mean	T-Stat
Monday	-0.0770%	-2.5403**	-0.1559%	-3.3889***	-0.0887%	-1.6423*	-0.2584%	-4.3090***	0.0268%	-0.4151
Tuesday	0.0537%	1.2794	0.0310%	0.8148	0.0942%	0.6883	0.0856%	0.9313	-0.0310%	-1.3100
Wednesday	0.0559%	1.3749	0.0605%	1.4886	0.1315%	1.1864	0.2456%	3.4179***	0.1819%	1.9770**
Thursday	0.0205%	0.3186	0.0039%	0.2000	0.0244%	-0.2316	-0.0246%	-0.7166	-0.0278%	-1.2521
Friday	-0.0054%	-0.4509	0.0330%	0.8472	0.0381%	-0.0492	0.0654%	0.6285	0.1211%	1.0061
Total	0.0098%		-0.0049%		0.0418%		0.0239%		0.0541%	

*, **, *** denote significance at 10%, 5% and 1% respectively.

IV. CONCLUSION

This study provides a recent evidence of the calendar effects in five major ASEAN countries, namely Malaysia, Singapore, Thailand, Indonesia and the Philippines. Based on the findings, it is obvious that the month-of-the-year and day-of-the-week effects can still be detected in all five stock markets. As a matter of fact, the trend of stock returns in the Philippines gives support to the presence of January effect while for Malaysia, Singapore and Thailand, the stock returns render support for the presence of Monday effect. While the evidence indicates the violation of the EMH, which may give hope for possible market exploitation, it does not guarantee abnormal returns given that the data does not incorporate the transaction cost. Perhaps, the evidence of significant positive return will disappear once the transaction cost is taken into account. As such, future studies on calendar should consider to incorporate the transaction cost to fully reflect the real world practice face by the investors.

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