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EXCESSIVE VOLATILITY IN ASIA STOCK MARKET AROUND GENERAL ELECTION (GE) PERIOD

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Abstract

A sample of eleven Asia countries' Morgan Stanley Capital International Incorporation (MSCI) index was collected from year 1972 to year 2010. The results of cumulative abnormal volatility (CAV) based on GARCH (1, 1) model show that there is excessive volatility up to 25 days before and after the GE in these Asian stock markets, suggesting the Asia stock markets are weak form inefficient. Further findings in this study reveal that market participants react conservatively to the change in political condition and causing abnormal fluctuation in stock market movement.

Keywords: Excessive volatility, GARCH, general election, stock market efficiency

1. INTRODUCTION

The collapse of the United Stated economy during the year 2008-2009 causes investor's confidence to invest in US reduces. In the meantime, Europe was unable to handle their crisis such as the Greece Debt crisis and Ireland banking crisis during year 2009-2010, they could not come out with a timely solution to overcome the crisis in Europe region. Europe is seen as the second best region to invest after US, but due to the instability of economic condition in that region, investors around the world losses their confidence in investing in US and Europe. Investors started to put their foresight in the emerging countries and Asia in this case is the best alternative.

However, the Uprising Arab Spring in recent years has spurred the interest of many investors to look into the political instability situation in the Asia countries. In Asia, most of the country is under the democratic ruling where economy and peace in these countries are mostly in good standards. However, not all the Asia countries are willing to accept the government democracy standards because they feel that although their country is practicing the democratic ruling but in reality, their choice is not truly represented because the government did not manage the country as a democratic country and this is why the Arab Spring arose in 2011.[1]

General Election (GE) is a big event for a country and it determines how the economy will perform when a new government is formed after the election. Investors could suffer in their investment's returns due to the changes of political policies which are known as political risk. During GE period,

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[1] After the recovery from Asian Financial Crisis, many countries in the Arab world that are used to be so conservative about their political issues raise attention of the whole world by demonstrating and protesting against their own government. The Arab revolution commonly known as Arab Spring started with countries like Egypt, Tunisia, Libya, Yemen and many more.

the country will moved into a state where the citizens are uncertain about the outcome of the election results while most politicians will try their best to deliver their objective in order to win the votes of the citizens. This is when information is freely flow in the air. There will be news about who have the best probability in winning the election, what the political parties will do if they win the election and what are the benefits that people can get. During this period, the stock market of the country will be extremely volatile because people perceived the news given out can be made as a judgment on whether how the country will benefit from the winning government.

When the perceived economic uncertainty is high, investors are less likely to believe that a passive strategy that attempts to exploit the superior performance of the market would be very profitable (Bonaparte et al., 2012). This suggests the investors will try to obtain superior performance through active trading strategies. When there is an active trading strategy in the stock market, it will cause excessive volatility. Excessive volatility happens when the stock market of the country moves up and down quickly and the point range of the index is very large. The stock market can be at a high in the first trading session but when it comes to the second trading session, the stock index falls tremendously. All of this happens because investors want to profit from their active trading. They will buy when they see the index is moving up, while sell quickly when they see that the index started to fall. This herding effect causes the market to move at a very fast pace and excessive volatility happened. Bialkowski et al. (2008) found that investors are exposed to higher political risk during the GE period.

To the best knowledge of author, this study is the first study to investigate the excessive volatility in Asia stock market around GE period which provides practical implications to the investors and policymakers. The findings of this study tell if Asia region is a good alternative to invest besides the US and European market. Furthermore, this is the first study regroups the MSCI sampling to capture time of investors takes to respond the information available around GE.

This paper is organised as follows. Section 2 provides the literature review of election effect on stock market return. Section 3 describes the data and methodology. Section 4 contains summary of the results and discussion, and Section 5 concludes.

2. LITERATURE REVIEW

The excessive volatility happens because investors tend to overreact to the information and causing the price move beyond the justified equilibrium level (Kim & Yang, 2008; Ali et al., 2010). Overreaction in the market that produces unwanted excessive volatility is mainly found during the GE period (Bialkowski et al., 2008). Based on a sample of 27 Organization of Economic Co-operation and Development (OECD) countries, Bialkowski et al. (2008) used GARCH model to test whether higher stock market volatility is induced by national elections. They found that the country-specific component of index return variance can easily double during the week around an election.

Similarly, Boutchkova et al. (2012) investigated how politics affect stock market volatility based on a sample of 72 industries from 51 countries over 16 years. They provide strong evidence that there is a significant link between political structures and volatility.

Siokis and Kapopoulos (2007) used EGARCH model to examine whether volatility in Greek Stock Market can be explained by the dynamics of political environment. Their results show significant and political events are very important in explaining the stock market behaviour. Chuang and Wang (2008) examined the stock market behaviour in the major democratic countries around general election dates with conditional heteroscedasticity, and used abnormal returns as an indicator of how stock returns react to general elections in the United States, Japan, United Kingdom and France. Their findings suggest the general elections influence the stock market and the stock market shows significant abnormal returns around presidential election.

The study of Bonaparte *et al.* (2012) in US found that the prevailing political climate and political affiliation of individuals jointly influence their optimism towards financial markets and the macro-economy. When the perceived economic uncertainty is high, investors are less likely to pursue a passive strategy, suggesting the exploit of superior performance through active trading strategies instead. On the other hand, Durnev (2010) investigated political uncertainty surrounding elections and concludes that politics has a significant impact on stock prices by affecting the managers in making investment decision.

Back in Asia, Chan and Wei (1996) found that the release of political news significantly amplifies stock market volatility in Hong Kong. In Taiwan, Wang *et al.* (2011) examined the correlation between stock market returns and long-term political factors (parliament effect). Their findings show a long term congressional activities indeed cause fluctuation in stock market returns, while negative conflicts between political parties increase political instability, uncertainty and fluctuation in the stock market. In Malaysia, Ali *et al.* (2010) found that Bursa Malaysia overreacts to surprises in political news. However, announcement of general election is not significantly caused investors to overreact in the stock market as it is an anticipated event.

3. DATA AND METHODOLOGY

3.1. The data
The sample is drawn from the Asian countries from 1972 to 2010 subjected to the selection criteria of non-monarchy or communist principle; the MSCI stock index, GE, as well as date of GE must be available over the test period; the complete set of financial data is available from the Thomson Financial Datastream. These selection criteria resulted in a final sample of 11 Asia countries for a total of 60 observations which included Indonesia, Israel, Kazakhstan, South Korea, Malaysia, Pakistan, Philippines, Singapore, Sri Lanka, Thailand and Turkey as shown in Table 1.

Table 1: Selection criteria and final sample included in this study

		Countries
Population	46	
Excluded:		
Without GE	(4)	Qatar; Timor-Leste; Yemen; Uzbekistan
Non-democratic government structure	(7)	China; Laos; Vietnam; North Korea; Brunei; Oman; Saudi Arabia
Without MSCI stock index	(18)	Kuwait; Bhutan; Turkmenistan; Nepal; United Arab Emirates; Afghanistan; Cambodia; Myanmar; Mongolia; Iraq; Armenia; Azerbaijan; Georgia; Kyrgyzstan; Maldives; Tajikistan; Syria; Iran
Without date of GE	(6)	Bangladesh; Japan; Bahrain; Jordan; India; Lebanon
Final sample	11	

3.2. Methodology
Unlike the autoregressive conditionally heteroskedasticity (ARCH) model, the generalised-ARCH (GARCH) technique can avoid over fitting as it is an infinite order of ARCH; and the likelihood for GARCH to breach non-negativity constraint is lesser compared to ARCH. The GARCH (1, 1) is usually sufficient to capture the volatility clustering in the data. Following Białkowski *et al.* (2008), this study adopted the GARCH (1, 1) model to capture the cumulative abnormal volatility (CAV) around the GE period. The GARCH model enables the conditional variance equation to form in a simplest way, which allows the conditional variance depend on its previous own lags:

$$\sigma_t^2 = \alpha_0 + \alpha_1 \mu_{t-1}^2 + \beta \sigma_{t-1}^2 \qquad \text{………………..……… (1)}$$

where σ_t^2 is conditional variance, which is forecast variance at time t based on the information of previous year; μ_{t-1}^2 is one lagged squared error; and σ_{t-1}^2 is one lagged conditional variance.

The daily continuously compounded return is computed as below:

$$R_{i,t} = \log\left(\frac{Stock\ Index_{i,t}}{Stock\ Index_{i,t-1}}\right) \qquad \dots\dots\dots\dots\dots\dots\dots (2)$$

where i denotes the individual stock market index. $R_{i,t}$ is used along with GARCH (1, 1) to generate residual and variance to capture the impact of GE on stock market volatility:

$$R_{i,t} = \alpha + \beta R_t^* + \varepsilon_{i,t}, \varepsilon_{i,t} \sim N(0, h_{i,t}) \qquad \dots\dots\dots\dots\dots\dots\dots (3)$$

$$h_{i,t} = \gamma_0 + \gamma_1 h_{i,t-1} + \gamma_2 \varepsilon_{i,t-1}^2 \qquad \dots\dots\dots\dots\dots\dots\dots (4)$$

where R_t^* is the continuously compounded returns on the U.S. dollar of which denominated global stock market index on day t; $\varepsilon_{i,t}$ denotes as country-specific part of index returns; and $h_{i,t}$ denotes as its conditional variance. Next, the two series are used to find the primary interest, $\hat{M}_t$:

$$\hat{M}_t = \frac{1}{N-1}\sum\nolimits_{i=1}^{N} \frac{\left(N \times \hat{\varepsilon}_{i,t} - \sum_{j=1}^{N} \hat{\varepsilon}_{j,t}\right)^2}{N \times (N-2) \times E\{h_{i,t}|\Omega_{t^*}\} + \sum_{j=1}^{N} E\{h_{j,t}|\Omega_{t^*}\}} \qquad \dots\dots\dots\dots\dots\dots (5)$$

where N is sample size; i is 1, 2, 3, ..., $N-1$, N; j is 1, 2, 3, ..., $N-1$, N; t^* denotes as estimated window; $\hat{\varepsilon}_{i,t}$ is $R_{i,t} - (\hat{\alpha} + \hat{\beta}R_t^*)$; and t is greater than t^*.

To identify the presence of excessive volatility in the stock market, the CAV for an event window (n_1, n_2) is calculated as:

$$CAV(n_1, n_2) = (\sum\nolimits_{t=n_1}^{n_2} \hat{M}_t) - (n_2 - n_1 + 1) \qquad \dots\dots\dots\dots\dots\dots (6)$$

The test statistic is stated as:

$$\phi(n_1, n_2) = \sum\nolimits_{t=n_1}^{n_2} (N-1) \times \hat{M}_t \sim X^2_{(N-1)\times(n_2-n_1+1)} \qquad \dots\dots\dots\dots\dots\dots (7)$$

H_0: There is no excessive stock market volatility around GE period,

$$CAV(n_1, n_2) = 0$$

4. EMPIRICAL RESULTS

Table 2 reports the cumulative abnormal volatility in windows centered on the Election Day, which are symmetric event windows for Panel A and asymmetric event windows for Panel B. The CAVs in Panel A tumble significantly from 14.5741 to 6.0570 when the days in the event windows increase. This finding is similar to the finding in Panel B. These results suggest that the excessive volatility in the stock market becomes more significant towards the election date. In fact, lesser declines in Panel

B reveal that the excess volatility is statistically more significant after the Election Day, suggesting the Asia stock markets are likely to be weak form inefficient as excessive stock market volatility last for 25 days post the Election Day.

Table 2: Cumulative abnormal volatility (CAV) around Election Day

Window	CAV(n_1,n_2)	p-value
Panel A: Symmetric event windows		
(-2,2)	14.574	0.000***
(-5,5)	13.954	0.000***
(-10,10)	10.849	0.000***
(-25,25)	6.057	0.000***
Panel B: Asymmetric event windows		
(0,2)	14.656	0.000***
(0,5)	13.958	0.000***
(0,10)	12.602	0.000***
(0,25)	10.691	0.000***

Notes: 0 indicates the event day, *** significant at the 1% level

Further regrouping based on whether election is held on weekday or weekend was carried out to ascertain its impact to the excess volatility. There are 34 and 26 elections placed on weekday and weekend respectively. The results in Table 3 show that elections that happened during the weekday are related to excessive stock market volatility significantly at 1 percent level for all the event windows. In contrast, no statistically significant excess volatility in stock market is found in longer election window for weekend election. In addition, the CAVs for weekday election are much higher than the CAVs for weekend election. These findings suggest that the effect of weekday election to the market inefficiency is greater than the weekend election for Asia stock market.

Table 3: Cumulative abnormal volatility (CAV) around Election Day (regrouping of day for election held)

Window	Weekday N=34		Weekend N=26	
	CAV(n_1,n_2)	p-value	CAV(n_1,n_2)	p-value
Panel A: Symmetric event windows				
(-2,2)	20.588	0.000***	4.849	0.000***
(-5,5)	19.528	0.000***	4.459	0.000***
(-10,10)	17.377	0.000***	0.391	0.317
(-25,25)	14.007	0.000***	-5.746	1.000
Panel B: Asymmetric event windows				
(0,2)	21.124	0.000***	4.235	0.000***
(0,5)	20.335	0.000***	3.541	0.000***
(0,10)	19.629	0.000***	1.447	0.011**
(0,25)	18.973	0.000***	-1.765	0.972

Notes: 0 indicates the event day, *** significant at the 1% level, ** significant at the 5% level

The second regrouping classifies the inflation for the election year into low or moderate level according to the findings from Piana (2001). A total of 26 data are considered in the low inflation bracket, which their inflation rates are in between 1 percent and 5 percent, while 28 data are included in the moderate inflation bracket, which rates are in between 5 percent and 30 percent. The remaining 6 data is considered as outlier, such as deflation (negative inflation rate), no inflation (inflation rate is nearly 0), high inflation (30%−50%) and extremely high inflation (50%−100%), so these outliers are excluded from the study.

When the inflation effect is considered, the results in Table 4 show that the CAVs are considerably greater for the election years with moderate inflation as compared to those election years of low

inflation. A closer examination reveals that the excessive volatility of all event windows for election years with moderate inflation is statistically significant at 1 percent level, despite the CAVs had declined in a longer window. In comparison, significant excessive volatility is only observed in two short event windows for the election years with low inflation. These findings imply that the higher inflation level in Asia contributes greater inefficiency to its stock markets towards the Election Day.

Table 4: Cumulative abnormal volatility (CAV) around Election Day (regrouping of level of inflation)

Window	Low inflation rate N=26		Moderate inflation rate N=28	
	CAV(n1,n2)	p-value	CAV(n1,n2)	p-value
Panel A: Symmetric event windows				
(-2,2)	2.285	0.000***	27.254	0.000***
(-5,5)	0.931	0.066*	26.324	0.000***
(-10,10)	-2.626	0.994	23.631	0.000***
(-25,25)	-6.144	1.000	18.705	0.000***
Panel B: Asymmetric event windows				
(0,2)	2.590	0.000***	26.757	0.000***
(0,5)	1.474	0.001***	25.718	0.000***
(0,10)	0.688	0.130	24.052	0.000***
(0,25)	-1.521	-	22.485	0.000***

Notes: 0 indicates the event day, *** significant at the 1% level, * significant at the 10% level.

Lastly, the elections were categorised as early election if they are called more than three months before the official end of the tenure of the incumbent administration. There are 32 early elections and 28 without early elections in this study. The results in Table 5 illustrate that the CAVs of early elections are noticeably higher than those CAVs of no early election. In fact, the excessive volatility for those stock markets with early elections is statistically significant at 1 percent level for all its event windows. On the contrary, significant excess volatility in stock market with no early election is detected mainly in a shorter event window and post the Election Day. These findings reveal that the inefficiency of Asia stock market is attributed to the timing of election and an early election is deemed to be an unexpected event which will lead to greater excessive volatility in the stock market.

Table 5: Cumulative abnormal volatility (CAV) around Election Day (regrouping of early election)

Window	No early election N=28		Early election N=32	
	CAV(n1,n2)	p-value	CAV(n1,n2)	p-value
Panel A: Symmetric event windows				
(-2,2)	5.004	0.000***	24.753	0.000***
(-5,5)	4.518	0.000***	24.115	0.000***
(-10,10)	1.779	0.079*	20.715	0.000***
(-25,25)	0.077	0.479	13.600	0.000***
Panel B: Asymmetric event windows				
(0,2)	5.064	0.000***	24.810	0.000***
(0,5)	4.868	0.000***	23.706	0.000***
(0,10)	4.296	0.000***	22.545	0.000***
(0,25)	3.153	0.001***	18.319	0.000***

Notes: 0 indicates the event day, *** significant at the 1% level, * significant at the 10% level

5. CONCLUSION

Empirical results in this study conclude the presence of excessive stock market volatility in Asia countries around the GE period. The Asia stock markets expose to higher political risk as market

participants such as the investors react significantly to the information available around election period, and causing abnormal fluctuation in stock market movement. The results imply that Asia stock markets are under weak form inefficiency as excessive stock market volatility last for 25 days after the Election Day. In addition, the regrouping of day of election held, level of inflation and early election show that excessive stock market volatility are presence from short to long period of time. These findings suggest that the effect of weekday election to the market inefficiency is greater than the weekend election for Asia stock market probably due to the spillover effect of possible change in political condition. Further findings reveal that the higher inflation level in Asia contributes greater inefficiency to its stock markets towards the Election Day and the inefficiency of Asia stock market is attributed to the timing of election and an early election is deemed to be an unexpected event which will lead to greater excessive volatility in the stock market. The findings of this study suggest the Asia stock market is not a better alternatives to US and European market that can help to reduce portfolio risk of investors.

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