# Political uncertainty and market volatility: evidences from South-East Asia countries

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**Abstract**

This paper examines the impact of political events in South-East Asia countries on stock market volatility. We use GARCH – based framework and alternative models to account for conditional heteroskedasticity, leverage effects and joint dynamics of country's stock index with the global index. We find that political uncertainty does have significant impacts on the stock market volatility of the South-East Asia countries.

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# 1. Introduction

Stock market volatility is one of the most important risk indicators in financial markets. An increase or decrease in the volatility of the stock market can be attributed not only to financial and macroeconomic variables, but also to political factors (Schwert, 1989). From a theoretical aspect, Pastor and Veronesi (2013) find that stock prices are more volatile in respond to political uncertainty, which refers to uncertainty about the future path of government policy. From empirical aspect, several studies confirm that political uncertainty is tightly linked to stock market volatility. Lobo (1999) examines the impacts of US presidential elections and partisan politics on the stock market from 1965 to 1996 and finds that midterm elections are source of stock market uncertainty. Alexakis and Petrakis (1991) study Greek stock market index and show the impact of political factors on the behaviour of the market. Similar evidences of the link between political instability and stock market volatility are documented in cases of South Africa (see Brooks et al., 1997) and Trinidad and Tobago (see Leon et al., 2000).

Political uncertainty has also been dominating financial markets in recent years. These events include the Middle East and North African civil uprisings which lead to the significant increase in the volatility of Islamic stock indices (Chau et al., 2014). The so-called Brexit in 2016 causes an increase in the volatility spillovers among European stock markets (Nishimura and Son, 2018). The close link between political uncertainty and market volatility can be found on the 2016 US presidential election (see Bouoiyour and Selmi, 2016; Shaikh, 2016). Recent years also document remarkable changes in political regimes in South-

East Asia countries. It is worth to note that the South – East Asia region has become one of the driving forces of global economic growth (Salgado, 2017). Therefore, any potential political and economic factor that is believed to influence the region's economy should be considered carefully. To the best of our knowledge, there has been no study on the impact of the political reforms on the stock markets of the region.

We address the research question: Do the political reforms in South-East Asia countries affect their stock market volatility? Our approach is to examine the structural change at the time of political reform by comparing the market volatility before and after the event. We adopt the GARCH-based framework to account for the conditionally heteroscedastic property of returns. Moreover, we conduct extensive specification checks to select the appropriate GARCH models. We also check the robustness of our findings using alternative GARCH specifications and a Multivariate GARCH model.

This research uses daily data of stock indexes of four South-East Asia countries from 2010 to 2017. Interestingly, we find that political reform causes significant decrease in market volatility of three countries: Thailand, Vietnam, and Indonesia, while it has little impact on the Philippines's. Besides, there is little evidence that South-East Asia markets are

The research is organized as follows. Section 2 presents the background of the government reforms in South-East Asia countries. Section 3 provides a data description. Section 4 conveys the methodology, and Section 5 excels the empirical analysis. The research is concluded in Section 5.

## 2. The political reforms of the South-East Asia countries

The South-East Asia region has become market of more than 600 million people, dwarfing NAFTA's 400 million and the EU's 500 million. The region is playing a vigorous role in the Asia's economy and has become a driver of global economic growth. At its current growth rate, the South-East Asia is expected to become the fourth largest market by 2030, besides the US, EU and China.

As far as politics is concerned, recent years have witnessed remarkable changes in government administration (political reform) in several key countries within the region, including Thailand, Indonesia, the Philippines, Myanmar and Vietnam. These can be carried out through domestic protest (coup d'état in Thailand) or formal election (Vietnam, the Philippines, Myanmar and Indonesia). However, due to the problem of short data,[1] we do not study the case of Myanmar. Thus, this study focuses on four countries: Thailand, the Philippines, Indonesia, and Vietnam. We present the overview of the political reforms of these countries as below.

- Thailand

The government system of Thailand was changed from absolute monarchy to institutional monarchy in June 1932. Since then, Thailand has been embroiled in chaos, with a total of 23 military coups and coup attempts. In 2001, Thaksin Shinawatra, a telecommunication billionaire, became prime minister. With the philosophy of populism and a focus on channelling more funds into rural areas, the Thai economy has recovered largely

[1] The Yangon Stock Exchange, the national stock exchange of Myanmar, was just established in October 2015.

from the 1997 Asia crisis. Nevertheless, there was still a coup against him resulting from a series of his mistakes. He was overthrown in September 2006 in a military coup.

In 2011, Yingluck Shinawatra, the sister of the ousted Thai leader, was elected as prime minister. Massive protests against her government occurred to remove Thaksin's influence on Thai politics. After a series of protests and conflicts, Prayut Chan-o-Cha, the powerful army chief launched a coup on 22 May 2014 to dissolve the disagreement between rival parties. This action ended the political turmoil in Thailand. General Prayut Chan-o-Cha then became Thai prime minister and run the new government.

- Indonesia

Indonesia is the largest economy in South-East Asia, ranking 16$^{th}$ among global economies by nominal GDP, and ranking in the top ten by price-adjusted GDP. The recent election of Indonesia, held on 9 July 2014, brought President Joko Widodo into office for a five-year term. It marked a new chapter in Indonesian politics, as Widodo is the first Indonesian president without a high-ranking military or political background. The win of President Widodo is widely regarded as reflecting the hope for a new type of leader, rather than the old-style Indonesian politician.

- Philippines

The Philippines is the 13$^{th}$ largest economy in Asia. On 9 May 2016, the country witnessed the win of Mr. Rodrigo Duterte as the 16$^{th}$ president of the Philippines after a controversial campaign, which focuses on deadly anti-drug and anti-corruption rather than politics. Since President Duterte entered office, a large amount of foreign funds has been pulled out of the

Philippines. Duterte's leadership style, which is unpredictable, is leading to the risk of sovereign downgrade and investor concern.

- Vietnam

Since "Doi Moi", the economic reforms initiated in 1986, the economy of Vietnam has experienced considerable growth from one of the world's poorest nations to a lower-middle-income group. As for politics, Vietnam is a one-party Communist state. The platform for the economy and politics is set up by the National Congress of the Communist Party. The National Congress, summoned every five years, discusses long-term economic and political policies. The Congress elects the Central Committee and the Politburo, the country's top two decision-making bodies.

The 12th National Congress, held on 22 Jan 2016, placed a milestone after 20 years from the start of the "open policy" to the market economy. The event witnessed an unexpected re-election of the current General Secretary, Mr. Nguyen Phu Trong[2], who is famous for his anti-corruption campaigns. The re-elected General Secretary called the Party Congress a new milestone in national construction and defence. A new image of creativity and integrity are key focuses of the new government after facing many difficulties, such as corruption and budget deficits left over from the previous administration.

# 3. Data and methodology

## 3.1 Data

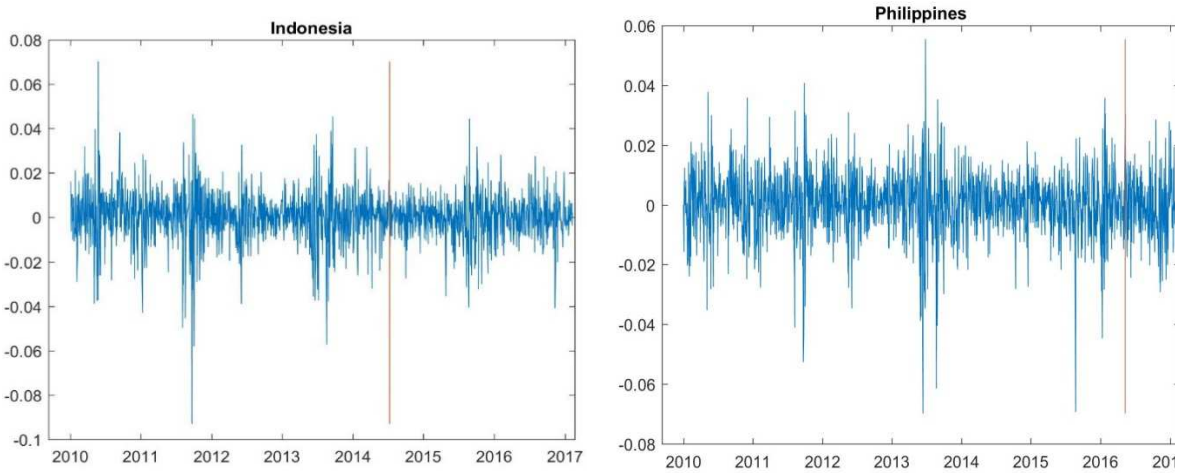
[2] Before the event, the General Secretary was 72 years old, the supposed age of retirement. Conventionally, the top leader of the country must be younger than 67 years old to be re-elected.

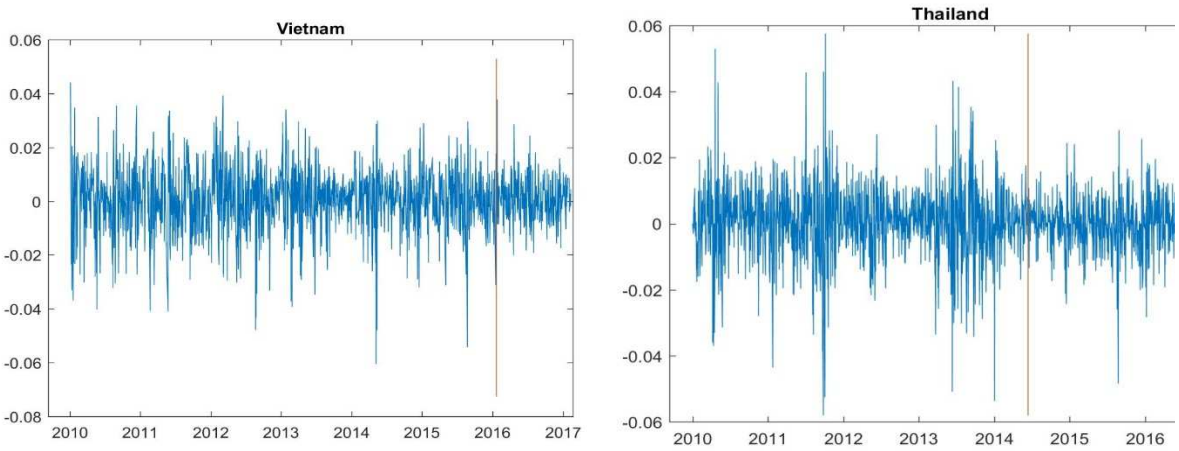
This research uses the daily stock market index of Vietnam, and the Philippines from January 2010 to February 2017, all collected from Datastream. In addition, we employ the MSCI World Index series from the same period as the benchmark. We do not collect data before 2010 to avoid any potential impact of the 2007-2009 global financial crisis on stock market volatility.

Suppose $P_t$ is the price of the stock market for each country at the end of trading day $t$. Continuous compound return series take the form $r_t = \ln(\frac{P_t}{P_{t-1}})$. Figure 1 illustrates the daily return of the four national indices of Indonesia, the Philippines, Vietnam, Thailand, and the global MSCI world index from January 2010 to February 2017, with a considerable amount of dispersion around the zero-average daily return. The level of dispersion, moreover, is not constant over time. Some periods display low volatility followed by low values, whereas high volatility is followed by high values, displaying a volatility clustering phenomenon in the daily return of these countries

**Figure 1:** Return series of stock indices

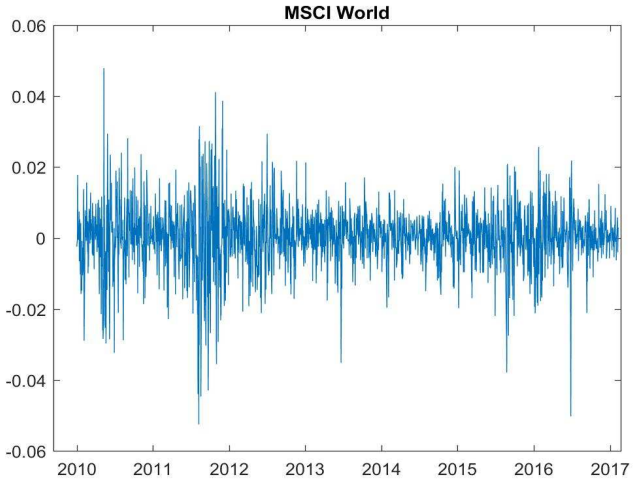
The return series of the stock indices of Indonesia, the Philippines, Thailand, Vietnam, and the MSCI world index from January 2010 to February 2017. The red line marks the date of the political event.












## 3.2 Methodology

We follow Gullen and Mayhew (2000) to employ the GARCH framework (Engle, 1982; Bollerslev, 1986) to study the research question. Specifically, the empirical analysis proceeds with the four-step approach presented below:

### 3.2.1 Data filtering

The purpose of this step is to filter out any global movements and potential autocorrelation from the local stock returns. We illustrate the pattern of stock return by the autoregressive model:

$$R_t = \omega + \alpha_w R_{w,t-1} + \sum_{i=1}^{5} \alpha_i R_{t-i} + \sum_{t=MON}^{THU} \beta_t DAY_t + u_t,$$

in which

$R_t$ = daily return of stock index on day $t$;

$R_{w,t}$ = daily return of world market index on day $t$;

$R_{t-1}$ = lagged daily return of the stock index;

$DAY_t$ = day-of-the-week dummies for Monday to Thursday.

In this equation, the day-of-the-week effect has been accounted for by adding dummy variables for Monday through Thursday. Lagged return is also added to the equation to remove any predictability of stock return induced by non-synchronous trading. Non-synchronous trading is a situation of low frequency trading. It is a possible source of autocorrelation in a stock index because the index is calculated each day from the closing prices of different stocks, which have not been established at the same time (Lo and Mackinlay, 1988; Nelson, 1991). The greater the variance at closing times, the greater the correlation. Therefore, lagged of stock return is included up to 5 lags to remove any possibility of autocorrelation. It is then confirmed by the Ljung–Box test for autocorrelation among residuals.

The MSCI world index is another independent variable in this whitening procedure. It is used to remove the effect of global factors on stock market volatility. Owing to the difference in time zones, the contemporaneous impact of global factors is reflected through the lagged value. The MSCI world index is preferred over a regional index, such as the MSCI Asia index, because of its comparatively higher integration level with East Asian economies (Devereux et al., 2011).

### 3.2.2 Model selection

The second step is to select the most appropriate GARCH specifications to fit with the residual series from step 1. According to Alexander (2001), choosing the appropriate GARCH-type model is necessary to reduce the convergence problem – a situation in which the likelihood function may become very flat and the gradient search algorithms fall off a boundary. If the model describes the data well, the convergence issue will be mitigated. Therefore, the most effective way to deal with the problem is to select the best fit model (Alexander, 1998).

The GARCH-type models have received great interest of both academia and practitioners in modelling volatility of economic and financial series. A variety of GARCH-type models has been proposed to deal with specific features. However, we select three specifications of univariate GARCH models to include in this study: the benchmark GARCH(1,1) as it is the simplest and superior performance among GARCH specifications (Hansen and Lunde, 2001), the EGARCH(1,1) of Nelson (1991) and GJR-GARCH(1,1) of Glosten et al. (1993) due to their ability to capture stylised facts not covered in the GARCH(1,1) model. The appropriate specification is selected using the log-likelihood function, the Akaike information criterion (AIC), and the Heteroskedastic mean squared errors (HMSE).

The GARCH(1,1)

$$\sigma^2{}_t = \omega_t + \alpha\varepsilon^2{}_{t-1} + \beta\sigma^2_{t-1}$$

The EGARCH(1,1)

$$\log(\sigma^2{}_t) = \omega_t + \alpha\frac{|\varepsilon_{t-1}|}{\sigma_{t-1}} + \chi\frac{\varepsilon_{t-1}}{\sigma_{t-1}} + \beta\log(\sigma^2{}_{t-1})$$

The GJR-GARCH(1,1)

$$\sigma^2{}_t = \omega_t + \alpha\varepsilon^2{}_{t-1} + \beta\sigma^2{}_{t-1} + \xi I_{t-1}[\,\varepsilon_{t-1} < 0]\,\varepsilon^2{}_{t-1}$$

in which $I_{t-1} = 1$ if $\varepsilon_{t-1} < 0$, and $I_{t-1} = 0$ otherwise. The coefficient ξ connected to dummy $I$ can be used to differentiate the impact between positive and negative shocks.

### 3.2.3 The impact of political event on stock market volatility

There are two approaches to measure the impact of political event on stock volatility under the univariate framework. The first is to divide the sample into two sub-periods (before and after the political event), and then compare the estimated coefficients together to clarify the question about the difference in the reaction of broad index volatility. The second approach is to estimate the full sample in one regression with the inclusion of dummy variable D, gauging the reform. We follow Gulen and Mayhew (2000) and Chau et al. (2014) to select the latter approach. Specifically, we add the dummy variable D which receives value of unit after the event and zero otherwise.

We incorporate dummy variable D into each GARCH specification, which takes the value of unit after the political event, and zero otherwise.

GARCH(1,1): $\sigma^2{}_t = (1+\lambda D)(\omega + \alpha\varepsilon^2{}_{t-1} + \beta\sigma^2{}_{t-1})$

EGARCH(1,1): $\log(\sigma^2{}_t) = (1+\lambda D)(\omega + \alpha\frac{|\varepsilon_{t-1}|}{\sigma_{t-1}} + \chi\frac{\varepsilon_{t-1}}{\sigma_{t-1}} + \beta\log(\sigma^2{}_{t-1}))$

GJR-GARCH(1,1): $\sigma^2{}_t = (1+\lambda D)(\omega + \alpha\varepsilon^2{}_{t-1} + \beta\sigma^2{}_{t-1} + \xi I[\,\varepsilon_{t-1} < 0]\,\varepsilon^2{}_{t-1})$

The dummy variable D is included as a multiple dummy on the assumption that the patterns of change of each component are similar to each other. The coefficient λ is used to

evaluate whether the impact of political reform increases the market's volatility or not. If $\lambda>0$, the stock market will experience greater volatility after the reform; if $\lambda<0$, the government reform will mark a new period of low volatility.

### 3.2.4 Robustness check

The univariate GARCH models are designed to capture the cluster in volatility of financial series, but not the cluster in correlation among them. Correlation clustering refers to the tendency of asset prices to move in the same direction, each asset having its own time-varying conditional variance as well as time-varying conditional covariance with the other asset. When government reform takes place, the conditional covariance will change significantly, probably lead to biased results in the previous univariate models. Therefore, we employ the bivariate GARCH to cover for the volatility interaction within each pair of local stock index and the global index, proxied by the MSCI World index.

We select the BEKK specification (Engle and Kroner, 1995) to parameterise the conditional variance and covariance. First, we conduct the data filtering step to remove any predictability of returns, including the day-of-the-week effect and the potential autocorrelation:

$$R_{i,t} = \omega_i + \sum_{j=1}^{5} \alpha_j R_{i,t-j} + \sum_{k=MON}^{THU} \beta_k DAY_k + u_{i,t}$$

$$R_{w,t} = \omega_w + \sum_{j=1}^{5} \alpha_j R_{w,t-j} + \sum_{k=MON}^{THU} \beta_k DAY_k + u_{w,t},$$

in which $R_{i,t}$ = daily return of country stock index *i* on day *t*;

$R_{w,t}$ = daily return of world market index on day *t*;

$R_{t-j}$ = lagged daily return of the stock index;

$\text{DAY}_k$ = day-of-the-week dummies for Monday to Thursday.

$u_{i,t}$ and $u_{w,t}$ are error terms having multivariate normal distribution:

$$u_t | \, I_{t-1} \sim N(0, H_t)$$

with $H_t$ follow the BEKK specification:

$$H_t = \text{C'C} + \text{A}'\varepsilon_{t-1}\varepsilon'_{t-1}\text{A} + \text{B}'H_{t-1}\text{B}$$

and C, A, and B are matrix of constants, ARCH coefficients, and GARCH coefficients, respectively. To measure the impact of political reform on the volatility, we follow Doan (2013) to add dummy variables D* to the constant term of the model:

$$H_t = (\text{C+ D*dt})'(\text{C+D*dt}) + \text{A}'\varepsilon_{t-1}\varepsilon'_{t-1}\text{A} + \text{B}'H_{t-1}\text{B},$$

where C is a lower triangular matrix, *dt* is a dummy variable taking 0 value before the event and 1 on or after the event. The aim of the study is to measure the impact of political reform on local stock market volatility when accounting for the spillover impact of global market movements. The research is not designed to measure how political reform in a single local country affects the global market. Therefore, a dummy variable is not included in the world's conditional covariance, or $d_{22}$ of the D set is 0.

Our modified specification, after adding dummy elements, is:

$$\begin{pmatrix} \sigma_{11,t} & \sigma_{12,t} \\ \sigma_{21,t} & \sigma_{22,t} \end{pmatrix} = \left(\begin{pmatrix} c_{11} & 0 \\ c_{12} & c_{22} \end{pmatrix} + \begin{pmatrix} d_{11} & 0 \\ d_{12} & 0 \end{pmatrix} d_t\right)\left(\begin{pmatrix} c_{11} & 0 \\ c_{12} & c_{22} \end{pmatrix} + \begin{pmatrix} d_{11} & 0 \\ d_{12} & 0 \end{pmatrix} d_t\right) +$$

$$\begin{pmatrix} \alpha_{11} & \alpha_{12} \\ \alpha_{21} & \alpha_{22} \end{pmatrix}\begin{pmatrix} {\varepsilon^2}_{1,\text{t}-1} & \varepsilon_{1,t-1}\varepsilon_{2,t-1} \\ \varepsilon_{1,t-1}\varepsilon_{2,t-1} & {\varepsilon^2}_{2,\text{t}-1} \end{pmatrix}\begin{pmatrix} \alpha_{11} & \alpha_{12} \\ \alpha_{21} & \alpha_{22} \end{pmatrix} + \begin{pmatrix} \beta_{11} & \beta_{12} \\ \beta_{21} & \beta_{22} \end{pmatrix}\begin{pmatrix} \sigma_{11,\text{t}-1} & \sigma_{12,\text{t}-1} \\ \sigma_{12,\text{t}-1} & \sigma_{22,\text{t}-1} \end{pmatrix}\begin{pmatrix} \beta_{11} & \beta_{12} \\ \beta_{21} & \beta_{22} \end{pmatrix}$$

After estimating these parameters using the maximum likelihood estimation method, the estimators will be assessed similarly to the univariate model's case. If $d_{11}$ is negative, it

implies the positive impact of the new government: the volatility of the stock market decreases after the event. If $d_{11}$ is positive, the introduction of the new government is related to greater volatility. Regarding the $d_{12}$ coefficient, a statistical value of $d_{12}$ suggests that the political reform affects the integration of individual local country and the MSCI world index. If not, results from the univariate model remain valuable.

# 5 Empirical analysis

## 5.1 The data whitening

This section carries out separate regressions of stock market returns on its lagged values and global returns together with day-of-the-week effect. The OLS estimation technique is used. Results are presented in Table 2.

Table 2 shows the significant impact of the global returns index (MSCI index) on all broad indices of ASEAN countries. Coefficients $\alpha_w$ are all positive and statistically significant. Among them, Indonesia's coefficient has the highest value, illustrating the country's highly integrated level of its financial market with the MSCI world index. Vietnam and Thailand share the same level of influence, which is double that of the Philippines.

As for autoregressive coefficients ($\alpha_1$ to $\alpha_5$), $\alpha_1$ is statistically significant for all countries, whereas the other four coefficients ($\alpha_2$ to $\alpha_5$) are mostly not significant. These properties illustrate the short memory impact of past returns on today's returns. It can be explained by the non-synchronous trading characteristics in emerging markets as analysed before. Different daily closing times of each component cause autocorrelation in returns of the broad index, frequently at one lag.

**Table 2**: Estimation results of preliminary test

The estimated values and the corresponding *t*-statistics of parameters in data filtering estimation for each country. The signs ***, **, * indicate that the estimated value is statistically significant at 99%, 95%, and 90% levels of confidence.

| | Vietnam | Thailand | Philippines | Indonesia |
|---|---|---|---|---|
| Constant | -0.0010 | -0.0007 | -0.0000 | -0.00122 |
| | (-1.807**) | (-1.497) | (-0.0894) | (-2.1754) |
| $\alpha_w$ | 0.2668 | 0.2826 | 0.1372 | 0.4183 |
| | (8.858**) | (10.16**) | (5.289**) | (14.096**) |
| $\alpha_1$ | 0.0937 | -0.0525 | 0.4635 | -0.0616 |
| | (4.001**) | (2.186**) | (17.64**) | (-2.581**) |
| $\alpha_2$ | 0.0387 | 0.0146 | 0.0417 | 0.0214 |
| | (1.651) | (0.6431) | (1.909) | (0.9427) |
| $\alpha_3$ | 0.0283 | -0.0244 | -0.0268 | -0.122 |
| | (1.211) | (-1.077) | (-1.240) | (-5.438**) |
| $\alpha_4$ | -0.0251 | 0.0233 | -0.0343 | -0.0457 |
| | (-1.074) | (1.031) | (-1.583) | (-2.012**) |
| $\alpha_5$ | -0.0107 | -0.0175 | -0.067 | 0.0039 |
| | (-0.4620) | (-0.7768) | (-3.110**) | (0.1747) |
| $\beta_{MON}$ | 0.00058 | 0.0013 | -0.0003 | 0.0022 |
| | (0.6862) | (1.847) | (-0.4505) | (2.777**) |
| $\beta_{TUE}$ | 0.0017 | 0.0021 | 0.0016 | 0.0036 |
| | (2.052**) | (2.992**) | (2.224**) | (4.610**) |
| $\beta_{WED}$ | 0.00160 | 0.0008 | 0.0003 | 0.0012 |
| | (1.8992) | (1.218) | (0.4561) | (1.508) |
| $\beta_{THU}$ | -0.04455 | 0.0013 | 0.0004 | 0.0011 |
| | (2.438**) | (1.799) | (0.6136) | (1.425) |

Regarding to the day–of–the–week effects, coefficients $\beta_{TUE}$ of all four indexes are statistically significant, coincide with literature on day–of–the–week effects in both emerging and developed countries (French, 2000; Jaffe and Westerfield, 1985; Choudhry, 2000). Indonesia stock exchange also experience day of the week effect on Monday. Besides, the coefficient $\alpha_w$ is all statistically significant, implying the moving average with global stock index (Gulen and Mayhew, 2000; Khazali, 2008).

## 5.2 Model selection

The residual series from the data whitening step are saved to be the input of the model selection. Recall that we use three criteria to select model. The results are presented in Table 4.

In each table, the three information criteria are calculated to show the preferred model. For example, in Vietnam, the log-likelihood value *lnL* gets the highest value for GARCH(1,1), compared with the case of EGARCH(1,1) and GJR-GARCH(1,1). *lnL*, therefore, is in bold in the GARCH(1,1) column and shows the preference for the GARCH(1,1) over other models when LnL information criteria is used. Carrying out a similar process for the other information criteria tests of each country, we find that the GARCH(1,1) is appropriate model in cases Vietnam and the Philippines, whereas GJR-GARCH(1,1) is for Thailand and the Philippines.

**Table 4**: Selecting a GARCH-type model using the information criteria

**Vietnam**

| | GARCH(1,1) | EGARCH(1,1) | GJR-GARCH(1,1) |
|---|---|---|---|
| LnL | **−5.5533** | −5.5596 | −5.5552 |
| AIC | **1.1113** | 1.1127 | 1.1118 |
| HMSE | **3.4791** | 3.6068 | 3.5211 |

**Thailand**

| | GARCH(1,1) | EGARCH(1,1) | GJR-GARCH(1,1) |
|---|---|---|---|
| LnL | −6.1337 | −6.1365 | **−6.1018** |
| AIC | 1.2275 | 1.2281 | **1.2213** |
| HMSE | 4.191 | **3.4024** | 3.6247 |

**The Philippines**

| | GARCH(1,1) | EGARCH(1,1) | GJR-GARCH(1,1) |
|---|---|---|---|
| LnL | **−5.8484** | −5.8602 | −5.8608 |
| AIC | **1.1703** | 1.1728 | 1.173 |
| HMSE | 5.5771 | **4.5876** | 4.8667 |

**Indonesia**

| | GARCH(1,1) | EGARCH(1,1) | GJR-GARCH(1,1) |
|---|---|---|---|
| LnL | **−5.6441** | −5.6537 | −5.6527 |
| AIC | 1.1294 | 1.1315 | **1.1283** |
| HMSE | 4.6635 | 4.5285 | **4.4997** |

## 5.3 The effect of political reform on stock market volatility

From the specification test, GARCH(1,1) and GJR-GARCH(1,1) will be used to test the impact of political uncertainty on stock market volatility. Recall that we use multiplicative dummy variables to represent the two different periods. As mentioned in the methodology section, dummy variable D is chosen to equal 0 before the event and takes on the value of 1 from the event onwards. Dummy D divides our dataset into two periods to have volatility comparison; therefore, choosing it is an essential part of our study.

In line with the literature, the event date is chosen when the news is out. It is the election day in case of the Philippines and Indonesia: When the new government is elected, their vision and proposed plan during the election campaign are taken into consideration, creating two sub-periods with different volatility levels. In the case of Thailand, it is the start date of the new government after the coup d'état, on which political turmoil is expected to end. As for Vietnam, the meeting date of the National Congress, on which key leading people of the country are elected, has been selected. Their visions and economic and political strategies will be immediately taken into consideration, creating a new phase of market volatility.

### Table 5: Event dates

This table presents the data period and the dates from which dummy variables take on the value of unit for the four ASEAN countries. The last two columns count the number of days before the event and after the event, called number of observations before the event and after the event).

| Country | Data period | Event date | Obs. Pre- | Obs. Post- |
|---|---|---|---|---|
| Vietnam | 4 Jan 2010–10 Feb 2017 | 22 Jan 2016 | 1508 | 261 |
| Thailand | 4 Jan 2010–10 Feb 2017 | 22 May 2014 | 1159 | 695 |
| The Philippines | 4 Jan 2010–10 Feb 2017 | 9 May 2016 | 1599 | 183 |
| Indonesia | 4 Jan 2010–10 Feb 2017 | 9 July 2014 | 1108 | 636 |

To answer the question whether political reform does raise stock market volatility (if $\lambda > 0$) or decreases volatility (if $\lambda < 0$), coefficients λ, related to dummy D, is assessed.

**Table 6:** Estimation of conditional volatility

The estimated values and the corresponding *t*-statistics (in parentheses) of parameters of GARCH specifications. The sign *** means the estimated parameter is statistically significant at 99% confidence level, and the signs ** and * denote the statistically significant at 95% and 90% confidence levels, respectively.

| | Selected model | ω | α | B | ξ | λ |
|---|---|---|---|---|---|---|
| Vietnam | GARCH(1,1) | 0.0000 | 0.1527 | 0.7479 | | −0.0953 |
| | | (3.252)*** | (5.886)*** | (16.719)*** | | (−2.488)** |
| Thailand | GJR-GARCH(1,1) | 0.0000 | 0.0061 | 0.8843 | 0.1480 | −0.0388 |
| | | (2.934)*** | (0.545) | (37.395)*** | (5.295)*** | (−2.224)** |
| The Philippines | GARCH(1,1) | 0.0000 | 0.1071 | 0.8143 | | 0.0320 |
| | | (2.061)** | (3.973)*** | (13.999)*** | | (1.001) |
| Indonesia | GJR-GARCH(1,1) | 0.0000 | 0.0817 | 0.7775 | 0.1495 | −0.0537 |
| | | (2.828)*** | (2.4101)** | (13.667)*** | (2.403)** | (−1.896)* |

The estimated coefficients ω, α, and β are statistically significant at 1% and 5%, representing the usual conditional volatility dynamic. Among the four countries, Vietnam's stock exchange is the most sensitive to market events, with α above 0.1. The α values of the Philippines and Indonesia are lower than Vietnam's, but still relatively high; approximately 0.1. of Thailand's volatility is least influenced by the market shocks in the group where α is small (α = 0.006) but insignificant. Regarding ξ in the two GJR-GARCH(1,1) specifications for

Thailand and Indonesia, they are positive and statistically significant, implying the leverage effect of stock-return volatility: A negative return today has great memory on tomorrow's.

The remaining estimated coefficients λ is the most important coefficient in our research. They are negative for three countries: Thailand, Vietnam, and Indonesia, with the largest coefficient belonging to Vietnam. Coefficients of Indonesia and Thailand follow Vietnam's. The Philippines' coefficient is at the same level of Thailand, but not statistically meaningful. Overall, the form of new government creates a positive impact on the stock market. In other words, the news decreases volatility in the stock market or increases stability in Thailand, Indonesia, and Vietnam. The finding fits with the economic condition of the countries as analysed in the overview section, and it coincides with the previous literature about the significant impact of politics on stock market return volatility. Any political party that assumes power after getting votes from the public or any forms of armed conflict must carry out the pre-announced policies, suspend projects of the previous government, or re-launch them with new identities. Stock market volatility, therefore, reacts to the changes in government. However, the impact sign in the three ASEAN countries above is opposite to the usual findings about the higher level of volatility following the news in the long run as in Mei and Guo (2004) and Chau *et al.* (2014). The reason is that the new forms of government are considered as positive decisions, bringing an end to the long-standing disorder in these countries and a new hope for the ASEAN economy. As for the Philippines, the coefficients λ is not statistically significant: No statistically structural change in the reaction of the conditional volatility to political reform has been detected.

## 5.5 Robustness tests

This section uses a multivariate framework to test the robustness of the previous estimation results. Time-varying covariance between emerging countries' returns and the global index is accounted for here. Estimated coefficients of BEKK model are reported in Table 8.

**Table 8**: Estimation of BEKK specification with dummy variables

The estimated parameters of the BEKK specification with dummy variables and the corresponding *t*-statistics in parentheses. The sign ** indicates that the estimated value is statistically significant at 95% level of confidence.

| | Vietnam | Thailand | The Philippines | Indonesia |
|---|---|---|---|---|
| $c_{11}$ | 0.0049 | 0.0080 | 0.0030 | 0.0039 |
| | (3.6692)** | (8.0506)** | (1.4489) | (5.1350)** |
| $c_{12}$ | 0.0006 | 0.0042 | −0.0008 | −0.0007 |
| | (0.4640) | (1.2797) | (−0.3683) | (−0.7588) |
| $\alpha_{11}$ | 0.2343 | 0.9975 | 0.2114 | 0.1168 |
| | (2.6213) | (3.1592)** | (3.9120)** | (0.9714) |
| $\alpha_{12}$ | 0.2136 | 0.3781 | 0.0453 | −0.0444 |
| | (1.8963) | (3.4460)** | (0.3195) | (−0.1567) |
| $\alpha_{21}$ | 0.0367 | −0.3426 | 0.0483 | 0.0342 |
| | (0.5922) | (−1.4220) | (0.6477) | (0.3117) |
| $\beta_{11}$ | 0.8697 | 0.4280 | 0.9257 | 0.9401 |
| | (15.132)** | (1.9384) | (14.792)** | (102.187)** |
| $\beta_{12}$ | −0.1137 | −0.1553 | −0.0478 | −0.0150 |
| | (−1.3986) | (−0.3254) | (−0.5920) | (−0.9312) |
| $d_{11}$ | −0.0080 | −0.0135 | 0.0036 | −0.0285 |
| | (−3.3619)** | (−8.2034)** | (1.2676) | (−18.726)** |
| $d_{12}$ | −0.0014 | −0.0071 | 0.0003 | −0.0004 |
| | (−0.6083) | (−0.9981) | (0.4147) | (−0.4086) |

The coefficients of interest are $d_{11}$ and $d_{12}$. Table 8 shows that $d_{11}$ takes a negative value and is statistically significant for three countries: Vietnam, Thailand, and Indonesia,

implying the positive impact of the political reform on the stock market. They also confirm the findings in the univariate model. $d_{12}$ is not statistically significant for any countries in the sample, meaning that the spillover effect of the MSCI global index's volatility on our emerging countries is not statistically significant. Therefore, the work using the univariate model remains valuable, and they all confirm that government reforms in ASEAN countries help stabilise stock returns.

# 6. Conclusion

It has been commonly reported that financial and economic variables play a small role in stock market volatility, whereas political variables and their changes are attributable to a considerable swing in the price and volatility levels. For this reason, this research aims to test the impact of political variables on the stock indices in four members of ASEAN, which emerged as flashpoints in the world economy. The political variable in this research is restricted to the regime changes sharing the same special characteristic: a new government that is different from the previous one, even if it is formed under protest or periodic elections.

Employing the three most popular forms of GARCH-type models, including GARCH(1,1), EGARCH(1,1), and GARCH-GJR(1,1), with dummy variables separating before- and after-event periods (the reform day), the research has accounted for the following points. First, it accounts for the special characteristics of stock-return-volatility clustering. Second, it employs the most frequent dataset that can be collected, a daily stock index. Third, it covers the volatility spill over effect from the global factors to the stock market using a multivariate GARCH framework.

Overall, a positive, long-term relationship between stock market volatility and political reform has been found. This finding coincides with Amihud *et al.* (2004) and Fuss and Bechtel (2008), explained by fact that the reforms bring an end to the disorders taking place for a long time in these countries. They are recognised as milestones in economic development: The new leading system will bring better and more stable economic growth. It may be that the new regimes in Thailand, Vietnam, and Indonesia are seen as more business friendly, offering optimism and transparency to business.

The findings above not only indicate the positive relationship between government reform in the three South-East Asia countries and stock market volatility, they also elaborate on the impact of a series of politically related events, such as strikes, riots, assignations, and government changes, on volatility. The findings provide significant benefits for portfolio managers and investors in making investment decisions, and they remind the authorities to be mindful of any considerable change in political decisions. Future studies can calculate the political instability index and its relationship with stock market volatility. A comparative assessment of the similarities and differences in the kinds of political events (elections, wars, riots, assignations) and their impact on stock-return volatility would be an interesting area for future research.

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