# ANALYSIS OF THE INFLUENCE OF THE UNITED STATES (US) AND CHINA ECONOMIC POLICY UNCERTAINTY (EPU) ON STOCK VOLATILITY IN 5 ASEAN COUNTRIES BEFORE AND DURING COVID-19

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| **Abstract:** | The purpose of this study is to analyze the effect of Economic Policy Uncerianty (EPU) on the volatility of the ASEAN 5 stock market. The method used in this study is a quantitative research method using a regression model and Generalized Autoregressive Conditional Heteroscedasticity (GARCH). The sample of this research is 5 ASEAN countries, namely Indonesia, Malaysia, Singapore, Thailand and the Philippines. The results showed that the United States EPU found a positive effect on the volatility of the stock market indexes of Malaysia, Singapore, and Thailand while Indonesia and the Philippines did not have a positive effect in the period before and during COVID-19. China's EPU has no effect on the volatility of the ASEAN 5 stock market indexes before and during COVID-19. This study also finds that the volatility of the previous period affects the volatility of the current ASEAN 5 stock market index before and during COVID-19. |
| **Keywords:** | *Economic Policy Uncertainty* (EPU), GARCH, Volatility of stock market indices, COVID-19 pandemic. |

PRELIMINARY
*Economic Policy Uncertainty* (EPU) is the impossibility of policy changes not to change the rules of the game for economic actors (Baker et al., 2016; Crazy, 2019).Changes in policy make economic actors change strategies and new rules that are adapted to conditions that occur in the business climate. The purpose of the EPU is to provide an assessment and parameter of how uncertainties in economic policies such as fiscal, tax, monetary and trade give effect to concerns related to newspaper reliability, accuracy, bias and consistency. Research on uncertainty is currently increasing in terms of computing and evaluating the measuring power of uncertainty due to financial crises and special events (Gilal, 2019; Baker et al., 2016). The effects of economic policies that affect uncertainty such as at the firm level can have a negative effect on the prospects for economic growth and equity prices (Gilal, 2019). Seeing the effect of the uncertaintyBaker et al., (2016) find a measuring tool for economic policy uncertainty that can affect return volatility (Gilal, 2019).

Stock market volatility is the difference between the highest and lowest prices (Bhowmik, 2013). Stock market volatility is influenced by several aspects such as social, economic, political, environmental and other aspects that can affect the stock market. One aspect that can affect the current volatility of the stock market is the social aspect, namely the Covid-19 pandemic. Policy changes in handling Covid-19 by governments in all countries in the world

such as lockdowns and restrictions on social activities can affect business and economic activities (Choi, 2020). Therefore, it is possible for EPU to be one of the pathways for changes in stock market demand and supply during the pandemic (Kalotychou et al., 2009; Lako, 2019;Arouri et al, 2016)

The increase in stock market volatility during the crisis during the Covid-19 pandemic has a similar situation to the global financial crisis (GFC) and the Asian crisis. During this period, the volatility of the stock market experienced extreme volatility (Arouri et al, 2016). The increase in EPU during the crisis can allow companies and investors to delay strategic business decisions in response to uncertainty in investment conditions, economic contraction, inflation rates and market risk (Arouri et al, 2016). This situation occurred when Covid-19 officially became a world pandemic (Baker et al., 2016 ; Leduc & Li, 2020). The increased EPU index during COVID-19 was accompanied by an increase in standard deviation as an indicator of volatility (Choi, 2020).

The theory of market efficiency sees that the market will respond to circulating information. During the pandemic, companies are in a difficult situation to increase expansion due to social restrictions so that finances are unstable and some economic activities have stopped. Market efficiency theory assumes that the market will move based on available information and create a new balance due to changes in fundamental values during the pandemic(Cahyadi et al., 2017). Based on this theory, investors cannot predict returns because of the high risk so that the market response can trigger an increase in volatility(Kartika et al., 2010). The channel for increasing volatility during COVID-19 is seen from the relationship between international financial markets originating from agents or rational investors who see and react to the decline in stock market performance (Sum & Hall, 2013). Increased uncertainty in economic policies during the pandemic risks triggering stock market crashes resulting in extreme volatility (Liu et.al, 2020).

Research that discusses the effect of Economic Policy Uncertainty (EPU) on stock market index volatility due to the global financial crisis (GFC) has been studied by previous researchers, namely Li et al. (2020) in China and India; Belcaid & El Ghini (2019) in Morocco; Balcilar et al. (2019) in Hong Kong, Malaysia and South Korea; Thiem (2019) in Japan & Su et al. (2018) in Germany, France, UK, Japan, Italy, Canada, China, India, and Russia. Liu & Zhang (2015); May et al. (2018); & Arouri et al. (2016) have examined US EPU on stock market volatility during the Asian and global financial crises in the United States (US), Europe, China and India. The Economic Policy Uncertainty (EPU) research on stock market volatility due to the COVID-19 crisis has been carried out by Choi (2020) and Baker et al. (2020) in US

Based on the description above, there is a gap phenomenon and a research gap, namely an increase in the EPU index and an increase in stock index volatility due to the COVID-19 pandemic crisis in ASEAN 5 and no research has been found in the stock markets of ASEAN 5 countries. The purpose of this study is to analyze the effect of EPU on market index volatility. stocks in 5 ASEAN countries before and during COVID-19. This research was conducted on the grounds that no EPU research has been found on the volatility of the stock market index in ASEAN 5, especially during the period during COVID-19. The basis for this research is the research by Belcaid & El Ghini (2019) which examines the effect of EPU on the volatility of the stock market index. The difference between this study and previous research is the research period, namely the period before and during COVID-19,

## LITERATURE REVIEW AND RESEARCH HYPOTHESES

### United States EPU with Stock Market Index Volatility in Indonesia, Malaysia, Singapore, Thailand and the Philippines Before and During Covid-19

EPU describes the confusion of economic actors regarding the role and direction of business due to policies decided by the government such as fiscal, regulatory, monetary and other economic policies (Belcaid & El Ghini, 2019). The uncertain economic situation and conditions during COVID-19 provide information that the uncertainty will have an impact on the stock market (L. Liu & Zhang, 2015). The increased integration of trade and finance into the market path between countries is vulnerable to the shock of crisis uncertainty that affects changes in stock prices so that market volatility increases(Crazy, 2019).

Research that discusses the effect of EPU on stock market volatility is research May et al. (2018) which gives the result that EPU has a positive effect on stock market volatility. As forL. Liu & Zhang (2015)shows that there was an increase in stock market volatility in the United States during the crisis period with a value greater than the period before the crisis. As for Altig's researchet al. (2020) revealed that the increase in the EPU index due to COVID-19 resulted in increased volatility. Balcilar et al. (2019) with research results showing that domestic and global EPU affect the volatility of the Malaysian stock market.

Study Thiem (2019)stated that the US EPU positively affects the volatility of the Japanese stock market due to the uncertainty and instability of foreign economic policies. This is supported by Choi's (2020) research.

The results of research by Belcaid & El Ghini (2019) and Liu & Zhang (2015) show that EPU has a positive influence on stock market volatility before and during the crisis. Arouri et al. (2016) revealed that the United States EPU has a linear effect on stock market volatility during the global crisis. This is supported by research. StudyCharfeddine & Al Refai (2019)stated that the EPU increased but exerted a strong influence on the volatility of the Bahrain stock market. These results are supported by the research of Baker et al. (2020) with research results that an increase in EPU increases volatility during COVID-19. Some of these studies are supported by research Li (2020) which examines the effect of European EPU under Brexit uncertainty on European stock market volatility.

The results of the study concluded that the European EPU was different in each country before and during the uncertainty of the Brexit economic policy. The European EPU has a positive effect on the UK. Choi's research (2020) which states that the United States EPU increases the volatility of the stock market.

H1 : The United States EPU has a positive effect on the volatility of the Indonesian stock market index before and during the COVID-19 pandemic

H2 : The United States EPU has a positive effect on the Volatility of the Malaysian Stock Market Index Before and During the COVID-19 Pandemic.

H3 : The United States EPU has a positive effect on the Volatility of the Singapore Stock Market Index Before and During the COVID-19 Pandemic.

H4 : The United States EPU has a Positive Effect on the Volatility of the Thai Stock Market Index Before and During the COVID-19 Pandemic.

H5 : The United States EPU has a Positive Effect on the Volatility of the Philippine Stock Market Index Before and During the COVID-19 Pandemic.

**Chinese EPU with Stock Market Index Volatility in Indonesia, Malaysia, Singapore, Thailand and the Philippines Before and During Covid-19**

The EPU describes the confusion of economic actors regarding the role and direction of the economy due to policies decided by the government such as fiscal, regulatory, monetary and other economic policies (Belcaid & El Ghini, 2019). The uncertain economic situation and conditions during COVID-19 provide information that the uncertainty will have an impact on the stock market (L. Liu & Zhang, 2015). Increased integration of trade and finance makes markets between countries vulnerable to the shock of crisis uncertainty, which affects changes in stock prices so that market volatility increases(Crazy, 2019).

Study May et al.,(2018)shows that EPU has a positive effect on volatility. The results of other studies such as researchLiu & Zhang (2015)states that EPU has a positive effect on stock volatility. The results of research by Altig et al. (2020) proved that during COVID-19 the EPU index and positive stock volatility rose.

The research of Yu et al. (2018) andMay et al. (2018)shows that EPU has a weak effect on stock market volatility in China and Europe (Germany, UK, France) during the expansion period (before the crisis). However, post-crisis EPU positively affected European stock markets (Germany, UK, France).

Study Liu & Zhang (2015)and Belcaid et al. (2020) stated that EPU has a positive influence on stock market volatility. StudyBelcaid & El Ghini (2019)Economic Policy Uncertainty (EPU) has a positive effect on stock market volatility. StudyL. Liu & Zhang, (2015) stated that the EPU also had a significant positive effect on the volatility of the stock market index.

Research result Charfeddine & Al Refai (2019) stated that the EPU had an effect on the volatility of Bahraini state stocks before and during the global financial crisis. The results of Baker et al. (2020) revealed that the increase in the EPU index due to policies taken by policymakers to deal with the problem of the economic crisis during COVID-19 resulted in an increase in stock market volatility in the US during the COVID-19 pandemic.

Study Belcaid & El Ghini (2019)stated that the EPU increased the volatility of the stock market before and during the crisis. StudyLi et al. (2020) also showed that the Economic Policy Uncertainty (EPU) had a positive impact on increasing volatility during COVID-19.

H6 : China's EPU has a Positive Effect on the Volatility of the Indonesian Stock Market Index Before and During the COVID-19 Pandemic.

H7 : China's EPU has a Positive Effect on the Volatility of the Malaysian Stock Market Index Before and During the COVID-19 Pandemic.

H8 : China's EPU has a Positive Effect on the Volatility of the Singapore Stock Market Index Before and During the COVID-19 Pandemic.

H9 : China's EPU has a Positive Effect on the Volatility of the Singapore Stock Market Index Before and During the COVID-19 Pandemic.

H10: There is a Positive Effect of China's EPU on the Volatility of the Singapore Stock Market Index Before and During the COVID-19 Pandemic.

**METHODOLOGY**
**Population and Sample**
The population and research sample in this study are the ASEAN 5 stock markets, namely the Indonesian stock market index, the Malaysian stock market index, the Singapore stock market index, the Thai stock market index, the Philippine stock market index, the United States (US) EPU index and China's EPU index. The research period is divided into two (2), namely the

period before Covid-19 which is from January 1, 2016 to December 31, 2019. The period during Covid-19 starts from January 1, 2020 to December 31, 2020. The sample is adjusted to the same trading day so that a total of the study sample was 978 in the period before COVID-19 and 262 samples in the period during COVID-19.

**Method of collecting data**

The data collection steps in this study used time series data obtained from Bloomberg and www.policyuncertainty.com. The EPU data is then processed by calculating the lag change rate and the return calculation to calculate the volatility of the stock market.

**Data analysis technique**

Data analysis analysis technique uses quantitative data. The research test is by applying the generalized autoregressive conditional heteroskedastic (GARCH) analysis technique to see market volatility and returns that are not assumed to be independent (Belcaid & El Ghini, 2019). The GARCH regression equation model is formulated as follows:

$$\sigma^2_{t\ (I,M,S,T,F)} = \omega + \alpha\varepsilon^2_{t-1} + \beta\ EPU\ (U.S)_{t-1}$$

$$\sigma^2_{t\ (I,M,S,T,F)} = \omega + \alpha\varepsilon^2_{t-1} + \beta\ EPU\ (China)_{t-1}$$

$\_t^2$ (I,M,S,T,F): Daily volatility of ASEAN 5 stock returns

☐ : alpha standard, coefficient, conditional mean function of variance

EPU (US) : United States EPU coefficient

EPU (China) : China EPU coefficient

$\_{(t-1)}^2$ : random error, forecast variance equation based on past variance

$\_{(t-1)}^2$ : is the lag of the square residual mean equation (ARCH)

**RESULTS AND DISCUSSION**
**DESCRIPTIVE STATISTICS**

Descriptive statistics in this study using the mean (average value), max (maximum value), min (minimum value) and standard deviation. The following table is the results of descriptive statistical tests:

**Table 2.0 Resume of Descriptive Statistics**

| Period | Information | mean | Max | Min | Std. Dev |
|---|---|---|---|---|---|
| Before COVID-19 | US EPU | 21.41 | 316 | -97.95 | 147.9 |
| | Chinese EPU | 19.34 | 740.8 | -95.39 | 85.38 |
| | JCI | 0.6936 | 16,296 | 4.1300 | 1.3496 |
| | KLCI | 0.5797 | 9.0639 | 2,2100 | 1.0552 |
| | STI | 0.2875 | 10.1641 | 7.0900 | 0.6239 |
| | SET | 0.7993 | 9.6993 | 4,2000 | 1.0861 |
| | PSEI | 1.4624 | 11.9446 | 8,3800 | 1.9211 |
| During COVID-19 | US EPU | 18.65 | 572.23 | -84.78 | 85.38 |
| | Chinese EPU | 21,808 | 953.2 | -100 | 94.37 |
| | JCI | 1.7845 | 73.9820 | 0.00011 | 6.2066 |
| | STI | 2.1758 | 53.4871 | 0.00010 | 5.9729 |
| | KLCI | 1.8813 | 36.9569 | 7.12000 | 3.6970 |
| | SET | 3.4973 | 76.9063 | 0.0002 | 9.9109 |
| | PSEI | 4.2168 | 92.2967 | 0.0003 | 11.5452 |

Source: processed by researchers using Eviews 10 (2021).

Table 2 shows that in the period before Covid-19 the highest average volatility gain was PSEI, which was 1.46. JCI has the highest maximum volatility value of 16.29 and the lowest minimum volatility of KLCI which is 2.21. The highest standard deviation value for stock index volatility is PSEI, which is 1.92 and the smallest standard deviation is STI, which is 0.62.

Table 2 shows that in the period during Covid-19 the highest average volatility gain was PSEI, which was 4.2. PSEI has the highest maximum volatility value of 92.3 and the lowest minimum volatility value is STI which is 0.0001. The highest standard deviation value for volatility is PSEI, which is 11.5 and the smallest standard deviation is KLCI, which is 3.7.

Based on Table 2, it can be concluded that there was an increase in volatility during the Covid-19 period. Prior to the Covid-19 period, the highest volatility value was PSEI and the lowest was KLCI. During the Covid-19 period, the lowest volatility was KLCI and the highest was PSEI. Volatility before Covid-19 has a lower value than volatility during Covid-19.

## STATIONERITY TEST

Testing the data using the GARCH model requires stationary data. This study uses a stationary test using the test *Augmented Dickey - Fuller* (ADF). The results of the stationarity test of this study are as follows:

**Table 3**

| Period | Information | Stationarity Test Results (prob.ADF) | Conclusion |
|---|---|---|---|
| Before Covid-19 | US EPU | 0.0000 | Stationary |
| | Chinese EPU | 0.0000 | Stationary |
| | JCI | 0.0000 | Stationary |
| | STI | 0.0000 | Stationary |
| | KLCI | 0.0000 | Stationary |
| | SET | 0.0000 | Stationary |
| | PSEI | 0.0000 | Stationary |
| During Covid-19 | US EPU | 0.0000 | Stationary |
| | Chinese EPU | 0.0000 | Stationary |
| | JCI | 0.0011 | Stationary |
| | STI | 0.0113 | Stationary |
| | KLCI | 0.0049 | Stationary |
| | SET | 0.0380 | Stationary |
| | PSEI | 0.0000 | Stationary |

Source: processed by researchers using Eviews 10 (2021).

Based on Table 3 shows that all stock indices have a significance value of 0.000 or below 0.05 (5%), then all data variables are stationary.

## TEST *AUTOREGRESSIVE CONDITIONAL HETEROSCEDASTICITY* (ARCH) EFFECT

Heteroscedasticity testing or GARCH effect is a step that must be done in testing time series data. It aims to detect the dissimilarity of the variance of the confounding variables in the data. This study will look at the residual autoregression model on the ARMA model in the ARCH LM (Lagrange Multiplier) test. The results of the ARCH effect test can be presented as follows:

**Table 4 ARCH Effect Test Results**

| Period | Information | F statistics | Prob | Obs.*R Squared | Prob.Chi-Square |
|---|---|---|---|---|---|
| Before COVID-19 | JCI | 4.8348 | 0.0281 | 4.8209 | 0.0281 |
| | STI | 101,610 | 0.0000 | 92.2089 | 0.0000 |
| | KLCI | 9.7208 | 0.0019 | 9.6446 | 0.0019 |
| | SET | 101,6102 | 0.0 | 92.2089 | 0.0000 |
| | PSEI | 4.6763 | 0.0308 | 4.6635 | 0.0308 |
| During COVID-19 | JCI | 4.0274 | 0.0458 | 3,996 | 0.0456 |
| | STI | 46.596 | 0.0 | 39,796 | 0.0000 |
| | KLCI | 7,105 | 0.0082 | 6,969 | 0.0083 |
| | SET | 8,098 | 0.0048 | 7,913 | 0.0049 |
| | PSEI | 21,900 | 0.0 | 20,348 | 0.0000 |

Source: processed by researchers using Eviews 10 (2021).

Based on Table 3 shows that all stock indices have a significance value of 0.000 or below 0.05 (5%). From the results of the ARCH effect test, it can be concluded that all stock index variables have an ARCH effect in the model.

**TEST *GENERALIZED AUTOREGRESSIVE CONDITIONALHETEROSCEDASTICITY* (GARCH)**

In the test section *Generalized Autoregressive Conditional Heteroscedasticity*(GARCH) contains the results of the GARCH EPU testing of the United States and China's EPU on stock market volatility in Indonesia, Malaysia, Singapore, Thailand and the Philippines. The following are the results of testing the United States (US) EPU variable during the period before and during Covid-19:

Table 5 GARCH . Test Results

| Period | Information | Index | Estimated Coefficient Value | | Probability | |
|---|---|---|---|---|---|---|
| | | | **Regression** | **GARCH** | **Regression** | **GARCH** |
| Before Covid-19 | US EPU | JCI | 0.189 | 0.849 | 0.086 | 0.006 |
| | China EPU | | -0.145 | 0.850 | 0.453 | 0.006 |
| | US EPU | KLCI | 0.150 | 0.451 | 0.000 | 0.004 |
| | China EPU | | 0.036 | 0.461 | 0.558 | 0.025 |
| | US EPU | STI | 0.199 | 0.975 | 0.000 | 0.000 |
| | China EPU | | 0.079 | 0.976 | 0.427 | 0.000 |
| | US EPU | SET | 0.234 | 0.834 | 0.025 | 0.000 |
| | China EPU | | 0.085 | 0.856 | 0.385 | 0.000 |
| | US EPU | PSEI | -0.155 | 0.934 | 0.155 | 0.000 |
| | China EPU | | 0.355 | 0.934 | 0.037 | 0.000 |
| During Covid-19 | US EPU | JCI | 0.061 | 0.938 | 0.348 | 0.000 |
| | China EPU | | -0.006 | 0.939 | 0.000 | 0.000 |
| | US EPU | KLCI | 0.018 | 0.931 | 0.010 | 0.000 |
| | China EPU | | -0.003 | 0.932 | 0.001 | 0.000 |
| | US EPU | STI | 0.027 | 0.935 | 0.012 | 0.000 |
| | China EPU | | -0.005 | 0.935 | 0.000 | 0.000 |
| | US EPU | SET | 0.057 | 0.929 | 0.015 | 0.000 |
| | China EPU | | -0.009 | 0.929 | 0.000 | 0.000 |
| | US EPU | PSEI | 0.095 | 0.934 | 0.000 | 0.000 |
| | China EPU | | -0.016 | 0.934 | 0.000 | 0.000 |

Source: processed by researchers using Eviews 10 (2021).

Table 5 shows that the United States EPU does not have a positive effect on the volatility of the Indonesian stock market index (CSPI) in both periods because the probability is not significant, namely $0.086 > 0.05$ in the previous period and $0.35 > 0.05$ in the period during COVID-19. The Chinese EPU does not have a positive effect on the volatility of the Indonesian stock market index (CSPI) because the regression coefficient value shows a negative value in both the period before and during COVID-19, which is -0.145 with an insignificant probability of $0.453 > 0.05$ and -0.006 in period before COVID-19 with a probability value of 0.00. The GARCH value from the equation with the US EPU in the period before COVID-19 is 0.849 ($\beta$) and the probability is 0.006 and is 0.061 with a probability of 0.00 in the period during COVID-19. The GARCH value in the equation with the Chinese EPU is 0.850 ($\beta$) with a probability of 0.006 in the period before and is 0.938 with a probability of 0.00 in the period during COVID-19. From the test results, it can be seen that H1 and H6 were rejected, so it can be said that neither the United States EPU nor the Chinese EPU had a positive effect on the volatility of the Indonesian stock market index (IHSG) both before and during COVID-19. Based on the GARCH value, it can be concluded that the volatility of the JCI is influenced by the volatility of the stock market index in the previous period or depending on the error term of the past period. The results of the study which show that H1 and H6 are rejected are supported by research 00 in the period during COVID-19. From the test results, it can be seen that H1 and H6 were rejected, so it can be said that neither the United States EPU nor the Chinese EPU had a positive effect on the volatility of the Indonesian stock market index (IHSG) both before and during COVID-19. Based on the GARCH value, it can be concluded that the volatility of the JCI is influenced by the volatility of the stock market index in the previous period or depending on the error term of the past period. The results of the study which show that H1 and H6 are rejected are supported by research 00 in the period during COVID-19. From the test results, it can be seen that H1 and H6 were rejected, so it can be said that neither the United States EPU nor the Chinese EPU had a positive effect on the volatility of the Indonesian stock market index (CSPI) both before and during COVID-19. Based on the GARCH value, it can be concluded that the volatility of the JCI is influenced by the volatility of the stock market index in the previous period or depending on the error term of the past period. The results of the study which show that H1 and H6 are rejected are supported by research Based on the GARCH value, it can be concluded that the volatility of the JCI is influenced by the volatility of the stock market index in the previous period or depending on the error term of the past period. The results of the study which show that H1 and H6 are rejected are supported by research Based on the GARCH value, it can be concluded that the volatility of the JCI is influenced by the volatility of the stock market index in the previous period or depending on the error term of the past period. The results of the study which show that H1 and H6 are rejected are supported by researchBalcilar et al. (2019) stated that the Global EPU (other countries) did not have a positive effect on the volatility of the Hong Kong stock market both before and during the crisis and research Li (2020), Su et al. (2018) & Li (2019) which revealed that the EPU had a negative influence during the global financial crisis.

Table 5 shows that the United States EPU has a positive effect on the volatility of the Malaysian stock market index (KLCI) in both periods due to the significant probability value of $0.00 < 0.05$ in the period before and $0.001 < 0.05$ in the period during COVID-19. The Chinese EPU does not have a positive effect on the volatility of the Malaysian stock market index (KLCI) because the regression probability value before COVID-19 is not significant, namely $0.558 > 0.05$ and has a negative regression coefficient in the period during COVID-

19 which is -0.003. The GARCH value in the equation with the US EPU is 0.451 ($\beta$) and the probability is 0.025 in the period before COVID-19 and is 0.061 with a probability of 0.00 in the period during COVID-19. The GARCH value in the equation with the Chinese EPU is 0.850 ($\beta$) and the probability is 0.006 < 0, 05 in the period before and of 0.932 with a probability of 0.00 < 0.05 in the period during COVID-19. From the test results, it can be seen that H2 is accepted so that it can be said that the United States EPU has a positive effect on the volatility of the Malaysian market index (KLCI) both before and during COVID-19, while H7 is rejected so that it can be concluded that there is no positive effect of China's EPU on KLCI volatility. Based on the GARCH value, it can be concluded that the volatility of KLCI is influenced by the volatility of the stock market index in the previous period or depends on the error term of the past period. H2 is supported by research From the test results, it can be seen that H2 is accepted so that it can be said that the United States EPU has a positive effect on the volatility of the Malaysian market index (KLCI) both before and during COVID-19, while H7 is rejected so that it can be concluded that there is no positive effect of China's EPU on KLCI volatility. Based on the GARCH value, it can be concluded that the volatility of KLCI is influenced by the volatility of the stock market index of the previous period or depends on the error term of the past period. H2 is supported by research From the test results, it can be seen that H2 is accepted so that it can be said that the United States EPU has a positive effect on the volatility of the Malaysian market index (KLCI) both before and during COVID-19, while H7 is rejected so that it can be concluded that there is no positive effect of China's EPU on KLCI volatility. Based on the GARCH value, it can be concluded that the volatility of KLCI is influenced by the volatility of the stock market index of the previous period or depends on the error term of the past period. H2 is supported by research Based on the GARCH value, it can be concluded that the volatility of KLCI is influenced by the volatility of the stock market index of the previous period or depends on the error term of the past period. H2 is supported by research Based on the GARCH value, it can be concluded that the volatility of KLCI is influenced by the volatility of the stock market index of the previous period or depends on the error term of the past period. H2 is supported by researchYu et al., (2018) Belcaid & El Ghini (2019)which proves that the US EPU and German EPU have a positive effect on stock market volatility during the period before and during the global financial crisis. Meanwhile, H7 is rejected and supported by researchThiem (2019)and Choi (2020). As forMay et al. (2018) and Su et al. (2018) which states that the EPU did not have a positive effect on the volatility of the German stock market before the crisis and that the EPU had a negative effect on the volatility of the stock markets of China, India and Russia during the global financial crisis.

Table 5 shows that the United States EPU has a positive effect on the volatility of the Singapore stock market index (STI) in both periods because of the significant probability value of 0.00 < 0.05 in the period before and 0.001 < 0.05 in the period during COVID-19. The Chinese EPU does not have a positive effect on the volatility of the Singapore stock market index (STI) because the regression probability value before COVID-19 is not significant, namely 0.427 > 0.05 and has a negative regression coefficient in the period during COVID-19 which is -0.003. The GARCH value in the equation with the US EPU is 0.975 ($\beta$) and a probability of 0.000 in the period before COVID-19 and is 0.935 with a probability of 0.000 in the period during COVID-19. The GARCH value in the equation with the Chinese EPU is 0.976 ($\beta$) and the probability is 0.00 < 0, 05 in the period before and of 0.935 with a probability of 0.00 < 0.05 in the period during COVID-19. From the test results, it can be seen that H3 is accepted so that it can be said that the United States EPU has a

positive effect on the volatility of the Singapore market index (STI) both before and during COVID-19, while H8 is rejected, so it can be concluded that there is no positive effect of China's EPU on KLCI volatility. Based on the GARCH value, it can be concluded that the volatility of KLCI is influenced by the volatility of the stock market index of the previous period or depends on the error term of the past period. H3 research results are supported by research From the test results, it can be seen that H3 is accepted so that it can be said that the United States EPU has a positive effect on the volatility of the Singapore market index (STI) both before and during COVID-19, while H8 is rejected, so it can be concluded that there is no positive effect of China's EPU on KLCI volatility. Based on the GARCH value, it can be concluded that the volatility of KLCI is influenced by the volatility of the stock market index of the previous period or depends on the error term of the past period. H3 research results are supported by research From the test results, it can be seen that H3 is accepted so that it can be said that the United States EPU has a positive effect on the volatility of the Singapore market index (STI) both before and during COVID-19, while H8 is rejected, so it can be concluded that there is no positive effect of China's EPU on KLCI volatility. Based on the GARCH value, it can be concluded that the volatility of KLCI is influenced by the volatility of the stock market index of the previous period or depends on the error term of the past period. H3 research results are supported by research Based on the GARCH value, it can be concluded that the volatility of KLCI is influenced by the volatility of the stock market index of the previous period or depends on the error term of the past period. H3 research results are supported by research Based on the GARCH value, it can be concluded that the volatility of KLCI is influenced by the volatility of the stock market index of the previous period or depends on the error term of the past period. H3 research results are supported by researchBelcaid & El Ghini (2019), Arouri et al. (2016), L. Liu & Zhang (2015)and Altig et al. (2020) revealed that the US EPU has a positive influence on stock volatility during the Asian crisis period and during the crisis period due to the COVID-19 pandemic. While the results of the H8 study are supported by researchMay et al. (2018) and Su et al. (2018) which states that the EPU does not have a positive effect on the volatility of the German stock market and that the EPU has a negative effect on the volatility of the stock markets of China, India and Russia during the global financial crisis.

Table 5 shows that the United States EPU has a positive effect on the volatility of the Thai stock market index (SET) in both periods because of the significant probability value of $0.025 < 0.05$ in the period before and $0.015 < 0.05$ in the period during COVID-19. The Chinese EPU does not have a positive effect on the volatility of the Thai stock market index (SET) because the regression probability value before COVID-19 is not significant, namely $0.385 > 0.05$ and has a negative regression coefficient in the period during COVID-19 which is -0.009. The GARCH value in the equation with the US EPU is 0.834 (β) and a probability of 0.000 in the period before COVID-19 and is 0.929 with a probability of 0.000 in the period during COVID-19. The GARCH value in the equation with the Chinese EPU is 0.856 (β) and the probability is $0.00 < 0, 05$ in the period before and of 0.929 with a probability of $0.00 < 0.05$ in the period during COVID-19. From the test results, it can be seen that H4 is accepted so that it can be said that the United States EPU has a positive effect on the volatility of the Thailand market index (SET) both before and during COVID-19, while H9 is rejected so that it can be concluded that there is no positive effect of the Chinese EPU on SET volatility. Based on the GARCH value, it can be concluded that the volatility of SET is influenced by the volatility of the stock market index in the previous period or depending on the error term of the past period. The results of the H4 study are accepted and supported by research From

the test results, it can be seen that H4 is accepted so that it can be said that the United States EPU has a positive effect on the volatility of the Thailand market index (SET) both before and during COVID-19, while H9 is rejected so that it can be concluded that there is no positive effect of the Chinese EPU on SET volatility. Based on the GARCH value, it can be concluded that the volatility of SET is influenced by the volatility of the stock market index in the previous period or depending on the error term of the past period. The results of the H4 study are accepted and supported by research From the test results, it can be seen that H4 is accepted so that it can be said that the United States EPU has a positive effect on the volatility of the Thailand market index (SET) both before and during COVID-19, while H9 is rejected so that it can be concluded that there is no positive effect of the Chinese EPU on SET volatility. Based on the GARCH value, it can be concluded that the volatility of SET is influenced by the volatility of the stock market index in the previous period or depending on the error term of the past period. The results of the H4 study are accepted and supported by research Based on the GARCH value, it can be concluded that the volatility of SET is influenced by the volatility of the stock market index in the previous period or depending on the error term of the past period. The results of the H4 study are accepted and supported by research Based on the GARCH value, it can be concluded that the volatility of SET is influenced by the volatility of the stock market index in the previous period or depending on the error term of the past period. The results of the H4 study are accepted and supported by researchMay et al. (2018)which states that the crisis did not have a positive effect on European stock markets in the period before the Asian crisis (recession) and had a positive effect on the expansion period (during and after the crisis). The rejected H9 is supported by researchMay et al. (2018) who stated that the crisis did not have a positive effect on European stock markets in the pre-crisis (recession) period in Asia. Su et al. (2018) who found that EPU did not have a positive effect on the volatility of the German stock market and that EPU had a negative effect on the volatility of the stock markets of China, India and Russia during the global financial crisis.

Table 5 shows that the United States EPU does not have a positive effect on the volatility of the Philippine stock market index (PSEI) because the regression correlation coefficient is negative at -0.155 and the probability value is not significant in the period before COVID-19, which is $0.155 > 0.05$. Meanwhile, China's EPU does not have a positive effect on the volatility of the Philippine Stock Market Index (PSEI) because it has a negative regression coefficient in both periods, namely -0.355 and -0.016. The GARCH value in the US EPU equation is 0.934 (β) and a probability of 0.000 in the period before COVID-19 and is 0.934 with a probability of 0.000 in the period during COVID-19. The GARCH value in the China EPU equation is 0.934 (β) and the probability is $0.00 < 0.05$ in the previous period and is 0.934 with a probability of $0.00 < 0, 05$ in the period during COVID-19. From the test results, it can be seen that H5 and H10 were rejected so that it can be said that neither the United States EPU nor the Chinese EPU had a positive effect on the volatility of the Philippine stock market index (PSEI) both before and during COVID-19. Based on the GARCH value, it can be concluded that the volatility of SET is influenced by the volatility of the stock market index in the previous period or depending on the error term of the past period. Research results that reject H5 are supported by research Based on the GARCH value, it can be concluded that the volatility of SET is influenced by the volatility of the stock market index in the previous period or depending on the error term of the past period. Research results that reject H5 are supported by research Based on the GARCH value, it can be concluded that the volatility of SET is influenced by the volatility of the stock market index in the previous

period or depending on the error term of the past period. Research results that reject H5 are supported by researchLi (2020) Thiem (2019)& Choi (2020) that the crisis had a positive effect on market volatility before, during and after the Asian financial crisis and the COVID-19 pandemic. The research results that reject H10 are supported by the research of Li (2019) andSu et al. (2018) which revealed that EPU had a negative effect on the volatility of the Russian state stock market during the global financial crisis.

From this research, investors can get information that the increase in volatility during the COVID-19 period was caused by fundamental factors, namely social conditions due to the uncertain time of the pandemic. The volatility of the ASEAN 5 index, especially Malaysia, Singapore and Thailand, is influenced by the US EPU. The increase in the Indonesian and Philippine indices could be influenced by factors other than the US EPU. The volatility of the five stock market indices is influenced by factors other than China's EPU which are outside of this research.

Based on the results of the GARCH test by adding up the values of & which show numbers more than 1 in the COVID-19 period, it can be concluded that Domestic and foreign investors must be careful investing during the COVID-19 pandemic because the volatility of the ASEAN 5 stock index is high and persistent during the pandemic, but it will be an opportunity for risk takers to take advantage of the moment of rising volatility.

**CONCLUSION**
Based on the previous description, it can be concluded that the US EPU has no effect on the volatility of the Indonesian stock market index (IHSG) and the Philippines (PSEI) both in the period before and during COVID-19. The US EPU has a positive effect on the volatility of the Malaysian, Singaporean and Thai stock market indices.

The results of the China EPU test show that there is no positive effect on the volatility of the stock market index both before and during the COVID-19 pandemic. The implication of this research is that the influence of the EPU of the United States and China is different on volatility in each country. EPU does not always increase volatility in every country like Chinese EPU which has a negative effect on stock market volatility.

The role and actions of developed country investors on emerging markets have declined due to the high uncertainty caused by changes in economic conditions during the COVID-19 pandemic. This becomes a pathway that results in changes in volatility and changes in the market. Companies are expected to be careful in paying attention to business risks that exist during the pandemic, especially in making business decisions in ASEAN 5 countries, especially Malaysia, Singapore and Thailand. Further research is expected to be able to add other macroeconomic variables such as taxes, inflation, interest rates and GDP growth as additional variables by using time observations into three periods, namely before, during and after the COVID-19 pandemic as well as the addition of stock market indexes from other countries, especially the index. shares of Asian Countries.

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