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THE INFLUENCE OF FEDERAL FUNDS RATE VOLATILITY BEFORE AND DURING THE COVID-19 PANDEMIC ON ECONOMIC STABILITY IN ASEAN COUNTRIES

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Abstract

The purpose of this study is to analyze the effect of the Federal Funds Rate before and during the Covid-19 pandemic on economic stability in five developing countries in the Southeast Asian region which are members of an economic and geopolitical organization, namely the Association of Southeast Nations (ASEAN) to see short-term relationships. and long-term during that period. The indicators of economic stability used are the benchmark interest rate for deposits, the reference interest rate for loans, the balance of payments which includes exports and imports, inflation, exchange rates, and the money supply. In this study, the method used was the quantitative method and the data obtained was secondary data sourced from International Financial Statistics (IFS) from January 2015 to December 2022 which used the Vector Error Correction Model (VECM) approach in the Eviews 9 application. The results found indicated that in the long run, the existence of FFR volatility has a positive effect on the Deposit and Export Reference Rates. While those that have a negative effect are Loan Reference Rates, Imports, Exchange Rate Inflation, and Money Supply. In the short term, the existence of the FFR interest rate has a positive effect on the Reference Rates for Deposits, Imports, and Inflation. While those that have a negative effect are Loan Reference Rates, Exports, Exchange Rates, and Money Supply.

Keywords: ***Federal Funds Rate, Economic Stability, ASEAN Countries, Covid-19***

1. INTRODUCTION

The stability of a country's economy is the most important thing for every country. The background is that if the economic conditions in a country are unstable, it will cause problems such as rising inflation rates, increasing unemployment, and worse, it can disrupt economic growth. Internally, the measurement of macroeconomic performance includes short-term fluctuations in output, employment, and prices and the indicators used are interest rates, the amount of money in circulation, exchange rates, inflation, economic growth, and unemployment rates (Samuelson & Nordhaus, 2005). Meanwhile, externally stable international economic conditions will contribute to

significant economic growth in many countries. Conversely, when the international economy experiences turmoil and is out of control it can result in economic instability which is called an economic crisis, where there is a close relationship between the economic crisis and the indicators that occur in the global economy. The economic crisis can quickly spread to many countries because the economy is experiencing globalization, while the process of globalization is affected by the economic crisis (Tuca, 2014). If we trace back to the existence of a financial crisis that has occurred in many countries has massively damaged the country's economic performance. One of the crises that occurred globally and had an impact on other countries was the financial crisis in the United States in 2008 which was an example of changes in global economic conditions that had an impact on global economic performance. This can happen because the United States is a reflection of the world economy and the United States' contribution to the world is very large.

The case of the financial crisis in America caused a decline in the value of the US dollar against other currencies as indicated by the use of the USD as a foreign currency that is accepted globally in international economic transactions (Akalin & Prater, 2015). In the context of trade between countries, America is still a pillar in exploring many countries. The US stock price index, namely the Down John Index on Wall Street, is still used as a reference for monetary authorities in many countries in determining monetary policy. Likewise, developments in the US central bank's benchmark interest rate (Federal Reserve System) or The Fed, namely the Federal Funds Rate (FFR) have also become a reference for monetary authorities and economic policymakers in their activities. In this situation, global financial markets experienced pressure and caused economic growth to experience disruption (Apostolakis, 2016).

In creating stable economic performance, conducive macroeconomic conditions are needed. The Fed responds to monetary fluctuations in the American financial market through the FFR instrument, in which the FFR is the benchmark interest rate for countries in the world which can have implications for economic stability in many countries. The era of globalization which demands the openness of the world economy has created economic dependence between countries. FFR interest rates influence interest rates and interest exchange rates in various countries (Bluedorn & Bowdler, 2006). When FFR experiences volatility, there is a relatively significant response due to monetary policy through the FFR interest rate instrument (Lee J, 2006). (Chandan & Rajat, 2017) also stated that monetary policy can affect output, exchange rates, and inflation. In line with this, the existence of FFR volatility also has an impact on the economic stability of developing countries, and inflation will usually occur. Countries in the Southeast Asian region have also experienced it, including the geopolitical and economic organization countries, namely the Association of Southeast Nations (ASEAN).

ASEAN beranggotakan sepuluh negara, yang terdiri dari Indonesia, Kamboja, Malaysia, Thailand, Filipina, Brunei Darussalam, Republik Demokratik Rakyat Laos, Myanmar, Singapura, dan Vietnam. Komponen yang dilakukan oleh negara yang tergabung dalam ASEAN tidak hanya sebagai sarana untuk memperkokoh dan memfasilitasi lebih lanjut integrasi secara nyata tetapi juga untuk menciptakan pasar dengan ukuran, kedalaman, dan likuiditas menarik bagi investor asing (Lee & Takagi, 2014). Ketika terjadi krisis yang diakibatkan oleh volatilitas suku bunga FFR dapat menyebabkan *contagion effect* bagi ekonomi global. Interaksi ekonomi yang dilakukan oleh antar negara dapat menyebabkan ketergantungan ekonomi antar negara (Mankiw, 2009). Kontribusi Amerika Serikat dalam bidang ekonomi global dapat menyebabkan krisis global dan dapat menimbulkan tekanan di pasar keuangan serta ketidakpastian kebijakan yang dilakukan oleh masing-masing negara (Liow et al, 2018).

In facing the uncertain situation of global economic stability, an appropriate policy response is needed. In this case, monetary policy makes a major contribution to maintaining the stability of the country's economy. For example, the macroprudential policy is an instrument to increase the resilience of exchange rates, interest rates, asset price vulnerabilities, and excessive

credit growth to shocks (Dumicic, 2017). In the Mundell-Fleming Theory, in an open economy, the determination of interest rates is influenced by the reference world interest rate. Therefore, to adjust to changes in the global economy and keep domestic economic conditions stable, the Fed can play its role in adjusting interest rates because changes in interest rates will affect the real sector through monetary policy transmission.

In the transmission mechanism or its implementation, monetary policy is carried out by a mechanism that is transmitted from the financial system to the real economy. In this stage, fluctuating monetary policy directly affects real production and aggregate prices (Petursson, 2001). Thus the company needs to reduce its sales because of the risk of the economy becoming sluggish caused by the depreciation of the local currency which has the potential to reduce company profits (Bruna & Blahova, 2016). At a time when the world was experiencing an outbreak of the Covid-19 pandemic, the United States central bank, namely The Fed, maintained its interest rates at zero percent during the economic recovery period that was affected by Covid-19. In early March 2020, the Fed cut the target range for the FFR rate to 05-0.25% and it was the lowest level during the financial crisis. In 2022 the global economy will begin to experience recovery as well as the domestic economy which will slowly start to grow. The Fed began to raise FFR interest rates against the backdrop of inflation in the United States which has been heating up since early 2022, even reaching its highest level in the middle of the year which forced the Fed as America's central bank to tighten policies to suppress it. FFR volatility will have an impact on the domestic economy because America is a reflection of the global economy and has a large contribution to the interstate market. Since an open economy is affected by foreign and domestic shocks, policymakers need to understand how the domestic economy can be affected by uncertain shocks originating from within the country and abroad (Nilavongse et al, 2021).

A country will experience economic stability when domestic demand is in balance with domestic spending, saving, and investment. A country's economic stability will also be shaken when inflation hits. Like developing countries, they are more careful because they are vulnerable to inflation which can have an impact on economic stability. Seeing the global financial crisis in 2008 which had an impact on global economic conditions, stabilization and risk mitigation of the financial sector is very important (Na'im et al, 2021). This condition is in line with the activities of developing countries such as countries in ASEAN, most of which are developing countries in the context of increasing their economic stability. The indicators used to measure economic stability are inflation rates, interest rates, exchange rates, the balance of payments (exports and imports), and the money supply. These indicators play an important role in knowing the resilience of a country's economic stability. This indicator was chosen because FFR volatility can affect financial markets that refer to this indicator. When FFR experiences volatility, it will have an impact on these indicators of economic stability and can affect a country's economic activities. When FFR experiences volatility, there is a relatively significant response due to monetary policy through the FFR interest rate instrument (Lee J, 2006). (Chandan & Rajat, 2017) also mentions that monetary policy can affect output, exchange rates, and inflation.

The study (Bluedorn & Bowdler, 2006) concluded that the FFR interest rate influences domestic interest rates and exchange rates in various countries. (Ekanayake et al, 2008) stated that the average impact of a decrease in the FFR target rate on stocks is positive, while the reaction from an increase in the FFR target rate is negative. (Malahayati et al, 2021) concluded that the government introduced fiscal incentives to support the economy during a pandemic, economic conditions will improve although not fully, and are expected to help increase GDP by around 1-3%. Research conducted by (Ali et al, 2017) shows that portfolio inflows from Japan to the US are more than monetary variables strengthening the possibility of remaining in conditions of dollar-yen appreciation with low volatility, therefore, controlling credit flows can be used as a policy tool to

achieve economic and financial stability. Therefore, monetary policy must significantly balance the macroeconomic implications of global economic instability and the global economic crisis resulting from the Covid-19 pandemic, and use appropriate strategies to maintain economic stability. So researchers are interested in researching this to analyze the effect of FFR interest rate volatility before and during the Covid-18 pandemic on economic stability in ASEAN countries and to see short-term and long-term relationships.

From the explanation of the problems above, the relevant theory in this study refers to the indicators that have been determined, first, the Reference Interest Rate indicator uses Mundell Fleming's Theory where the domestic interest rate is influenced by world interest rates and risk premiums. The indicator, Balance of Payments (Exports) uses The General Theory of Employment, Interest, and Money through the work of John Maynard Keynes which states that achieving a balance of payments cannot be achieved instantly but requires intervention or intervention from the government. The Balance of Payments (Import) indicator uses the Monetary Approach Balance of Payment theory, which is the change in the country's foreign exchange reserves caused by changes in domestic interest rates due to the influence of changes in world interest rates. The Inflation Indicator uses the Quantity Theory which was declared by Irving Fisher that the emergence of inflation is due to an increase in the money supply due to the volatility of interest rates. The Exchange Rate Indicator uses the Purchasing Power Parity theory to prove how exchange rates affect the money market. Finally, the indicator of the amount of money in circulation uses the theory of the Velocity of Money, to measure the rotation of the use of money in transactions.

2. RESEARCH METHOD

This study uses a quantitative method using the Vector Error Correction Model (VECM) in Eviews 9. Data were obtained from International Financial Statistics (IFS) from January 2015 to December 2022 which covered five ASEAN developing countries namely, the Philippines, Thailand, Malaysia, Cambodia, and Indonesia. Data analysis used in this study are:

1. Data Stationarity Test

The stationarity test functions to find out whether the processed data is stationary or not as seen from the unit root test using Augmented Dickey-Fuller at the level, first difference, or second difference concerning the t-statistic value of less than 5%.

2. Lag Order Selection Criteria

Lag determination is carried out using Lag Order Selection Criteria or Determination of Lag which aims to find out which lag to choose and estimate the actual situation.

3. Cointegration Test

The cointegration test has the function of determining which variables are not cointegrated stationary or not by using the Johansen method and looking at the Eigenvalue Test and Trace Test. If there is a short-term and long-term relationship, it can be called the VECM model, but the cointegration rank is more than zero.

4. Vector Error Correction Model (VECM)

VECM according to Luetkepohl (2011) is a VAR model that explicitly includes the cointegration structure of the estimated variables. The use of this model can provide benefits in conducting short-term and long-term analyses. The following are the indicators and symbols used in this study. First, the Federal Funds Rate with the symbol FFR. Second, the Reference Interest Rate with sub-indicators of the Deposit Reference Rate (SBAs) and the Loan Reference Rate (SBAp). Third, the Balance of Payments with Export (Ex) and Import (Imp) sub-indicators. Fourth Inflation with symbol Inf. The fifth is the Exchange Rate with the Ntk symbol and finally the Money Supply

with the JUB symbol. This data processing uses the Eviews 9 application with the VECM specification model as follows:

$$\Delta yt = \mu 0x + \mu 1xt + \Pi xyt\text{-}1 + \Sigma\, ik\, \Delta yt\text{-}1 + \varepsilon t \quad (1)$$

By description:

yt = Vectors that contain variables to be analyzed in the research
μ0x = Interception vector
μ1x = Regression coefficient vector
t = *Time trend*
Πx = αxβ' where β' contains long-run cointegration equations
yt-1 = The in-level variable
Σ ik = Regression coefficient matrix
k-1 = Ordo VECM from VAR
εt = *Error term*

Meanwhile, the Vector Error Correction Model (VECM) based on the variables used is as follows:

$$\Delta FFR = \alpha + \sum_{i=1}^{n} \beta i \Delta SBAs_{t-1} + \sum_{i=1}^{n} \beta i \Delta SBAp_{t-1} + \sum_{i=1}^{n} \beta i \Delta Eks_{t-1} + \sum_{i=1}^{n} \beta i \Delta Imp_{t-1} + \sum_{i=1}^{n} \beta i \Delta Inf_{t-1} + \sum_{i=1}^{n} \beta i \Delta NTk_{t-1} + \sum_{i=1}^{n} \beta i \Delta JUB_{t-1} + \lambda EC_{t-1} + \varepsilon t \quad (2)$$

By description :

ΔFFR = Federal Funds Rate (FFR) interest rate volatility
$\sum_{i=1}^{n} \beta i \Delta SBAs_{t-1}$ = Reference interest rates for deposits in five ASEAN developing countries
$\sum_{i=1}^{n} \beta i \Delta SBAp_{t-1}$ = Loan Reference Rates in five ASEAN developing countries
$\sum_{i=1}^{n} \beta i \Delta Eks_{t-1}$ = Exports in five ASEAN developing countries
$\sum_{i=1}^{n} \beta i \Delta Imp_{t-1}$ = Imports in five ASEAN developing countries
$\sum_{i=1}^{n} \beta i \Delta Inf_{t-1}$ = Inflation in five ASEAN developing countries
$\sum_{i=1}^{n} \beta i \Delta NTk_{t-1}$ = Exchange Rates in five ASEAN developing countries
$\sum_{i=1}^{n} \beta i \Delta JUB_{t-1}$ = The Money Supply in the five ASEAN developing countries
λEC_{t-1} = *Error correction at a certain period*
εt = *Error term*

5. Impulse Response Function

The IRF test has a function to determine the impact of shocks on one variable on other variables. This IRF test is also used to evaluate the effectiveness of a policy change.

6. Variance Decomposition

The Variance Decomposition (VD) test has the objective of predicting each contribution of each variable studied to shocks or changes in certain variables.

3. RESULTS AND DISCUSSION

1. Data Stationarity Test

Table 1. The results of the data stationarity test with the ADF at the level

Variable	t-statistics	Prob
Eks	-2.266	0.0117
Imp	-4.110	0.0000
Inf	-10.9621	0.0000
NTk	-2.9423	0.0016

Source: Data processed with Eviews 9

Table 2. Results of the Data Stationarity Test with ADF at the First Difference Level

Variable	t-statistics	Prob
FFR	-5.46843	0.0000
SBAs	-6.79996	0.0000
SBAp	-9.19987	0.0000
JUB	-11.6208	0.0000

Source: Data processed with Eviews 9

The results of the stationarity test using Augmented Dickey-Fuller in Table 1 above show that four variables are stationary at the Level level, namely Exports (Ex) with a coefficient value of 0.0117, Imports (Imp) with a coefficient value of 0.0000, Inflation (Inf) with a coefficient value of 0.0000, and Exchange Rate (NTk) with a coefficient value of 0.0016. Meanwhile, table 2 shows that four other variables are stationary at the First Difference level, namely the Federal Funds Rate (FFR), Deposit Reference Rate (SBAs), Loan Reference Rate (SBAp), and Total Money Supply (JUB) with values coefficient 0.0000.

2. Test the Lag Order Selection Criteria

Table 3. Test the Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-26050.98	NA	7.70e+39	114.5450	114.6174	114.5735
1	-25617.17	850.4630	1.52e+39	112.9194	113.5714*	113.1763
2	-25495.06	235.0871	1.17e+39	112.6640	113.8956	113.1492*
3	-25415.66	150.0842*	1.10e+39*	112.5963*	114.4074	113.3098
4	-25372.8	79.48771	1.21e+39	112.6893	115.0799	113.6311

Source: Data processed with Eviews 9

The table above describes the optimum lag structure for VECM modeling. The results showed that most of the selection criteria such as the LR test, Schwarz Information Criteria (SC), and Hanna Quinn chose lag 3 at a significance level of 5% because it had the most asterisks to be used in the VECM test and Johansen Cointegration test.

3. Johansen Cointegration Test

Table 4 Johansen Cointegration Test

Variable	Eigenvalue	t-statistics	Critical Value	Prob.**
FFR	0.443123	1153.816	159.5297	0.0001
SBAs	0.424542	887.4543	125.6154	0.0001
SBAp	0.332204	636.0260	95.75366	0.0001
Eks	0.290580	452.3098	69.81889	0.0001
Imp	0.242256	296.1049	47.85613	0.0001
Inf	0.180046	169.8835	29.79707	0.0001
NTk	0.136144	79.56261	15.49471	0.0000
JUB	0.028111	12.97356	3.841466	0.0003

Source: Data processed with Eviews 9

The results of the Johansen Cointegration test based on Table 4 above show that the t-statistic and eigenvalue are greater than the critical value with a significance level of 5%, which explains that the alternative hypothesis and the null hypothesis which results in no cointegration are rejected, so the VAR model can be combined with the Error Correction Model becoming the Vector Error Correction Model (VECM).

4. Vector Error Correction Model (VECM)

Table 5. VECM Test Results

Variable	Response	
	Short-term	Long-term
FFR	-0.378072	1.000000
SBAs	0.056470	2.07755
SBAp	-0.009513	-1.83885
Eks	-0.000217	15.8857
Imp	0.000942	-11.2506
Inf	0.089426	-2.15132
NTk	-0.000668	-3.33358
JUB	-0.000156	-0.16891

Source: Data processed with Eviews 9

The results of the analysis from the VECM test conducted in this study with the volatility of the Federal Fund Rate (FFR) before and during the Covid-19 pandemic in short-term conditions. the FFR rate of 1% in the previous month will increase the Deposit Reference Rate (SBAs) by 0.0564% in the following month. The Loan Reference Rate (SBAp) variable has a significant negative effect with a coefficient value of -0.0095, which means that every 1% increase in the FFR interest rate in the previous month will reduce the Loan Reference Interest Rate (SBAp) by 0.0095% in the following month. Then, for the Export variable (Ex) it has a significant negative effect with a coefficient value of -0.000217, which means that every 1% increase in the FFR interest rate in the previous month will reduce Exports (Ex) by 0.000217% in the following month. In contrast, the Import variable (Imp) has a significant positive effect with a coefficient value of 0.000942, which means that every 1% increase in the FFR interest rate in the previous month will increase Imports (Imp) by 0.000942% in the following month. In line with imports, the inflation variable (Inf) also has a significant positive effect with a coefficient value of 0.089426, which means that every 1% increase in the FFR interest rate in the previous month will increase inflation (Inf) by 0.089426% in the following month. Finally, the variables of the Exchange Rate (NTk) and the Money Supply (JUB) have a significant negative effect with coefficient values of -0.000668 and -0.00156 respectively, which means that every 1% increase in the FFR interest rate in the previous month will reduce the Exchange Rate (NTk) of 0.000668% and for the Total Money Supply (JUB) of 0.000156%.

In a long-term relationship, the volatility of the FFR interest rate results in a significant positive effect on the Deposit Reference Rate (SBAs), where every 1% increase in the FFR interest rate will increase the Deposit Reference Rate (SBAs) by 2,077%. For the variable Loan Reference Rate (SBAp) it has a significant negative effect where every 1% increase in the FFR interest rate will reduce the Loan Reference Interest Rate (SBAp) by 1,838%. In contrast to the Export (Ex) variable, it has a significant positive effect where every 1% increase in the FFR interest rate will increase

Exports (Ex) by 15,885%. The Import Variable (Imp) has a significant negative effect where every 1% increase in the FFR rate will reduce Imports (Imp) by 11,250%. This is in line with the variables Inflation (Inf), Exchange Rate (NTk), and Total Money Supply (JUB) which have a significant negative effect where every 1% increase in the FFR interest rate will reduce Inflation by 2,151%, Exchange Rate by 3,333%, and Total Money Supply of 0.168%.

5. Impulse Response Function (IRF) Test

The Impulse Response Function (IRF) test was carried out to see the response to the effect of the Federal Funds Rate (FFR) before and during the Covid-19 pandemic on economic stability in Southeast Asian countries which are members of ASEAN which includes the Deposit Reference Rate (SBAs), Loan Reference Interest (SBAp), Exports (Ex), Imports (Imp), Inflation (Inf), Exchange Rates (NTk), and the Money Supply (JUB). IRF test results for each variable will be explained in the following figure.

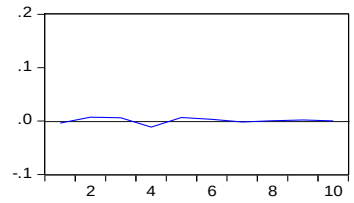

Figure 1. FFR Response to SBAS

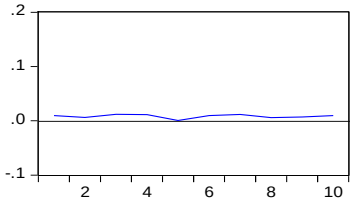

Figure 2. FFR Response to SBAp

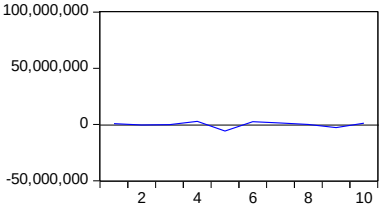

Figure 3. FFR Response to Exs

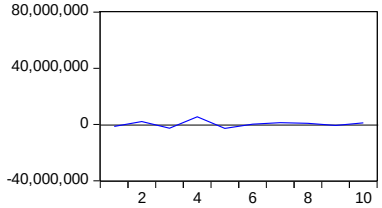

Figure 4. FFR Response to Imp

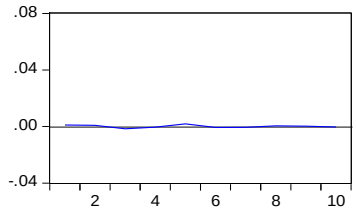

Figure 5. FFR Response to Inf

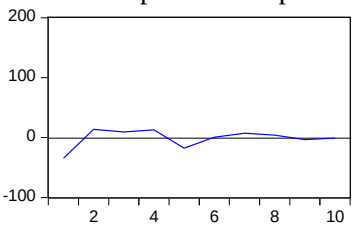

Figure 6. FFR Response to NTk

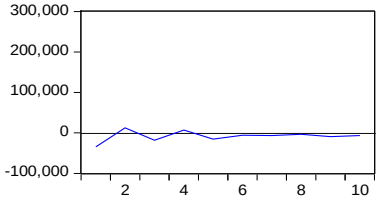

Figure 7. FFR Response to JUB
Source: Data processed with Eviews 9

In Figure 1 it can be seen that forecasting the impact of FFR interest rate shocks on the Deposit Reference Rate (SBAs) shows a decline in the first period, then increases in the second to third periods. In the fourth period, it decreased again and increased in the fifth period and continued to be stable until the tenth period. In Figure 2 it can be seen that forecasting the impact of FFR interest rate shocks on the Loan Reference Rate (SBAp) shows that in the first period, it increased to the fourth

period, then decreased in the fifth period. In the sixth period, it experienced a significant increase and was classified as stable until the tenth period. In Figure 3 it can be seen that forecasting the impact of FFR interest rate shocks on Exports (Ex) shows that from the beginning of the period to the tenth period, it tends to move stably even though it experienced a decline in the fifth period. In Figure 4 it can be seen that forecasting the impact of FFR interest rate shocks on Imports (Imp) shows that it tends to be stable in the first and second periods, then decreases in the third period, and increases again in the fourth period and continues to be stable until the tenth period.

In Figure 5 it can be seen that forecasting the impact of FFR interest rate shocks on Inflation (Inf) shows that starting from the beginning of the period to the last period, namely the tenth period, it tends to be stable. In Figure 6 it can be seen that forecasting the impact of FFR interest rate shocks on the Exchange Rate (NTk) decreased in the first period, then increased in the second to fourth periods. Furthermore, there was a decline in the sixth period but after that, it continued to increase until the tenth period. Figure 7 can be seen that forecasting the impact of FFR interest rate shocks on the Money Supply (JUB) in the first period to the fifth period fluctuated, but stabilized until the tenth period.

6. Variance Decomposition Test (VD)

This test explains the form of contribution of each variable to other variables to find out which variable contributes more to the influence of the FFR interest rate before and during the Covid-19 pandemic. Here are the results of the analysis.

Table 6 Variance Decomposition Test Results

Variance Decomposition of D(SBAS):

Period	S.E.	D(FFR)	D(SBAS)	D(SBAP)	D(EKS)	D(IMP)	D(INF)	D(NT)	D(JUB)
1	0.193825	0.034168	99.96583	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
5	0.237250	0.487749	98.27834	0.637286	0.410287	0.102115	0.004965	0.046825	0.032429
10	0.275447	0.385481	98.40847	0.604722	0.354699	0.135601	0.007002	0.057157	0.046870

Variance Decomposition of D(SBAP):

Period	S.E.	D(FFR)	D(SBAS)	D(SBAP)	D(EKS)	D(IMP)	D(INF)	D(NT)	D(JUB)
1	0.161324	0.364379	0.009797	99.62582	0.000000	0.000000	0.000000	0.000000	0.000000
5	0.197752	1.042850	4.630771	93.74755	0.180455	0.109335	0.022794	0.122662	0.143581
10	0.231839	1.517094	3.800300	93.90119	0.241338	0.164254	0.033680	0.168270	0.173874

Variance Decomposition of D(EKS):

Period	S.E.	D(FFR)	D(SBAS)	D(SBAP)	D(EKS)	D(IMP)	D(INF)	D(NT)	D(JUB)
1	82444556	0.008560	1.108489	0.372863	98.51009	0.000000	0.000000	0.000000	0.000000
5	1.00E+08	0.424747	1.343251	0.503668	87.14848	9.623992	0.536185	0.398543	0.021137

10	1.08E+08	0.514397	1.470106	0.707445	81.49868	14.18449	0.801406	0.800920	0.022559

Variance Decomposition of D(IMP):

Period	S.E.	D(FFR)	D(SBAS)	D(SBAP)	D(EKS)	D(IMP)	D(INF)	D(NT)	D(JUB)
1	60444812	0.051156	0.008915	0.003040	6.281789	93.65510	0.000000	0.000000	0.000000
5	73384525	0.942538	0.060639	0.070513	11.71307	84.74924	0.212871	2.221118	0.030003
10	81141168	0.832710	0.067351	0.096103	16.96100	78.27079	0.324850	3.399358	0.047845

Variance Decomposition of D(INF):

Period	S.E.	D(FFR)	D(SBAS)	D(SBAP)	D(EKS)	D(IMP)	D(INF)	D(NT)	D(JUB)
1	0.062749	0.026416	0.012527	0.000202	0.205444	0.208476	99.54694	0.000000	0.000000
5	0.074535	0.148928	0.026209	0.007887	0.449595	0.464733	98.88805	0.012880	0.001720
10	0.084284	0.135044	0.025332	0.010720	0.625365	0.623706	98.55800	0.019466	0.002362

Variance Decomposition of D(NT):

Period	S.E.	D(FFR)	D(SBAS)	D(SBAP)	D(EKS)	D(IMP)	D(INF)	D(NT)	D(JUB)
1	185.8528	3.449569	0.114968	0.067189	3.993624	0.107978	0.001298	92.26537	0.000000
5	224.3757	3.865454	0.116154	0.389898	5.246828	1.014286	0.003231	89.33486	0.029294
10	266.1624	2.864686	0.093981	0.505147	7.405255	1.293936	0.003728	87.80993	0.023339

Variance Decomposition of D(JUB):

Period	S.E.	D(FFR)	D(SBAS)	D(SBAP)	D(EKS)	D(IMP)	D(INF)	D(NT)	D(JUB)
1	267447.8	1.644190	0.008740	0.014251	0.031599	0.089525	0.005986	0.105252	98.10046
5	315709.2	1.955272	0.057680	0.401480	0.110212	0.201662	0.030616	0.095895	97.14718
10	361914.6	1.652987	0.063368	0.406588	0.102240	0.204028	0.036651	0.102035	97.43210

Source: Data processed with Eviews 9

In the first period, the Savings Reference Interest Rate (SBAs) variable contributed to 99.96% and decreased until the tenth period to 98.40%. At the beginning of the period, the Loan Reference Rate (SBAp) variable contributed to 99.62% and continued to decline until the tenth period to 93.90%. For the Export variable (Ex) in the first period, it contributed 98.51% and continued to decrease until the tenth period to 81.49%. Then, the Import variable (Imp) in the first period contributed 93.65% and continued to decline until the tenth period to 78.27%. Furthermore, the inflation variable (Inf) contributed 99.54% and decreased until the tenth period to 98.55%. The Exchange Rate Variable (NTk) at the beginning of the period contributed 92.26% and continued to decline until the tenth period to 87.80%. Finally, the variable Amount of Money in Circulation (JUB) in the first period contributed 98.10% and decreased until the tenth period to 97.43%.

The results showed that there was a positive influence on the long-term FFR interest rate before and during the Covid-19 pandemic on economic stability in five ASEAN developing countries, namely Indonesia, Cambodia, Malaysia, Thailand, and the Philippines as an indicator of the Deposit

Reference Rate (SBAs). This happens when the FFR interest rate experiences volatility, then a country's Reference Deposit Rate (SBAs) also increases. The Fed, which is the central bank of the United States of America, takes full action from the monetary authority, including in terms of setting benchmark interest rates to maintain economic stability. The FFR is used as a reference rate in determining interest rates for central banks in other countries, including ASEAN countries, because the United States currency, namely the US Dollar, is the global currency used in economic activities. The volatility of the FFR interest rate causes the Deposit Reference Rate (SBAs) to increase in line with this volatility. The policies implemented by the five central banks of developing ASEAN countries were allegedly a front-loaded, pre-emptive, and forward-looking step to reduce the inflation expectation rate so that it could return to the target which could further strengthen the exchange rate stabilization policies of the five ASEAN countries so that they were in line with their fundamental values because the impact of the strengthening US dollar and heightened uncertainty on global financial markets amidst domestic economic demand that remains strong so that economic stability is maintained. This proves that in the Mundell-Fleming Theory where the domestic interest rate which is denoted by r is influenced by the world interest rate which is denoted by r* and the interest rate of each country has differences due to country risk and exchange rate expectations.

In the short term, it shows that there was a positive influence of the FFR interest rate before and during the Covid-19 pandemic on economic stability in five developing ASEAN countries, namely Indonesia, Cambodia, Malaysia, Thailand, and the Philippines as an indicator of the Deposit Reference Rate (SBAs). There was an increase in the Savings Reference Rates (SBAs) in the five ASEAN developing countries which were below five percent, but when implemented at the beginning of the month the policy was implemented showing the public's interest in saving to avoid inflation as well as the motive to take precautions amid uncertainty due to the economic crisis that occurred and in the end the Deposit Reference Rate (SBAs) tends to increase according to the economic conditions and political situation of a country. This is in line with research (Brodeur et al, 2020) that the macroeconomic and financial impacts during the Covid-19 pandemic as well as public responses to policies taken by a country's central bank and its government.

Based on the results of data processing, it shows that there was a negative effect on the long-term FFR interest rate before and during the Covid-19 pandemic on economic stability in five ASEAN developing countries, namely Indonesia, Cambodia, Malaysia, Thailand, and the Philippines as an indicator of the Loan Reference Rate (SBAp). This happened when the FFR interest rate experienced volatility in terms of a decrease, the Loan Reference Rate (SBAp) in the five ASEAN countries also experienced a decrease. The decline in loan interest rates that occurred as a result of the global economic crisis that occurred in the United States in 2008 and the economic crisis due to the Covid-19 pandemic made business actors who borrow money or credit sluggish because of the large number of bad loans that occurred. In addition to bad credit that occurs as a result of business actors who do not make a profit, individuals also do not want to take risks in making credit due to uncertain income. This is in line with the Mundell-Fleming Theory, namely the interest rate of each country is different due to the risk premium of that country. Then, policymaking is differentiated by the risk premium.

In the short term, it shows that there was a negative effect of the FFR interest rate before and during the Covid-19 pandemic on economic stability in five developing ASEAN countries, namely Indonesia, Cambodia, Malaysia, Thailand, and the Philippines as an indicator of the Loan Reference Rate (SBAp). The decline in loan interest rates in five developing ASEAN countries forced banks to relax or restructure to prevent bad loans from occurring as a result of businesses that did not work and individual incomes that did not settle due to the implementation of social distancing and even several countries implementing lockdowns. If loan interest rates rise, the number of installments will also swell. This can cause debtors to have difficulties in repaying loans and cause non-performing

loans which have an impact on domestic economic stability. Research conducted by (Rey, 2015) states that one of the determinants of the global financial cycle is monetary policy in central countries that affect global banks, capital flows, and credit growth in the international financial system.

The results of data processing show that there was a positive long-term influence on the FFR interest rate before and during the Covid-19 pandemic on economic stability in five ASEAN developing countries, namely Indonesia, Cambodia, Malaysia, Thailand, and the Philippines, the Balance of Payments indicator, the Export sub-indicator (Ex). The increase in interest rates in five ASEAN developing countries caused by the volatility of FFR interest rates indicates that higher interest rates will increase export volumes. This increase in exports will increase economic growth as measured by Gross Domestic Growth (GDP). Apart from that, the formation of alternative markets as potential products from the five ASEAN developing countries are sold to other countries due to the limitations of a country creating reciprocal relations between countries due to trade so that the country's foreign exchange grows and economic stability is also maintained. This proves The General Theory of Employment, Interest, and Money through the work of John Maynard Keynes who argues that the balance of payments does not automatically reach a balance but requires government intervention.

In the short term, it shows that there was a negative effect of the FFR interest rate before and during the Covid-19 pandemic on economic stability in five ASEAN developing countries, namely Indonesia, Cambodia, Malaysia, Thailand, and the Philippines. During the economic crisis caused by the Covid-19 pandemic, the Fed as the Central Bank of the United States cut the FFR rate which was followed by other countries including the five ASEAN developing countries because it is a reflection of the world economy. As a result, domestic interest rates also became low and the exchange rate depreciated so that the value of exports fell.

The results showed that there was a negative effect on the long-term FFR interest rates before and during the Covid-19 pandemic on economic stability in five developing ASEAN countries, namely Indonesia, Cambodia, Malaysia, Thailand, and the Philippines, the Balance of Payments indicator, the Import sub-indicator (Imp). The export performance which was still strong in the five ASEAN developing countries was shaken by inflationary pressures that occurred in other countries even though interest rates decreased due to the volatility of FFR interest rates, so indirectly the prices of goods and necessities at low prices originating from abroad caused the large number of public requests that make imports fluctuate. This shows that the theory of the balance of payments balance Monetary Approach Balance of Payments, namely the international balance of payments is a change in the country's foreign exchange reserves caused by changes in domestic interest rates due to the influence of changes in world interest rates and prioritizes monetary or traffic accounts carried out government both the current account and the capital account.

In the short term, it shows that there was a positive influence on the FFR interest rate before and during the Covid-19 pandemic on economic stability in five ASEAN developing countries, namely Indonesia, Cambodia, Malaysia, Thailand, and the Philippines, the Balance of Payments indicator, the Import sub-indicator (imp). The FFR interest rate is volatile, where during the global economic crisis the Fed cut interest rates massively which made domestic interest rates follow this movement so that ASEAN developing countries maintain price stability, especially food and energy resources as well as readiness for digital transformation and innovation for the future in support better economic growth so that economic stability can be maintained.

The results of data processing show that there was a negative effect on the long-term FFR interest rate before and during the Covid-19 pandemic on economic stability in five developing ASEAN countries, namely Indonesia, Cambodia, Malaysia, Thailand, and the Philippines as an indicator of Inflation (Inf). Weak domestic demand causes a lot of economic capacity to be unused so prices tend to fall which results in a large amount of money circulating in society and has an

impact on the Gross Domestic Product (GDP). In addition, there is also a massive disbursement of subsidies to subsidize staple foods to cooking oil for the community so that prices do not increase and economic stability is maintained. This is in line with the Quantity Theory declared by Irving Fisher, which states that an increase or decrease in the amount of money in circulation in society caused by the volatility of interest rates can cause an increase or decrease in the prices of goods and services, which refers to the inflation indicator.

In the short term, it shows that there was a positive influence of the FFR interest rate before and during the Covid-19 pandemic on economic stability in five developing ASEAN countries, namely Indonesia, Cambodia, Malaysia, Thailand, and the Philippines as an indicator of Inflation (Inf). The interest difference between the five ASEAN developing countries and The Fed due to the global economic crisis from the Covid-19 pandemic can narrow and there is a risk of capital outflows occurring again massively and can cause the exchange rate to depreciate and inflation to soar and severely suffocate people's purchasing power.

The results of the study show that there is a negative effect on the long-term FFR interest rate before and during the Covid-19 pandemic on economic stability in five developing ASEAN countries, namely Indonesia, Cambodia, Malaysia, Thailand, and the Philippines. As a result of the volatility of FFR interest rates, investors in developed countries seek investments with higher yield purchases and encourage portfolio flows to Emerging Markets which result in higher yields in the United States thereby triggering returns on investment which result in a currency depreciating which can trigger disruptions domestic economic stability and the government needs to take action by making the right policies. This is in line with the theory of Purchasing Power Parity, namely how exchange rates affect the money market. Changes in exchange rates between two currencies are determined by relative changes in prices in the two countries which are influenced by world reference interest rates, which are then followed by domestic interest rates.

In the short term, it shows that there was a negative effect of the FFR interest rate before and during the Covid-19 pandemic on economic stability in five ASEAN developing countries, namely Indonesia, Cambodia, Malaysia, Thailand, and the Philippines. The exchange rates of the five ASEAN developing countries failed to strengthen or depreciate against the US Dollar due to the volatility of the FFR interest rate by the Fed, namely the United States central bank and foreign investors. The decline in the exchange rate can trigger inflation which needs to be watched out for because it can disrupt the stability of the domestic economy.

Finally, the results of data processing show that there was a negative effect on the long-term FFR interest rates before and during the Covid-19 pandemic on economic stability in five ASEAN developing countries, namely Indonesia, Cambodia, Malaysia, Thailand, and the Philippines as an indicator of the Money Supply (JUB). The volatility of the FFR interest rate on the Money Supply in the five developing ASEAN countries is that the domestic interest rates of developing ASEAN countries have decreased due to following the movement of world FFR interest rates due to the global economic crisis. The global economic crisis which caused the economy to weaken caused economic activity to not run properly, followed by a drastic decline in public consumption so that the velocity of money also decreased which could affect economic stability. This is in line with the Quantity Theory of Money, the concept of Velocity of Money, which is money circulating or the circulation

of money in transactions to find out how much money changes hands over a certain period and measures the rate at which money circulates in economic activity.

In the short term, it shows that there was a negative effect of the FFR interest rate before and during the Covid-19 pandemic on economic stability in five developing ASEAN countries, namely Indonesia, Cambodia, Malaysia, Thailand, and the Philippines as an indicator of the Money Supply (JUB). One of the measures implemented by the five central banks of ASEAN developing countries was to reduce the money supply and purchase government bonds on the primary market to reduce volatility in international financial markets. However, this reduction is not too large so that the economy can grow strongly amidst global risks that threaten the stability of the domestic economy.

4. CONCLUSION

Research that has been conducted shows that the volatility of FFR interest rates before and during the Covid-19 pandemic had short and long term effects on economic stability in the five developing countries of the Southeast Asian region which are members of ASEAN, namely Indonesia, Cambodia, Malaysia, Thailand and the Philippines. . The Indicator of the Reference Rate for Deposits in the long term and short term has a positive influence. Loan Reference Rate Indicators have a negative effect on the long term and short term. Export indicators in the long term have a positive effect, while in the short term they have a negative effect. The import indicator in the long term has a negative effect, while in the short term it has a positive effect. Inflation in the long term has a negative effect, while in the short term it has a positive effect. Finally, the indicators of the Exchange Rate and the Money Supply in the long and short term have a negative effect. Therefore, the monetary authority of each country needs an appropriate policy response so that economic stability with these indicators can always be maintained. Research that has been conducted shows that the volatility of FFR interest rates before and during the Covid-19 pandemic had a short and long term impact on economic stability in the five developing countries of the Southeast Asian region which are members of ASEAN, namely Indonesia, Cambodia, Malaysia, Thailand and the Philippines. . The Indicator of the Reference Rate for Deposits in the long term and short term has a positive influence. Loan Reference Rate Indicators have a negative effect on the long term and short term. Export indicators in the long term have a positive effect, while in the short term they have a negative effect. The import indicator in the long term has a negative effect, while in the short term it has a positive effect. Inflation in the long term has a negative effect, while in the short term it has a positive effect. Finally, the indicators of the Exchange Rate and the Money Supply in the long and short term have a negative effect. Therefore, the monetary authority of each country needs an appropriate policy response so that economic stability with these indicators can always be maintained.

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