

Research Article

The Monetary Policy and International Trade Response Amidst Volatility in the Fed's Federal Fund Reserve (FFR): The Emerging Market of Southeast Asian Study

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Abstract.

The purpose of this study was to analyse the domestic monetary policy, inflation and international trade responses to the Fed's federal fund reserve (FFR) shock in the emerging market of Southeast Asian such Indonesia, Malaysia, Viet Nam, Thailand, and Philippine. The data analysis method used was Vector Autoregression (VAR) to perceive the domestic interest rate, exported, imported and inflation to the Fed's federal fund reserve (FFR) shock as well as exported, imported and inflation variables response to the domestic interest rate changed in each country. The result of study shown that the Fed's federal fund reserve (FFR) shock results diverse responses in each country. These reflect the difference of economic structure and monetary policy. The response of exported, imported, and inflation variables on the domestic interest rate changed also have a response variation each country. This finding confirms that domestic monetary policy need to be adjusted with economic circumstance and trade characteristic in each country to address external shock such as the Fed's federal fund reserve (FFR) policy.

Keywords: monetary policy, the Fed's federal fund reserve (FFR), the domestic interest rate, international trade, the emerging market of Southeast Asian

1. Introduction

The Fed's federal fund rate (FFR) has a pivotal important to influence other interest rate of countries in across the world. Increasing the Fed's federal fund rate (FFR) is able to make more interesting in dollar US in asset domination term. It leads to capital out flow from emerging countries enter United State (US). Preventing the currency devaluation and capital out flow happened, central bank of emerging markets often must increase the domestic interest rate (1).

Changing of the Fed's federal fund rate (FFR) can influence globally liquidities circumstance and credit risk lead to impacted the financial market in emerging market

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countries. Maintaining the financial stability, central bank in those countries tend to adjust the interest rate (2). On the other hand, there are relationship between interest rate and inflation, excessive the interest rate tends to reduce the inflation by reducing the aggregate demand.

Emerging market countries have to increase the interest rate for control the inflation that could be triggered by currency devaluation caused the capital outflow. The currency devaluation as response on capital outflow can increase the price of goods and services imported. Its turn could emphasize the domestic inflation. Those have an impact, such as the central bank has to increase the interest rate to maintain the import inflation.

On the other hand, the interest rate has an influence on exported and imported trade costs. Excessive the interest rate in a country tends leading the appreciation of currency rate (3). The interest rate appreciation has a meaning that increasing the currency rate, so that currency rate has more expensive on other currency of other countries. Expansive export cost happening as well as foreign consumers have to pay much more own currency value to buy goods and services from other countries that have a stronger currency rate. Changing the Fed's federal fund rate (FFR) is able to influence the capital flow and exchange rate of other countries. In the transmission mechanism of monetary policy to real economic through the interest rate and exchange rate have an influencing to exported and imported trade costs.

The theory of mundell-fleming model explain that how monetary and fiscal policies running in openness economic with high capital mobilities (4,5). The domestic interest rate has to adjust with international interest rate in order to avoiding came outflow or entering the big capital. On the other word, increasing the Fed's federal fund rate (FFR) will lead to other countries decided to rise the interest rate, it is conducted to avoid currency devaluation and capital come out (6,7).

On the other side, based on the theory of global financial cycle mentions that the monetary policy in big economic such as US, it is able to influence global financial circumstance. When the Fed's federal fund rate (FFR) changes the interest rate, the global liquidity condition and investor risk sentiment follows to also change. Maintaining the domestic economic stabilities and global financial condition, the central bank in other countries likely responses the changing of the federal fund rate (FFR) to adjust economic conditions (1,8).

Several researches have done previously to describe relationship among federal reserve interest rate (The Fed), interest rate of central bank, exported and imported trade

and inflation. for instance, employ a large-scale policy model (SIGMA) to investigate implications of monetary policy spillover by using one of indicator namely the fed interest rate to gauge impacting of US monetary policy on multiple policy from global economic stability (9). One of finding in his research explains that the positive spillovers of easing actions have been conducted by the Federal Reserve interest rate and other central bank provide stabilizing on global economic. In addition, to response spillover condition, central bank have a purpose for monetary policy to address some challenging such as stabilizing domestic economic as well as inflation to promote export or maintaining financial stability.

The Fed is able to change monetary policy and private business sector, the effect of the Fed shock bases on information news revealing and it has consequent on unemployment or inflation that there are different viewed with standard macroeconomic model (10). The monetary policy could impact inflation (11). Furthermore, Kontonikas et al, (2017) in their paper has found a negative response in the obligation fluctuated occurring in FFR interest rate in US country.

On the other side, Indonesia country by investigating response of Bank Indonesia as central bank of Indonesia to economic stability in Indonesia when the federal fund rate (FFR) experiences a shock. finding that the federal fund rate (FFR) has significantly impact the exchange rate and the consumer price index (CPI) or inflation. However, it does not have significantly impact the BI rate as domestic interest rate (13).

This paper has purpose to investigate response the interest rate of central bank in emerging market in Southeast Asian to shock the Fed's federal fund rate (FFR) happening. Furthermore, this paper wants to analysis response the exported and imported trade and inflation to shock interest rate of central bank. There are some emerging markets in Southeast Asian such as Indonesia, Malaysia, Philippine, Viet Nam and Thailand. On the other side, this paper also tries to compare how response of each monetary policy and international trade condition. Especially, domestic interest rate of central bank, inflation and imported and exported trade in each emerging market countries to shock of the Fed's federal fund rate (FFR) happening.

Overall, this paper has obviously novelty gap when it has been comparing with previously researches. Not only seeing geography object research, but also this paper trying to comparative analysis response monetary policy and international trade activities in each emerging market the Southeast Asian. Those ways are conducted to describe deeply analyzing of monetary policy and international trade circumstances in each

emerging market country in the Southeast Asian region to shock of the Fed's federal fund rate (FFR).

2. Methods

2.1. Data

Data uses in this paper is secondary data in beginning period 1983 until 2022. Several data are utilized in this paper such as Federal fund interest rate (FFR) the Fed, domestic interest rate, inflation and exported and imported trade data from emerging market country in Southeast Asian (Indonesia, Malaysia, Philippine, Viet Nam, and Thailand). The Fed's federal fund (FFR) data was obtained from officially Federal Reserve the Fed published, as well as domestic rate, inflation and exported and imported data of each country were obtained from officially The World Bank published.

2.2. Data Analysis

This paper employ Vector Autoregressive (VAR) model as data analysis method. However, before determining counted the result of VAR model, it need to be conducted several testing steps to ensure model analysis using is deserve. Three are several test using such as stationer test, determining number of optimal lags, model stability test, and LM test.

Stationery data testing is done to exam that data used have unit root, this paper utilized *Augmented Dickey-Fuller* (ADF) approach. Unit root test is the examining often used to ensure data has a stationarity in time series data term (14). This equation approach as follow:

$$\Delta y_t = \alpha_0 + \gamma y_{t-1} + \int_{i=1}^m \beta_i \Delta y_{t-1} + u_t \quad (1)$$

Equation 1 -- Stationarity Equation

Where α_0 is intersep, γ is autoregressive coefficient, β_i is autoregressive coefficient that have differentiation with value $i = 2, 3, \dots, p$, Δy_{t-1} is the result of data differentiation to t-th period.

Determining number of optimal lags is employed to determine long optimal lags by considering value of *Aikaike's Information Criterion* (AIC), *Hannan-Quinn Criterion* (HQ),

Schawrz Information Criterion (SIC), Likelihood-ratio Criteration (LR), dan final prediksi error (FPE) (15).

Vector Autoregressive Model (VAR) using is this paper refer Lutkepohl, (2005). In this season Vector Autoregressive Model (VAR) equations divided in some equations appropriated with each country by constructing equation model as follow:

$$y_t = A_{1yt-1} + A_{2yt-2} + A_{3yt-3} + A_{4yt-4} + A_{5yt-5} + A_{p\ yt-p} + \mu_t \quad (2)$$

Equation 2 -- Response exogeneous variable of Indonesia Equation

Where A_1 , A_2 , A_3 , A_4 and A_5 set up becoming 0 as coefficient matrix, and y_t is vector variable, where A_1 is federal fund interest rate (FFR) variable, A_2 is the interest rate of domestic Indonesia variable, A_3 is Indonesia inflation variable, A_4 is Indonesia exported trade variable, A_5 is Indonesia imported trade variable, and μ_t is error vector.

$$y_t = A_{1yt-1} + B_{2yt-2} + B_{3yt-3} + B_{4yt-4} + B_{5yt-5} + B_{p\ yt-p} + \mu_t \quad (3)$$

Equation 3 -- Response exogeneous variable of Malaysia Equation

Where B_1 , B_2 , B_3 , B_4 and B_5 set up becoming 0 as coefficient matrix, and y_t is vector variable, where A_1 is federal fund interest rate (FFR) variable, B_2 is the interest rate of domestic Malaysia variable, B_3 is Malaysia inflation variable, B_4 is Malaysia exported trade variable, B_5 is Malaysia imported trade variable, and μ_t is error vector.

$$y_t = A_{1yt-1} + C_{2yt-2} + C_{3yt-3} + C_{4yt-4} + C_{5yt-5} + C_{p\ yt-p} + \mu_t \quad (4)$$

Equation 4 -- Response exogeneous variable of Philippine Equation

Where A_1 , C_2 , C_3 , C_4 and B_5 set up becoming 0 as coefficient matrix, and y_t is vector variable, where A_1 is the Fed's federal fund rate (FFR) variable, C_2 is the interest rate of domestic Philippine variable, C_3 is Philippine inflation variable, C_4 is Philippine exported trade variable, C_5 is Philippine imported trade variable, and μ_t is error vector.

$$y_t = A_{1yt-1} + D_{2yt-2} + D_{3yt-3} + D_{4yt-4} + D_{5yt-5} + D_{p\ yt-p} + \mu_t \quad (5)$$

Equation 5 -- Response exogeneous variable of Viet Nam Equation

Where A_1 , D_2 , D_3 , D_4 and B_5 set up becoming 0 as coefficient matrix, and y_t is vector variable, where A_1 is federal fund interest rate (FFR) variable, D_2 is the interest rate of domestic Philippine variable, D_3 is Philippine inflation variable, D_4 is Philippine exported trade variable, D_5 is Philippine imported trade variable, and μ_t is error vector.

$$y_t = A_{1yt-1} + E_{2yt-2} + E_{3yt-3} + E_{4yt-4} + E_{5yt-5} + E_{p\ yt-p} + \mu_t \quad (6)$$

Equation 6 -- Response exogeneous variable of Thailand Equation

Where A_1 , E_2 E_3 E_4 and B_5 set up becoming 0 as coefficient matrix, and y_t is vector variable, where A_1 is federal fund interest rate (FFR) variable, E_2 is the interest rate of domestic Thailand variable, E_3 is Thailand inflation variable, E_4 is Thailand exported trade variable, E_5 is Thailand imported trade variable, and μ_t is error vector.

Response impulse function (IRF) is used to prove a range of variable process that undertaken in this research. IRF analyzing responses a variable due to shock happening to other variable in equation on all variable value in further period. This analyzing is conducted with one of predictor variable is given a shock.

2.3. Data source

Yearly data using in interval during 1983 to 2022 is chosen to depict the Fed's federal fund rate (FFR), domestic interest rate, inflation, exported and imported trade in each emerging market the Southeast Asian. Every variable using is a percent unit during in the year period 1983 until 2022, based on table 1 about describing of statistic data show data about the Fed's federal fund rate (FFR) as well as domestic interest rate, inflation, exported and imported trade rate in emerging market the Southeast Asian.

Based on Table 1 explain that the highest interest rate in emerging market the Southeast Asian such as Indonesia, Malaysia, Viet Nam, Philippine and Thailand have around 18,7%, 22,9%, 12,5%, 14,2% and 15,12%, respectively. The smallest interest rate in each emerging market the Southeast Asian has -24,6%, -3,9%, -20,4%, -16,19%, and -1,51%, respectively.

On the other side, Table 2 also explains that the highest inflation in each emerging market the Southeast Asian. Indonesia has the highest inflation around 58,45%, smallest inflation 1,56%, and with average of inflation 6,06%. Malaysia has the highest inflation approximately 5,44%, smallest inflation -1,13% and with average of inflation 2,47%. Furthermore, the highest inflation in Viet Nam, Philippine, and Thailand around 23,11%, 50,33% and 7,99%, respectively as well as the smallest inflation in those countries around -1,7%, 0,67%, -0,90% respectively. On the other side, average of inflation in certain third countries approximately 5,77%, 7,39% and 2,92%, respectively.

Table 1 also point out about amount exported and imported rate in emerging market the Southeast Asian. Based on Table 1 mention that Indonesia has the highest, smallest and average exported rate approximately 26,48%, -31,80% and 6,34%, respectively as

well as the highest, smallest and average of imported rate around 26,65%, -40,67% and 5,85% respectively. On the other side, the highest exported rate in Malaysia, Viet Nam, Philippine and Thailand approximately 21,90%, 29,85%, 20,30% and 27,17% respectively. Meanwhile, the smallest and exported rate average in Malaysia around -1,08% and 7,64%, respectively as well as Viet Nam, Philippine, and Thailand have smallest exported rate around -5,08%, -19,91% and -19,68% respectively with average exported rate in those countries namely Viet Nam around 14,77%, Philippine around 6,29% and Thailand around 7,99%.

On the other side, the amount of imported rate is associated with maximal, minimum and average in each emerging market show that Viet Nam has maximum, minimum and average the imported rate approximately 41,82%, -6,82% and 13,76% respectively. Philippine has maximum, minimum and average the imported rate about 27,91%, -21,55% and 6,74% respectively as well as Thailand has maximum, minimum and average the imported rate about 39,56%, -20,77% and 8,33% respectively.

3. Result and Discussions

3.1. The Fed's federal fund rate (FFR) and domestic interest rate

Figure 1 point out about the growing of the Fed's federal fund rate (FFR) that compared with interest rate in some countries namely Indonesia, Malaysia, Philippine, Viet Nam and Thailand as emerging market in the Southeast Asian during period 1983 until 2022. Based on Figure 1 that almost the interest rate of emerging market in Southeast Asian has different moving response on the Fed's federal fund rate (FFR).

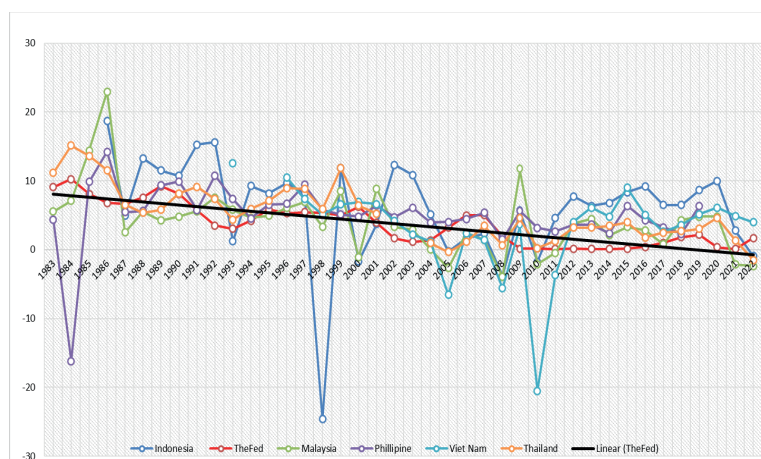


Figure 1: The Fed's federal fund rate (FFR) and domestic interest rate in emerging market the Southeast Asian during 1983 until 2022 (percent).

TABLE 1: Describing of Statistic Data.

Variable	Symbol	Obs	Mean	Std. dev.	Min	Max
Federal Rate	Fund FFR	40	3.673441	3.056397	0.0786849	10.22508
Indonesia						
Interest rate	Indorate	37	6.069352	7.329181	-24.60017	18.70734
Inflation	Indoinfla	40	8.54355	8.856042	1.56013	58.45105
Export	Indoexp	40	6.348327	1.007192	-31.80498	26.48492
Import	Indoimp	40	5.852228	1.374106	-40.67524	26.65329
Malaysia						
Interest rate	Malayrate	40	4.183951	4.890294	-3.903382	22.95688
Inflation	Malayinfla	40	2.4728	1.444366	-1.138702	5.440782
Export	Malayexp	40	7.642707	7.891761	-1.087842	21.90672
Import	Malayimp	40	7.706109	1.130542	-1.875385	26.28553
Viet Nam						
Interest rate	Vietrate	28	3.199965	6.251267	-20.49708	12.57721
Inflation	Vietinfla	27	5.772233	5.241212	-1.710337	23.11545
Export	Vietexp	33	14.77648	6.989806	-5.085058	29.85725
Import	Vietimp	33	13.7627	10.05324	-6.820988	41.82305
Philippine						
Interest rate	Phillrate	37	5.117519	4.467032	-16.1901	14.23028
Inflation	Phillinfla	40	7.39856	8.400338	0.6741925	50.33897
Export	Phillexp	40	6.295412	9.117065	-19.91415	20.30773
Import	Phillimp	40	6.747055	10.40427	-21.55442	27.9113
Thailand						
Interest rate	Thairate	38	5.225169	3.981008	-1.514932	15.12481
Inflation	Thaiinfla	40	2.925249	2.230358	-0.900425	7.994729
Export	Thaiexp	40	7.995471	9.06761	-19.68123	27.17106
Import	Thaiimp	40	8.333029	13.9521	-20.77229	39.56445

Black line color represents as trendline of the Fed federal fund rate (FFR), during period 1983 to 2022 the FFR trendline inclines a downward trend. However, domestic interest rate of emerging market countries in Southeast Asian has a vary moved during that period. In the year period 1983 until 1986, Philippine has deeply downward the interest rate between in the year 1983 and 1984 around -14% under FFR trendline. According to Thompson (1995) said that Philippine is in the midst of severe political crisis. Benigno “Ninoy” Aquino Jr killing has triggered a massive protest on Ferdinand Marcos regime in the year 1993. Those circumstances lead to political instabilities have

been continued until in 1984 by massive demonstrating and protests. The Philippine economic become severe with high inflation, high foreign debt, and slow economic growth circumstances that leads to the exacerbating political and social discontent (18). Nevertheless, the Philippine economic start gradually getting better in the year 1985, the Philippine interest rate experiences a sharply increasing above FFR trendline.

In the same period, Malaysia has an increased the interest rate while its moving under FFR trendline. On the other side, during in the year period 1984 until 1986, the Malaysia interest rate has sharply increased and higher interest rate compered among other emerging market countries the Southeast Asian around 22%. In the year 1980s early, Malaysia has succeed attracting significantly foreign investment, particularly in manufacture and industry sectors. Mahathir as the prime minister of Malaysia has made the economy policy that is pro-businesses and giving incentive for foreign investment that has a key role in such policies (19).

The Thailand interest rate moved above the FFR trendline in the year 1983 to 1984. In the other hand, Thailand interest rate has a downward trend during 1984 until 1988. According to Phongpaichit & Baker (2002) argue that the Thailand's economic grew rapidly during that period with average of GDP growth annual approximately 9%. That growth was empathized by increasing exported, foreign investment, and thriving of manufacture sector.

Furthermore, Indonesia has a deeply downward the interest rate in the year period 1986 to 1987. However, Indonesia interest rate has moved above FFR trendline during period in the year 1988 until 1992. Nasution (1994) argued that Indonesia has made a system of banking sector reforms to purpose stabilizing investment and economic growth since 1983. Declining the Indonesia interest rate encourages domestic investment by making cheaper credit in order to there are increasing in investment activities such as infrastructure, construction, and manufacture sectors (22).

In the other hand, Malaysia has deeply declined the interest rate during 1986 until 1991, in the year 1986 Malaysia interest rate around 22% drop be 5,5% in the year 1991. Thailand interest rate has also declined in period 1986 until 1991 while Thailand interest rate has moved above FFR trendline during 1990 to 1992.

On the other side, almost all countries have a slightly downward the interest rate except the Indonesia interest rate that has severe declined approximately -24% during periode1997 to 1998 or Asian financial crisis. Asian financial crisis was occurred caused

by several economic factors such as Thailand Baht devaluation and currency speculation, overseas and short-term debt, as well as controlling and weakness of banking system (23, 24, 25). Nevertheless, Indonesia interest rate comeback moving above trendline FFR in 1999. Furthermore, Indonesia interest rate has a deeply downward which followed by Thailand interest rate under 0% during period in 1999 to 2000. Other countries such as Malaysia, Viet Nam and Philippine experiences moving of domestic interest rates above trendline FFR in similar period.

In the next period between 2001 and 2003, the Indonesia interest rate has gradually increased and its moving above FFR trendline. Even though, the Indonesia interest rate has comeback deeply declining during period in 2003 to 2005. On the other hand, other countries tend downward the interest rate. Nonetheless, other countries such as Indonesia and Philippine have a moving the interest rate above FFR trendline.

In the year period between 2005 and 2008, almost whole country experiences growth of interest rates that moved under FFR trendline except the Philippine interest rate. In the year 2008, all countries in emerging market the Southeast Asian have a downtrend interest rate. Indonesia, Thailand and Viet Nam have deeply declined the interest rate under 0% in 2008. Even though, all country has increased interest rate in 2009. However, all country has a declined the interest rate together in 2010. Meanwhile, the Viet Nam interest rate has a deeply declined in 2010 approximately -20%.

During period 2011 until 2022, all interest rate of emerging market in Southeast Asian has fluctuated the interest rate and it moving above trendline FFR. Indonesia interest rate is country that has highest interest rate until 2020, although the Indonesia interest rate experiences a deeply declined during 2020 until 2022.

3.2. Response monetary policy and international trade rate to FFR Shock

3.2.1. Indonesia

Based on feature 2 show relationship naturally among domestic interest rate, the Fed's federal fund rate (FFR), Indonesia inflation, and exported and imported trade of Indonesia. The Fed's federal fund rate (FFR) has a naturally interconnected with the domestic interest rate of Indonesia each other. FFR has also connecting directly on exported and imported trade of Indonesia. The Indonesia inflation and imported trade

of Indonesia have a directly relation on FFR while FFR does not has relationship on Indonesia inflation.

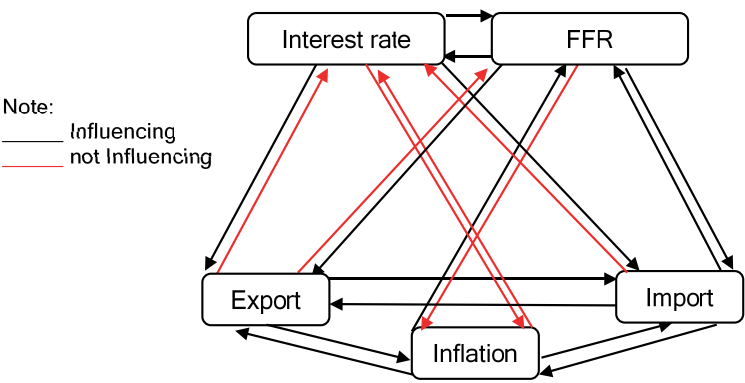


Figure 2: Relationship variables with each other in Indonesia.

On the other side, the Indonesia interest rate has a directly influenced on exported and imported variable. Even though, it has not a naturally influenced on the Indonesia inflation. The domestic interest rate can has less influenced on inflation caused by globalization and global economic interaction that can make a domestic monetary policy is lack of interesting (26). Inflation can be influenced by other factors such as globally goods and services prices or monetary policy of other countries. Inflation not only depend on a monetary policy, but also inflation expectation in the future (27,28).

Other variable such as Indonesia inflation, exported and imported trade variables does not have directly impacted on Indonesia interest rate. However, Indonesia inflation, exported and imported trade variables have directly interconnected with each other. Imported trade activities have a directly and indirectly impact on the Indonesia inflation, one of factor that cause an indirectly influencing such as the foreign and domestic company competitiveness (29,30). Meanwhile, the relationship between exported trade and inflation have an influenced with each other, it is associated with costlier goods and services in the global market (4,5).

Furthermore, feature 3 is result of accounting the impulse response function (IRF), where that feature to show response of Indonesia interest rate, Indonesia inflation and exported and imported trade of Indonesia when the Fed’s federal fund rate (FFR) has shocks.

Based on Figure 3 point out that exported and imported trade of Indonesia have a similarly response when the Fed’s federal fund rate (FFR) experience a shock. Even thought, in the beginning period both has different value of responses, the exported trade around 0% as well as the imported trade is 3%.

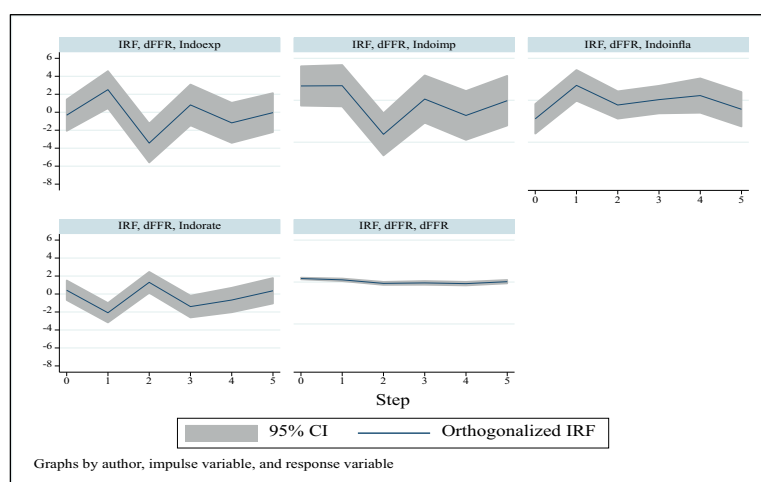


Figure 3: Response interest rate, inflation, exported and imported in Indonesia to the Fed's federal fund rate (FFR) shock.

Between 1st and 2nd year period, both it has a declining while rising up again during in 1st to 2nd years period above balance line. In the last period, both response moves in balance line. On the other side, Indonesia inflation has an increased during the beginning period until 1st year period when FFR has shocks. Furthermore, Indonesia inflation experiences a slightly declined during in 1st and 2nd period. However, response of the inflation has an under 0% in the las period.

On the other hand, response of the Indonesia interest rate has a downward trend between in the beginning period and '1st year period. Nonetheless, it has sharply increased during 2nd to 3rd years period. Even though, during 2nd to 3rd year period response of Indonesia inflation comeback drops. However, it has an increasing above 0% in the last period. This finding has confirmed that the Indonesia interest rate has an insignificant to the Fed's federal fund rate (FFR) shocks while that research has a different outcome in regard to the Indonesia inflation that has a significance to FFR shock (13).

Figure 4 tries showing response of inflation, exported and imported trade of Indonesia to the Indonesia interest rate shocks. At the time, the Indonesia interest rate has shocks, exported and imported of Indonesia has a similar response namely both it has a negatively response in the beginning period. In 1st year period, both has sharply increasing approximately 1% and 2%, respectively. During 1st to 4th year period, exported and imported trade of Indonesia have a sharply decreasing response to be negative response. However, both it has wake up to positive response in the last period.

On the other side, response of the inflation has a negatively response around -4% in the beginning period. Subsequently, the Indonesia inflation has a gradually increased

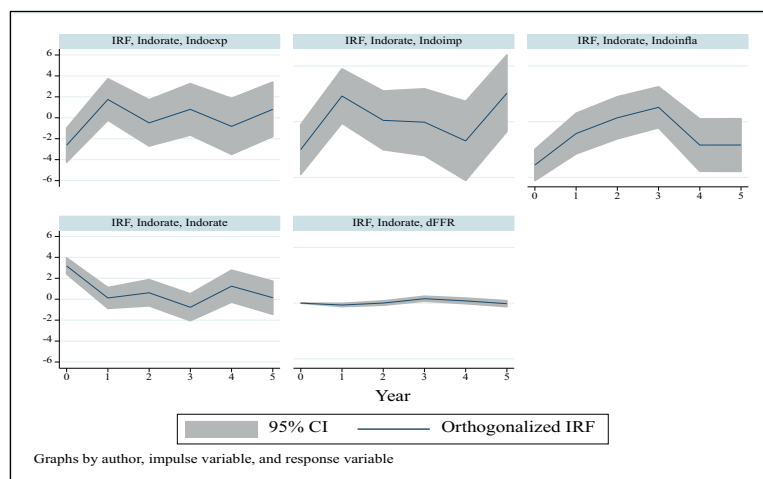


Figure 4: Response of inflation, exported and imported trade to the domestic interest rate shocks in Indonesia.

achieving positive point during 1st year to 3rd year period. Nonetheless, the Indonesia inflation experiences a back drop in negative response during 4th to 5th year period. Whereas, response of Indonesia interest rates has a downward trend to own self shock. In the beginning period, it has around 3% as well as in the las period has response around 0%. It can be summarized that Indonesia interest rate has an inclined not significance on Indonesia inflation.

3.2.2. Malaysia

Figure 5 shows relationship between one of variable with each other. The Fed's federal fund rate (FFR) has a directly influenced on the Malaysia interest rate. However, the Malaysia interest rate have no influenced on FFR. The Fed's federal fund rate (FFR) has also an influenced on exported and imported trade of Malaysia. Even though, exported and imported trade of Malaysia has not an influenced on FFR.

Furthermore, Figure 5 also depicts that FFR has no relationship on the Malaysia inflation. Whereas, the Malaysia inflation has insignificance on FFR, exported and imported trade of Malaysia. The Malaysia interest rate to all variable has not an influenced, vice versa. Those circumstances have an implied that monetary policy of Malaysia has been made, not having an effect on inflation and international trade activities in Malaysia.

Figure 6 explains response of Malaysia interest rate, inflation, exported and imported in Malaysia when the Fed's federal fund rate (FFR) experiences shocks. Exported and

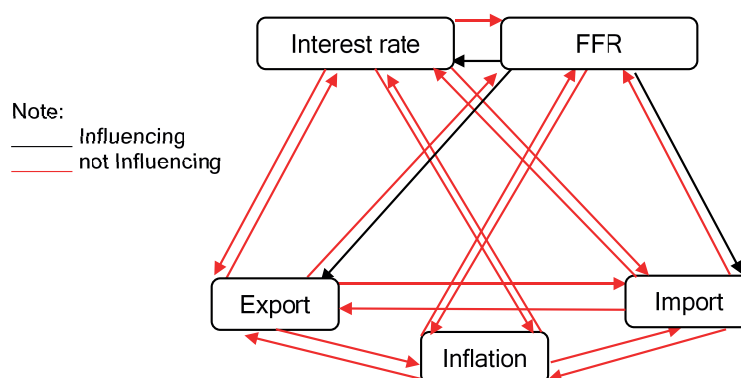


Figure 5: Relationship variables with each other in Malaysia.

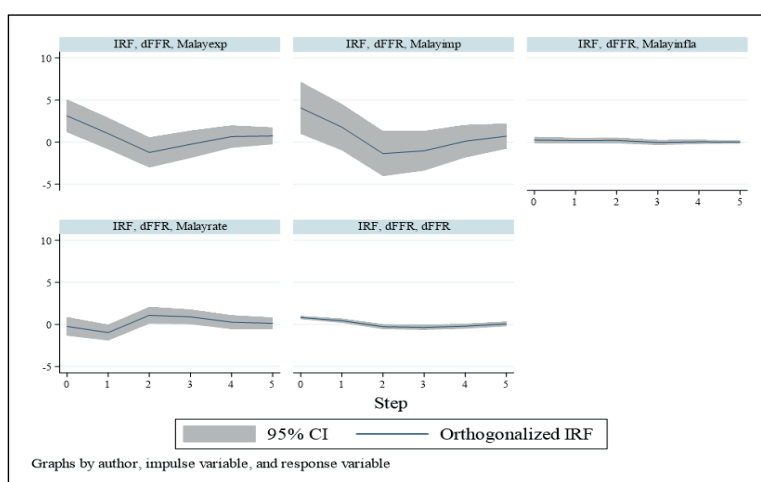


Figure 6: Response of interest rate, inflation, exported and imported in Malaysia to the Fed's Federal fund rate (FFR) shock.

imported trade of Malaysia have a same response to FFR shocks. During in the beginning period to 2nd period, both has a reduced under 0% or negative response. Furthermore, both has gradually increased to balance line until in the last period. The response of Malaysia inflation has shown that this variable has an insignificance to FFR shock. However, the Malaysia interest rate has a slightly reduced in the beginning period until 1st year period, later on that variable response increasing until 2nd year period. Even though, the response of Malaysia interest rate has a downward trend toward balance line until in the last period.

Figure 7 shows the response of inflation, exported and imported trade of Malaysia to the Malaysia interest rate shocks. Exported and Imported trade of Malaysia has a same growth during 5 years period. It implies that when Malaysia exported trade has increased also followed by imported trade of Malaysia that experiences an increasing. In the beginning period, both between exported and imported trade has around under

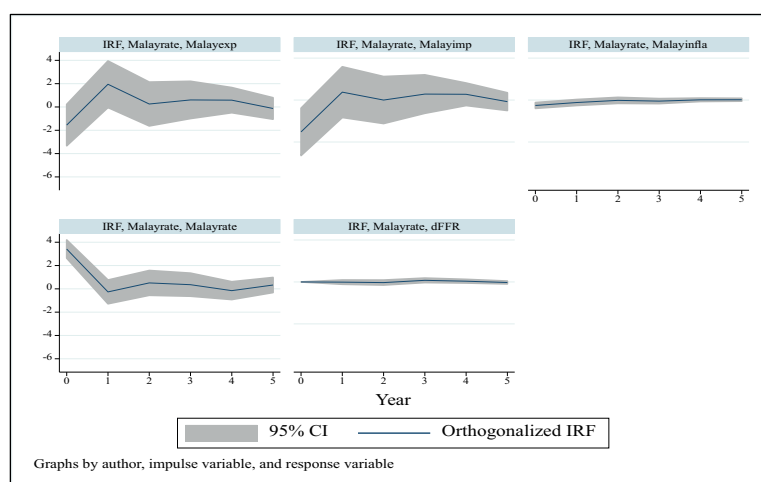


Figure 7: Response of interest rate, inflation, exported and imported trade to the domestic interest rate shock in Malaysia.

0%, when the Malaysia interest rate has shocks. Suddenly, in 1st year period, both has increased above 0%. Both has a reduced until in the last period, response of exported trade under 0% and response of imported trade has above 0%.

On the other side, response of Malaysia inflation to the Malaysia interest rate shock shows that in the beginning period, it has around 0%. Subsequently, it has slightly increased until in the last period. Whereas, the Malaysia interest rate has shocks, it has response of its own shock experience a reducing in 1st year period despite still having a response above 3% in the beginning period. However, response of Malaysia interest rate has slightly above 0% in the last period. Furthermore, response of the FFR experienced a plateaued about above 0% since in the beginning period until the last period. It implies that the FFR has positively significance when Malaysia interest rate has a shock.

3.2.3. Viet Nam

Figure 8 is showing causality relationship between one variable with other. In other word, that figure to prove variables of monetary policy, international trade in Viet Nam as well as the Fed's federal fund rate (FFR) whether having influenced with each other or nor. Based on Figure 8 point out that the FFR has indirectly influenced on exported and imported trade in Viet Nam. Nonetheless, FFR variable has uninfluenced on monetary policy of Viet Nam.

On the other side, the Viet Nam interest rate variable has uninfluenced on FFR variable. It implies that changing of Viet Nam interest rate does not having an influenced

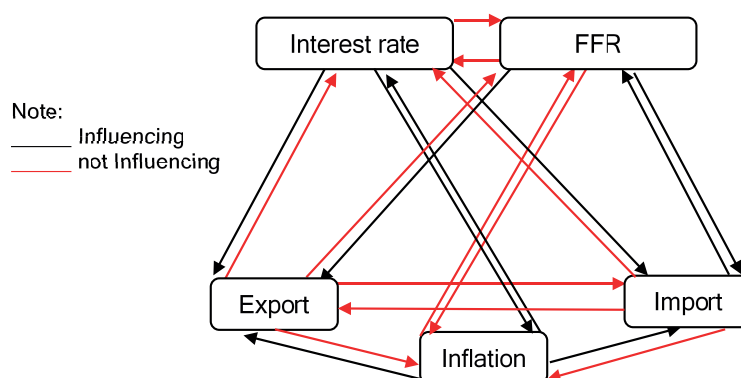


Figure 8: Relationship variables with each other in Viet Nam.

on the Fed's federal fund rate (FFR). However, the Viet Nam interest rate has influenced on the Viet Nam inflation, exported and imported trade in Viet Nam. It implies that monetary policy of Viet Nam has an impacted to international trade. Even though, the Viet Nam inflation has also influenced on the Viet Nam interest rate, exported and imported trade. But, exported and imported trade have no directly influenced on the Viet Nam inflation and interest rate variable.

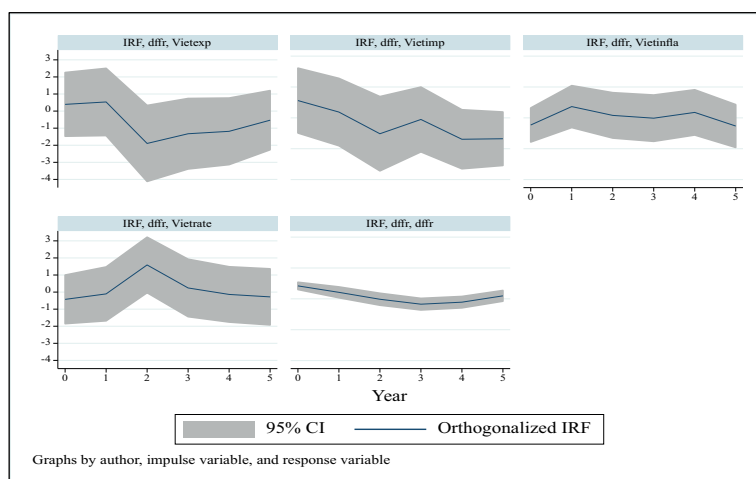


Figure 9: Response of interest rate, inflation, exported and imported in Viet Nam to the Fed's Federal fund rate (FFR) shock.

Figure 9 tries to explain response of monetary policy and exported and imported trade in Viet Nam to the Fed's federal fund rate (FFR) shocks. Exported and imported trade in Viet Nam, both has different response direction to the Fed's federal fund rate (FFR) shock. Even though, in the beginning period, both has a positive response. During in the beginning period until 1st period, the response of exported trade has plateaued and the response of imported trade inclines reducing. Subsequently, both end up under balance line be negatively response until in the last period. Nonetheless, the exported

trade has increased direction, but the imported trade has a fluctuated moving. Those implied that the exported and imported trade in Viet Nam has negatively significance to the Fed's federal fund rate (FFR) shocks.

On the other side, Viet Nam inflation response to the Fed's federal fund rate (FFR) shock leads to negatively response. In the beginning period, the Viet Nam inflation response has positive. That variable then increasing response around 1% in the 1st period. Viet Nam inflation experienced a declined until last period about under 0%. Meanwhile, Viet Nam interest rate tend to negatively response, despite in 2nd period experienced a sharply increasing approximately 1%. However, the Viet Nam interest rate continue a reducing to be a negatively response until in the last period.

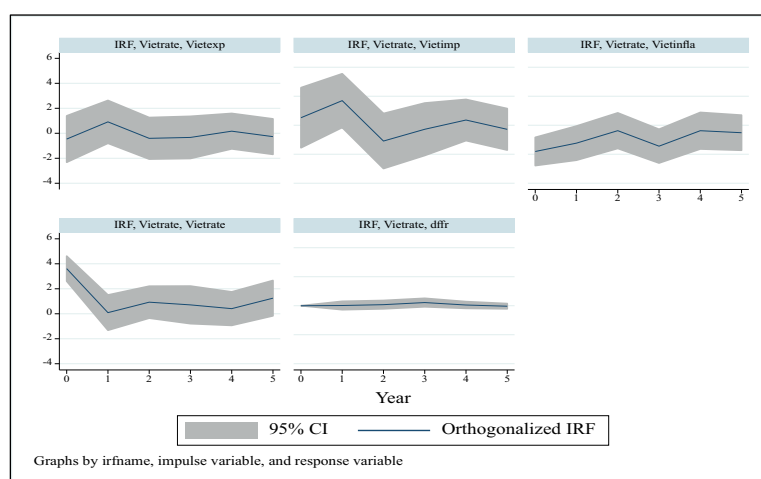


Figure 10: Response of interest rate, inflation, exported and imported trade to the domestic interest rate shock in Viet Nam.

On the other hand, Figure 10 explains in regard to the responses of the monetary police and international trade in Viet Nam to the Viet Nam interest rate shock. In the beginning period, the exported trade has a negatively response and the imported trade has a positively response to the Viet Nam interest rate shocks. Both has an increased in the 1st period, however both experiences a declined in 2nd period. In those periods, the imported trade has a reduced in negatively point. In the last period, the exported trade has a negatively point as well as the imported trade has increased in a positive point.

Furthermore, the Viet Nam inflation has a response negative in the beginning period until the 1st period. Even though, in the 2nd period, it experiences a slightly increased then comeback be fall down in point negative. However, Vietnam inflation has rising up in balance line in the last period. Meanwhile, response of the Fed's federal fund rate

(FFR) has a steady moved and positive to the Viet Nam interest shock until the in the last period.

3.2.4. Philippine

The result of granger testing is showed in Figure 11 about the relationship between one of variable with other variables. The Fed's federal fund rate (FFR) variable has an uninfluenced on monetary policy and international trade variables in Philippine, vice versa.

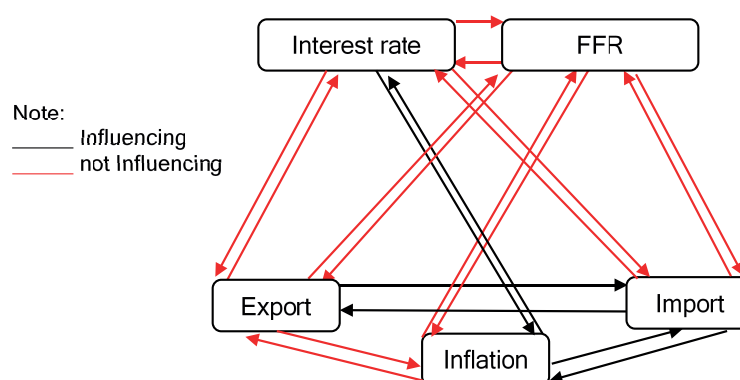


Figure 11: Relationship variables with each other in Philippine.

However, Philippine monetary policy shows having not directly influenced on exported and imported trade. Those conditions are showed by the Philippine interest rate that has directly influenced on Philippine inflation, vice versa. On the other side, Philippine inflation has an influenced on imported trade of Philippine while not having an influenced on exported trade of Philippine. Exported and imported trade have influencing on the Philippine inflation as well as relationship between exported and imported trade have directly interinfluenced with each other.

In the 2nd year period, the exported trade of Philippine continued a decreased around -1%. Meanwhile, the imported of Philippine has a reduced in same point about 1%. In this period, the Philippine inflation experiences an increasing in 1%. Similarly reducing has also happen to the Fed's federal fund rate (FFR) almost touch 0%. Whereas, the Philippine interest rate shown still not moving such as in previously period.

During 3rd year period until in the last year period, the exported and imported trade in Philippine have regularly increased achieve 0%. On the other side, the response of Philippine inflation has slightly reduced toward 0%. These circumstances are followed

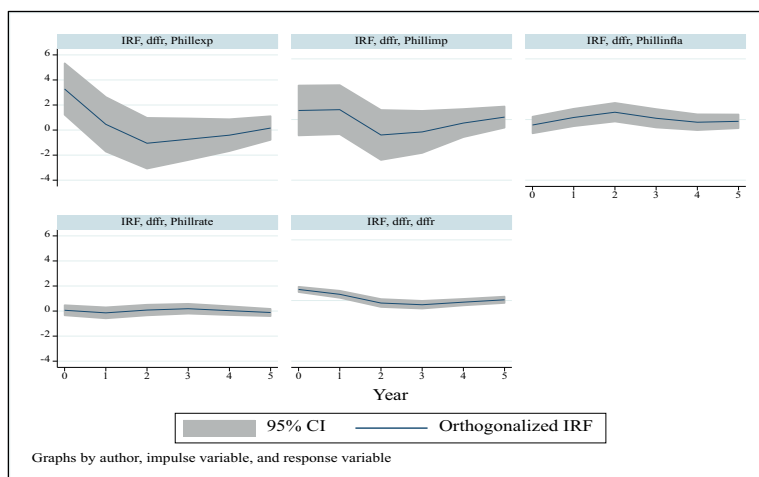


Figure 12: Response of interest rate, inflation, exported and imported trade to the domestic interest rate shock in Philippine.

by increasing response of the Fed's federal fund rate. However, response of Philippine interest rate is still in 0%.

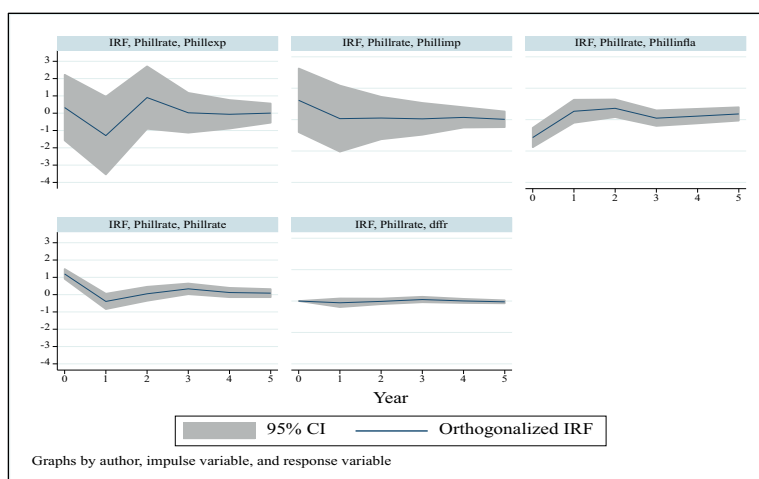


Figure 13: Response of interest rate, inflation, exported and imported trade to the domestic interest rate shock in Philippine.

Figure 13 is capturing the response of international trade of Philippine and the Philippine Inflation to the Philippine interest rate shocks. in the over period, response of the Fed's federal fund rate (FFR) has a stagnant response in negative point to Philippine interest rate shocks. On the other hand, the response of exported and imported trade of Philippine has a positive point as well as the Philippine inflation has a negatively point in the beginning period.

However, when the response of Philippine inflation has an increased around 0% in the 1st year period. Suddenly, the exported trade of Philippine has a negatively reduced around -1%, it is followed by reducing the response of imported trade of Philippine to

be negative point. The Philippine interest rate has also negatively decreased to own self shock.

In the 2nd year period, the exported trade of Philippine has an increased to positive point. Nevertheless, the imported trade of Philippine has a stagnant and this variable continue until in the last period around negative point. On the other side, the Philippine inflation and the Philippine interest rate have a slightly increased around above 0%. In the 3rd year period, the exported trade of Philippine experiences a declined toward balance line until in the last the year period. Similarly, response of the Philippine inflation and the Philippine interest rate moved in balance line until in the last year period.

3.2.5. Thailand

Figure 14 present a causality testing of the relationship between monetary policy and international trade in Thailand as well as the Fed's federal fund rate (FFR) variable. Based on Figure 14 the Fed's federal fund rate (FFR) has not influenced directly on all variable in monetary policy and international trade of Thailand. However, imported trade of Thailand has a directly effect on the Fed's federal fund rate (FFR).

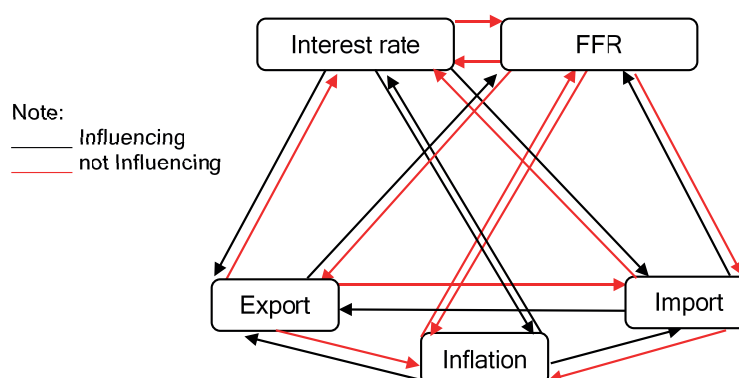


Figure 14: Relationship variables with each other in Thailand.

On the other side, the Thailand interest rate has not directly influenced on the Fed's federal fund rate (FFR). Nonetheless, the Thailand interest rate not showing a directly effect on the Thailand inflation, exported and imported trade. The Thailand inflation has also directly influenced on the Thailand interest rate and international trade variables as well as not influenced on the Fed's federal fund rate (FFR). Furthermore, the exported trade of Thailand has not directly influenced on all variables. Whereas, the imported trade of Thailand has a directly influenced on the exported trade of Thailand.

Figure 15 shown the response of monetary policy and international trade in Thailand to the Fed federal fund rate (FFR) shock. In the beginning period, the Thailand interest rate and inflation has a response around 0%. Whereas, the exported and imported trade have a response approximately 3% and 0% point, respectively.

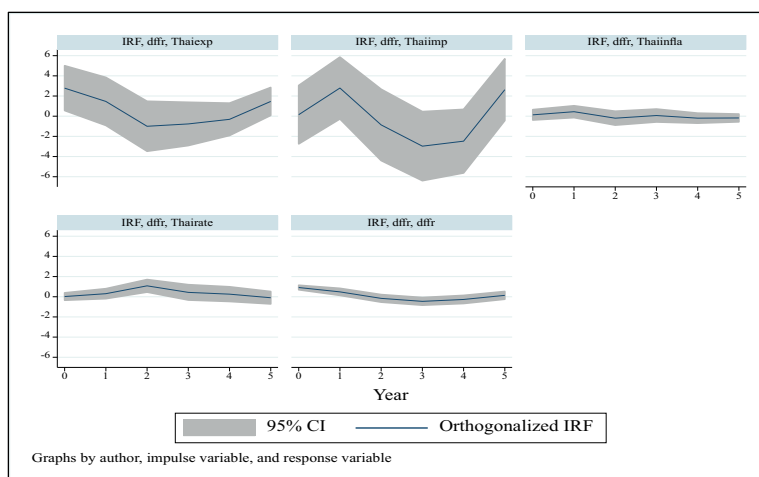


Figure 15: Response of interest rate, inflation, exported and imported trade to the Fed's federal fund rate shock in Thailand.

In the 1st year period, the exported trade of Thailand has a reduced response and other variable such as the imported trade of Thailand, the Thailand inflation and the interest rate have increasing responses. Even though, the imported trade of Thailand has a sharply rising up around more 2% as well as the Thailand inflation and interest rate have slightly increasing response when the Fed's federal fund rate (FFR) experiences little declined responses.

In the 2nd year period, the exported trade of Thailand continued reducing responses. The imported trade of Thailand has a deeply declined to a negative response. Whereas, the Thailand inflation has a slightly reduced by negatively response. It is followed by increasing response of the Thailand interest rate.

During in the 3rd year period to in the last year period, the exported trade of Thailand has an upward trend approximately 1%. On the other side, the imported trade of Thailand has a declined during 2nd year to 3rd year period subsequent having an increased in 3rd year period until last period. The Thailand inflation still has a steady response in balance line until in the last period. Whereas, the Thailand interest rate has a downward trend until the last period.

Figure 16 attend to explain the response of Thailand inflation, exported and imported trade variables to the Thailand interest rate shock during 5 years period. In the beginning period, the Thailand inflation, exported and imported trade have a negatively response

to the Thailand interest rate shock. The Thailand interest rate has a positively response to own self shock.

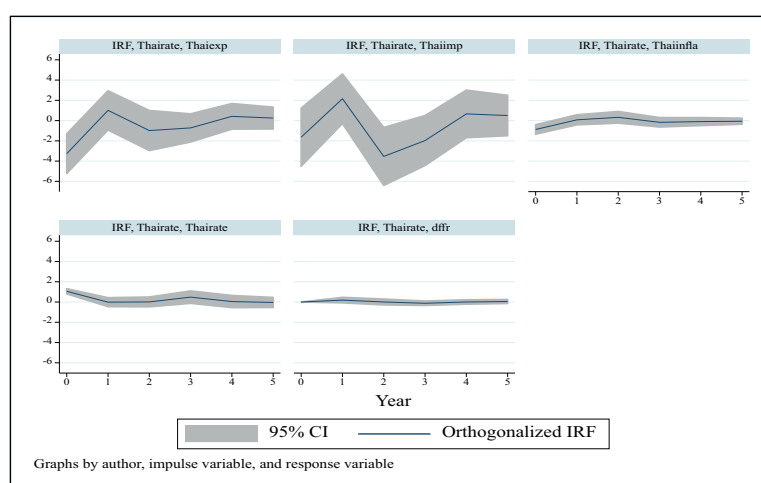


Figure 16: Response of inflation, exported and imported trade to the domestic interest rate shock in Thailand.

In the 1st year period, exported and imported trade both has a sharply increased until a positive response when the Thailand inflation also experienced an increased the response. On the other side, response of the Thailand interest rate has a declined to 0%. Those circumstance implies that when the Thailand interest experience a reduce will be followed the increasing by another variable in the 1st year period.

On the other hand, response of the Thailand interest rate has slightly increased that followed by declining exported and imported trade until negatively responses in 2nd year period. Whereas, response of the Thailand inflation experiences slightly increasing. However, both exported and imported trade have an upward trend achieving positive point between 3rd year and 5th year period. Even though, the Thailand interest rate and Thailand inflation have a steady trend until the last period.

4. Conclusions

The result of this discussion shows that there are different causalities relationship among the Fed's federal fund reserve (FFR), domestic interest rate, exported, imported and inflation variables in the emerging market of Southeast Asian has a diverse response. Each countries have different response ways when the Fed's federal fund reserve (FFR) experiences a shock. it reflects a diverse in economic structure and monetary policy. The impacted of the Fed's federal fund reserve (FFR) shock on the interest rate, exported,

imported and inflation in the emerging market of Southeast Asian has significantly variations.

On the other side, when the domestic interest rate of in the emerging market of Southeast Asian has changed and shock, the exported, imported and inflation variables give different responses in each country. These differences shown that domestical factors such fiscal policy and internal economic circumstances have an important role to divide the response on the domestic interest rate changed. Therefore, the monetary policy gives not the similar impact in the emerging market of Southeast Asian. Each country needs to be adjusted the policy strategies appropriate with economic and market responses condition.

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