

## **Impact Shock Policy China Exchange Rate (Devaluation of Yuan) to Indonesian Economic Fluctuation**

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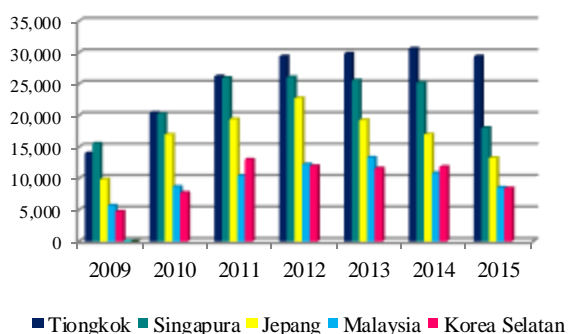
### **Abstract**

The purpose of this study is to analyze the impact of yuan devaluation policy shocks on Indonesia's economic fluctuations and the transmission of and the transmission of devaluation policy shocks which is more dominant on transmission mechanism of Mundell-Fleming-Dornbusch (MFD). The method used in this research is Structural Vector Error Correction (SVEC). The results show that the China's monetary expansion policy (devaluation of yuan) has a negative and positive impact (mixed effect) on Indonesia's economics fluctuation, based on the transmission lines that's affected. The response of macroeconomic variables to structural shock of monetary expansion policy of China (devaluation of yuan) based on model mechanism of MFD with Impulse Response Function (IRF) analysis from SVEC model shows that shocks of China's current account balance, China's exchange rate, and China's imports is responded negatively (recession). While the shocks of China's exports is responded positively (expansion). Based on the results of Forecast Error Variance Decomposition (FEVD) analysis, the current account transmission line is the dominant transmission to analyzing the impact of devaluation of yuan on the Indonesia's economics fluctuation based on the MFD model through the expenditure switching effect, which is led to decline in Indonesia's output (recession).

## INTRODUCING

Indonesia as one of the countries that adhere to the principle of open economy is inseparable from the principle of the global economy and the principle of trade liberalization, where the greater the international trade and financial transactions will affect the amount of capital outflow from capital inflow (Setiawan, 2010). So the external economic shock will give effect to the Indonesian economy. One indicator of the economy that is sensitive to external shocks is the exchange rate of the currency. As a small open economy, the development of exchange rates is one factor that can affect the performance of the economy in general.

China is a country that is in the spotlight of the world, with the most dynamic economic entity with growth above the average growth of major countries in the world (Jamilah, et al, 2016).



**Figure 1.** Indonesian import by the countries of origin (CIF: Million US\$, 2009-2015)  
Source: central Statistics Agency

China is one of Indonesia's main trading partner countries, so that China's economic conditions will also affect the Indonesian economy. Based on Figure 1, Indonesia's highest import value comes from China, from 2009 to 2015 the import value from China has an increasing trend.

The high imports from China are influenced by domestic and foreign economic conditions, so that changes in domestic and

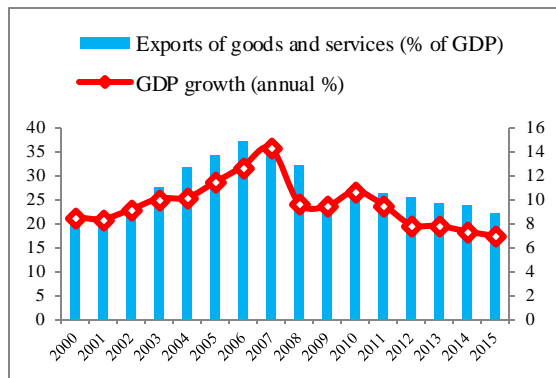
global conditions will affect China's trade balance. Changes in the exchange rate, for example, if the yuan depreciates against the USD, it will increase China's exports as the price of the product becomes cheaper. The increase in Chinese exports then led to an increase in Indonesian imports from China. Changes in economic variables such as the Chinese exchange rate will have an impact on the economy of other countries, such as Indonesia.

The exchange rate of a country's currency describes the strength of the economy as the effect of the global economy. changes in currency exchange rates in the money market indicate fluctuations occurring in a country's currency against the currencies of other countries (Chou, 2000). The economic reforms made China adjust the yuan renminbi (CNY) exchange rate system against the US dollar (USD). This is done because it is very important to support the economic growth of China (Zulfiandri, 2012).

To support China's growing domestic conditions, China made adjustments to the yuan renminbi's exchange rate system against the US dollar (devaluation policy) in 1994, resulting in a decline in the value of the Chinese currency from 5.8 yuan renminbi per US dollar to 8.45 yuan renminbi per US dollar which was then repeated in 2015 by three stages in August 2015, which caused the yuan to depreciate to 1.9%.

According to Wardono (2015), the yuan renminbi devaluation policy is carried out in order to internationalize the yuan as a reserve currency by the International Monetary Fund (IMF). The yuan's devaluation policy is done because China's exports decline more than 8% due to the slow growth of the global economy. In addition, the yuan's devaluation policy is due to the slowing rate of China's economic growth estimated at 7% by 2015.

The devaluation policy is used to improve the trade balance, in the short term, to encourage exports and restrict imports, so as to encourage the use of domestic production, will further improve the position of balance of payments or the occurrence of BOP balance.



**Figure 2.** Export and Economics Growth of China 2000-2015

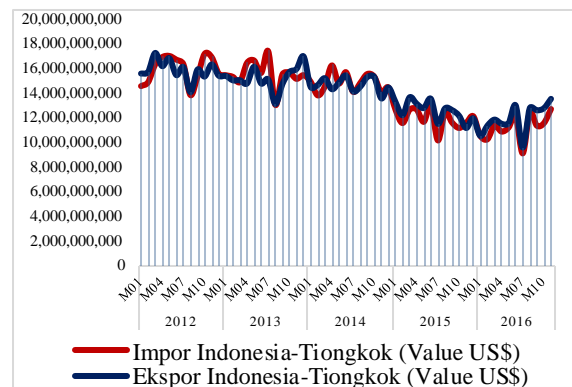
Source: *International Monetary Fund, World Bank*, 2016 (data processed)

The devaluation of the yuan's exchange rate in 2015 caused the value of the Chinese currency to fall from 6.12 yuan per annum renminbi to 6.39 yuan renminbi per US dollar, this is done because China's economic growth fell sharply mainly due to the current account deficit due to declining exports (figure 2).

The purpose of the devaluation of the yuan is to encourage exports and restrict incoming imports, thus improving the trade balance. In addition, the lower exchange rate makes imported goods more expensive so that foreign imports become limited. So that will increase the economic output. The yuan's devaluation policy as China's monetary expansion not only affects China's economic indicators but also affects other country's economic indicators such as Indonesia, due to the increasing integration of global market conditions. Policies and shocks coming from abroad can affect domestic economic conditions. The monetary expansion undertaken by China will have an impact on the Indonesian economy.

Dornbusch, et. al., (2008) mentions that monetary expansion in the country will cause the exchange rate depreciate, net exports rise, and an increase in output, but related to the worsening of foreign trade balance. Domestic depreciation shifts demand from overseas goods to domestic goods so that net foreign exports fall and output declines. Figure 3 shows that the shock of the Chinese exchange rate in this case the devaluation of the yuan in 2015 affects the movement of exports and imports of China and Indonesia. The depreciation

of the Chinese exchange rate causes domestic and Chinese exports to increase and decrease imports, which according to the Mundell-Flemming-Dornbusch (MFD) model will lead to a decline in overseas exports (Indonesia) which will further reduce output.



**Figure 3.** Yuan Exchange Rate Towards Indonesia-China Export and Import Fluctuation, 2015:1 – 2016:9, processed

Sourcer: *International Monetary Fund (IMF)*, Central Statistics Agency, 2016

In contrast to MFD theory, Figure 3 shows that as the yuan depreciates, Indonesia's exports actually increase as well as Indonesia's imports are also increasing. Increased Indonesian exports mean positive, because it will increase the surplus or reduce the trade deficit. But on the other hand, Indonesia's imports also increased (negative), will increase the deficit or reduce the trade surplus. Thus, both of these points out the ambiguity of a devaluation or depreciation of the yuan, whether resulting in a positive or negative impact on Indonesian economic indicators.

This research will analyze the impact of Chinese monetary expansion (yuan devaluation) on the fluctuation of Indonesian economy and its transmission mechanism. Based on a study conducted by Widodo & Putriani (2011) indicating that the devaluation of the renminbi yuan has a positive impact on exports of ASEAN countries to the United States. However, another study conducted by Robert (1999) explains that the devaluation of the renminbi yuan shows a negative impact on exports of ASEAN countries. This indicates that there is a research gap between

research on the impact of monetary expansion of China in this case the devaluation of the yuan renminbi exchange rate, whether it produces negative or positive impact on the economy of other countries.

There are two sources of ambiguity regarding the effects of monetary expansion. The Mundell-Flemming-Dornbusch (MFD) model explains the ambiguity associated with the effects of monetary expansion, whether it has a positive or negative impact. Based on the background, the purpose of this research is as follows: (1) Analyze the impact of the shock on the Chinese exchange rate policy (yuan devaluation) on the fluctuations in the Indonesian economy, whether resulting in recession or expansion. (2) Analyze the fluctuating response of the Indonesian economy due to the shock of Chinese macroeconomic variables from the Chinese exchange rate policy in the Mundell-Flemming-Dornbusch (MFD) model transmission mechanism. (3) Analyze the shock transmission path of more dominant devaluation policy toward the level of output in Indonesia.

## RESEARCH METHOD

This study uses secondary data from International Financial Statistics through International Monetary Fund website, World Bank, National Bureau Statistics of China and Central Bureau of Statistics (BPS). The data used are quarterly data from 1994: Q1-2016: Q2, namely the yuan renminbi exchange rate against the US dollar, Chinese exports, Chinese imports, China's current account balance, Chinese personal income, Indonesian exports, Indonesian imports, Indonesian economic fluctuations (GDP real). Data that is not available in the quarter data is adjusted by data interpolation, ie the method used to generate new data points within a range of a discrete set of known data (Insukindro and Pitradrajati, 2015).

In analyzing the impact of exchange rate policy of China that is yuan devaluation to fluctuation of Indonesian economy and answer problem formulation in this research will be analyzed using SVEC (Structural Vector Error Correction) method. The first and second research

questions will be answered using the Impulse Response Function (IRF) analysis of the estimated SVEC model, while the third question is answered using the Forecast Error Variance Decomposition (FEVD) analysis of the estimated SVEC model. The software used in this research data processing with E-Views 9 and J-Multi software.

The method used to answer this research question is Structural Vector Error Correction (SVEC). The SVEC model is used to capture the effect of variables and structural shocks that affect the fluctuations in Indonesian economy (real GDP) based on MFD theory with the equation:

$$\Delta Y_t = \sum_{i=0}^{\infty} A_i \Delta X_{t-i} - \sum_{i=1}^{\infty} \varepsilon_{t-i} + U_t$$

Where  $Y_t$  is the endogenous variable vector,  $X_t$  contains the exogenous variable,  $\varepsilon_t$  is the error correction term and  $U_t$  is a surprise or innovation vector. The model used in this study adopted the Pritadrajati research model (2014), involving the restriction used as the basis for model development. This research uses SVEC model to explain economic fluctuation in Indonesia with Mundell-Flemming-Dornbusch (MFD) model. The SVEC equation in this research can be written:

$$LGDP\_INDONESIA_t = f(NILAITUKAR\_TIONGKOK_t, LNTB\_TIONGKOK_t, LEKSPOR\_TIONGKOK_t, LIMPOR\_TIONGKOK_t, LPENDAPATAN\_TIONGKOK_t, LEKSPOR\_INDONESIA_t, LIMPOR\_INDONESIA_t)$$

Whereas:

<i>NILAITUKAR_TIONGKOK</i>	: yuan exchange rate (USD/RMB)
<i>LNTB_TIONGKOK</i>	: China current account
<i>LEKSPOR_TIONGKOK</i>	: China's export
<i>LIMPOR_TIONGKOK</i>	: China's import
<i>LPENDAPATAN_TIONGKOK</i>	: disposable income China
<i>LEKSPOR_INDONESIA</i>	: Indonesian export
<i>LIMPOR_INDONESIA</i>	: Indonesian import
<i>LGDP_INDONESIA</i>	: Riil GDP of Indonesia

### Vector Autoregressive (VAR) Model

The VAR model is used when all stationary variables are at the level level, but if the variable experiences an unstable at the level level the VAR

model can not be used, but the VAR in difference model can be used. The VAR model is a system of equations in which each endogenous variable is a function of the constant and lag of all endogenous variables in the system (Enders, 2004). VAR method is an alternative model to the model of multiple equations by minimizing the theory approach with the aim to capture economic phenomena well (Widarjono, 2010).

Model *Vector Error Correction* adalah VAR terestriksi dan digunakan untuk series non stasioner terkointegrasi. VEC memiliki hubungan kointegrasi yang dibangun dalam spesifikasi model sehingga membatasi perilaku variabel endogen dalam jangka panjang untuk memiliki hubungan kointegrasi, sementara memungkinkan untuk adanya dinamika penyesuaian jangka pendek. Menurut Enders (2004), model VECM terdapat *speed of adjustment* dari jangka pendek ke jangka panjang.

The Vector Error Correction model is an terrestrial VAR and is used for cointegrated non stationary series. VEC has a cointegration relationship built into the model specification thus limiting the behavior of endogenous variables over the long term to have cointegration relationships, while allowing for short-term adjustment dynamics. According to Enders (2004), VECM model there is a speed of adjustment from short to long term.

Menurut Setiawan (2010), metode *Vector Autoregressive* (VAR) dengan analisis IRF dan FEVD banyak mendapatkan kritik mengenai sisi esensi ekonomi yang terkandung dalam suatu sistem, kecuali jika terdapat landasan teoritis yang kuat dalam membenarkan restriksi, sehingga muncul model *Structural Vector Autoregression* (SVAR) atau disebut VAR yang teoritis.

According to Setiawan (2010), the Vector Autoregressive (VAR) method with the IRF and FEVD analysis has much criticism of the economic essence contained in a system, unless there is a strong theoretical foundation in justifying the restriction, so the Structural Vector Autoregression (SVAR) or called the theoretical VAR.

According to Alim (2013), SVAR basically uses economic theory to sort relationships between variables. The main difference between theoretical VAR and the structural VAR is the IRF and FEVD that can provide structural interpretation so that many SVARs can open information contained in the time series model in the form of reduced form (Keating, 1992).

According to Lutkepohl and Kratzig (2004), SVEC is a system of econometric models with dynamic equations, which look at the interrelations between various macroeconomic variables. In a system of vector equations in this study, any variable that affects the output level will be regarded as an endogenous variable or each variable has a reciprocal relationship with other variables.

Innovation accounting consists of Impulse Response Function (IRF) and Forecast Error Variance Decomposition (FEVD), defined as the decomposition of shock (shock). Analysis of IRF and FEVD is used to obtain interaction information between variables.

## RESULTS AND DISCUSSION

In the long run the time series model research shows cointegration or long-term balance. However, in the short term, the time series model may not be equilibrium, thus adjusting the short-run equilibrium deviation by including the error correction term originating from the long-term residual equation. The estimation results in Table 1 show that the coefficient of speed of adjustment of the Indonesian economic fluctuation model ( $\Delta LGDP\_INDONESIA$ ) is negative and significant at the 5% level for the first and second error correction. A significant and negative error correction value indicates a correction of the movement of a variable to its long-term balance, so the coefficient must be negative and closer to zero so that the long-term balance adjustment is faster

**Table 1.** VECM Estimation

<b>Jangka Panjang</b>		
<b>Variabel</b>	<b>Koefisien</b>	<b>t-Statistik</b>
LGDP_INDONESIA (-1)	1,000000	
NILAITUKAR_TIONGKOK (-1)	0,092216	3,40886
LNTB_TIONGKOK (-1)	0,111540	5,40349
LEKSPOR_TIONGKOK (-1)	-1,071889	-6,42542
LIMPOR_TIONGKOK (-1)	0,677780	4,82433
LEKSPOR_INDONESIA (-1)	0,177633	2,10672
LIMPOR_INDONESIA (-1)	-0,045361	-1,10390
<i>Speed of Adjustment = -0,458</i>		
<b>Jangka Pendek</b>		
<b>Variabel</b>	<b>Koefisien</b>	<b>t-Statistik</b>
LGDP_INDONESIA (-1)	0,356968	3,02912
NILAITUKAR_TIONGKOK (-1)	0,063770	1,50180
LNTB_TIONGKOK (-1)	0,055673	5,56291
LEKSPOR_TIONGKOK (-1)	-0,414483	-5,87521
LIMPOR_TIONGKOK (-1)	0,264200	4,23630
LEKSPOR_INDONESIA (-1)	0,073528	1,58592
LIMPOR_INDONESIA (-1)	-0,005279	-0,19970

Source: Data processed

The SVEC model estimation in this study used JMulti software with optimum slow rate at the lag level of five as the optimum slowness rate. This SVEC estimation also used 3 cointegration equations based on Johansen's cointegration test. Table 2 shows the SVEC estimates resulting in the coefficients in the model, but the resulting coefficients of each variable are difficult to

interpret. The SVEC method interprets all endogenous variables to determine relationships between variables, but not parameter estimates (Pritadrajati, 2014), so it needs to be analyzed using impulse response function and forecast error variance decomposition with structural decomposition (SVEC).

**Table 2.** SVEC Estimation Result

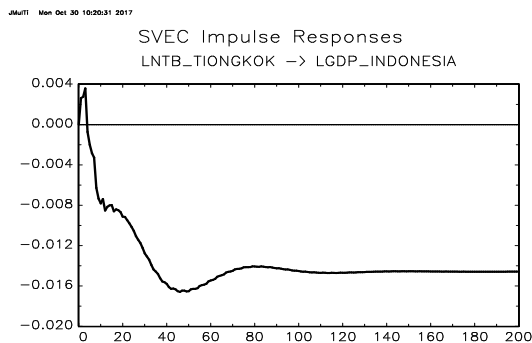
$\begin{bmatrix} \Delta NILAITUKAR\_TIONGKOK \\ \Delta LNTB\_TIONGKOK \\ \Delta LEKSPOR\_TIONGKOK \\ \Delta LIMPOR\_TIONGKOK \\ \Delta LEKSPOR\_INDONESIA \\ \Delta LIMPOR\_INDONESIA \\ \Delta LGDP\_INDONESIA \end{bmatrix}$	$=$	$\begin{bmatrix} 0,0134 & 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,0000 \\ 0,0023 & 0,0451 & 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,0000 \\ 0,0577 & 0,0029 & 0,5265 & 0,0000 & 0,0000 & 0,0000 & 0,0000 \\ -0,0055 & -0,0068 & 0,0104 & 0,0339 & 0,0000 & 0,0000 & 0,0000 \\ 0,0038 & -0,0084 & -0,0063 & 0,0357 & 0,0387 & 0,0000 & 0,0000 \\ 0,0039 & -0,0088 & -0,0014 & 0,0246 & 0,0093 & 0,0373 & 0,0000 \\ 0,00192 & -0,0157 & -0,0119 & 0,0053 & 0,0188 & 0,0023 & 0,0649 \end{bmatrix}$
$\begin{bmatrix} \Delta NILAITUKAR\_TIONGKOK \\ \Delta LNTB\_TIONGKOK \\ \Delta LEKSPOR\_TIONGKOK \\ \Delta LIMPOR\_TIONGKOK \\ \Delta LEKSPOR\_INDONESIA \\ \Delta LIMPOR\_INDONESIA \\ \Delta LGDP\_INDONESIA \end{bmatrix}$	$+$	$\begin{bmatrix} 0,0038 & 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,0000 \\ 0,0046 & 0,0129 & 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,0000 \\ 0,0607 & 0,0542 & 0,14,34 & 0,0000 & 0,0000 & 0,0000 & 0,0000 \\ 0,0044 & 0,0049 & 0,0045 & 0,0096 & 0,0000 & 0,0000 & 0,0000 \\ 0,0058 & 0,0057 & 0,0070 & 0,0095 & 0,0117 & 0,0000 & 0,0000 \\ 0,0049 & 0,0051 & 0,0051 & 0,0067 & 0,0046 & 0,0112 & 0,0000 \\ 0,0100 & 0,0079 & 0,0096 & 0,0072 & 0,0079 & 0,0078 & 0,0184 \end{bmatrix}$
	$+$	$\begin{bmatrix} \Delta NILAITUKAR\_TIONGKOK \\ \Delta LNTB\_TIONGKOK \\ \Delta LEKSPOR\_TIONGKOK \\ \Delta LIMPOR\_TIONGKOK \\ \Delta LEKSPOR\_INDONESIA \\ \Delta LIMPOR\_INDONESIA \\ \Delta LGDP\_INDONESIA \end{bmatrix}$

$$\begin{bmatrix}
 0,0179 & 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,0000 \\
 0,0000 & 0,2043 & 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,0000 \\
 0,0000 & 0,0000 & 2,0523 & 0,0000 & 0,0000 & 0,0000 & 0,0000 \\
 0,0000 & 0,0000 & 0,0000 & 0,1338 & 0,0000 & 0,0000 & 0,0000 \\
 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,2895 & 0,0000 & 0,0000 \\
 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,2180 & 0,0000 \\
 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,5358 \\
 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,0000 & 0,0000
 \end{bmatrix}
 \begin{bmatrix}
 \varepsilon_t^{NILAITUKAR\_TIONGKOK} \\
 \varepsilon_t^{LNTB\_TIONGKOK} \\
 \varepsilon_t^{LEKSPOR\_TIONGKOK} \\
 \varepsilon_t^{LIMPOR\_TIONGKOK} \\
 \varepsilon_t^{LEKSPOR\_INDONESIA} \\
 \varepsilon_t^{LIMPOR\_INDONESIA} \\
 \varepsilon_t^{LGDP\_INDONESIA}
 \end{bmatrix}
 +
 \begin{bmatrix}
 u_t^{NILAITUKAR\_TIONGKOK} \\
 u_t^{LNTB\_TIONGKOK} \\
 u_t^{LEKSPOR\_TIONGKOK} \\
 u_t^{LIMPOR\_TIONGKOK} \\
 u_t^{LEKSPOR\_INDONESIA} \\
 u_t^{LIMPOR\_INDONESIA} \\
 u_t^{LGDP\_INDONESIA}
 \end{bmatrix}$$

Source: Data processed

### Impulse Response Function Analysis

The IRF analysis measures how much the short-run and long-term impacts caused by the change in standard deviation of one endogenous variable to all endogenous variables in the SVEC model.



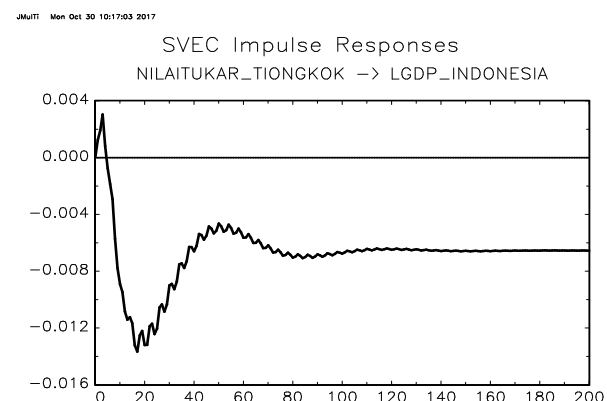
**Figure 4.** Indonesian Economics Fluctuation Response (Riil GDP) Towards Structural Shock of China's Financial Account

Source: data processed

Based on the IRF results in Figure 4 shows the response of economic fluctuations (real GDP) to the shock of China's current account transactions that responded negatively. At the beginning of the response period, the current account balance gives a large magnitude, but in the subsequent period the turmoil shows a shrinking response but the response does not completely disappear but still moves in negative fluctuations below the equilibrium line. The highest positive impact occurred in the 3rd period (0.36%), which could mean that an increase in the current account balance as a result of the yuan devaluation would lead to an increase in real foreign GDP (Indonesia). In subsequent periods there was a decrease in response, with the lowest negative response in the 46th period of 1.66% which then

the response fluctuated negatively but did not completely disappear and still move below the equilibrium line.

The result of IRF Indonesia's real GDP on the current account surplus is consistent with the theory of the Mundell-Flemming-Dornbusch (MFD), the increase of China's current account balance in which an increase in the trade balance lowers the demand for Chinese imports of goods and services produced abroad (Indonesia), so that the output abroad (Indonesia) will decrease. Conversely, if China's current account balance declines as a result of rising Chinese imports from abroad (Indonesia), the demand for foreign goods and services (Indonesia) increases and increases its output.



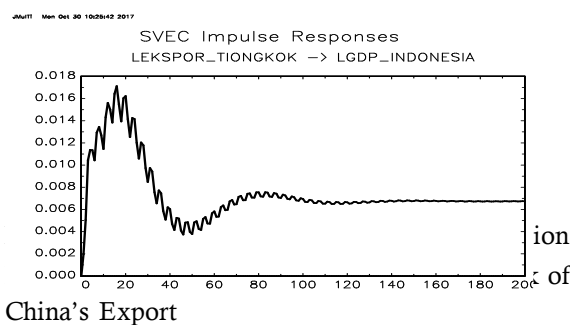
**Figure 5.** Indonesian Economics Fluctuation Response (Riil GDP) Towards Structural Shock of China's Currency

Source: data processed

Furthermore, the impulse response function in Figure 5 outlines the response of Indonesian economic fluctuations to the shock or shock of the Chinese exchange rate. The response of Indonesia's economic fluctuations shows a positive response at the beginning of the period until it reaches the highest positive response in the

3rd period with a response of 0.3% which means an increase in the exchange rate which in this case means depreciation or weakening of the yuan against the US dollar causing an increase in foreign output (Indonesia). In the next period there was a decrease in response, to reach negative response and the highest negative peak occurred in the 17th (-1.37%). Furthermore, in the long run the response stays in a negative position but does not go to equilibrium (convergent) until it is below the equilibrium line.

The IRF results are in accordance with the theory and model of Mundell-Flemming-Dornbusch which shows the effect of expenditure-switching effect, ie the Chinese exchange rate negatively impacts the fluctuation of Indonesian economy (real GDP). The depreciation of the yuan causes the price of goods and foreign inputs tend to increase and domestic prices tend to decrease due to the impact of the depreciation of the domestic exchange rate, resulting in more expensive imported products and the demand for goods and services switching from imported products to domestic products. Therefore, imports will decline and exports will increase with the implication that the addition of net exports will further reduce the output abroad (Indonesia) due to reduced demand for imports abroad.



Source: data processed

Figure 6 shows the result of IRF fluctuations in the Indonesian economy due to the shock of one standard deviation from export shocks from the Chinese monetary expansion. The response of Indonesia's economic fluctuations to China's export-level shock is positive. This can be interpreted as a surprise that China's export-level shocks have an impact on increasing Indonesia's output. In the next period there was an increase in

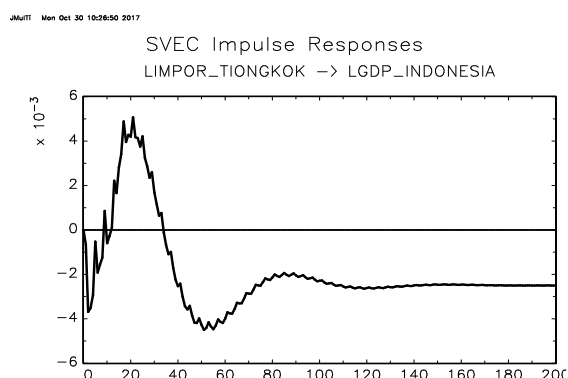
response, to reach the highest positive response of 1.71%. Then fluctuate until long-term has a positive response but not close to equilibrium (convergent) and is above balance.

The positive IRF yields of Chinese exports indicate results inconsistent with the Mundell-Fleming-Dornbusch (MFD) base model where monetary expansion will negatively impact domestic exports, as increased exports as a result of monetary expansion will have an impact on increasing the trade balance through expenditure switching effect and decreasing output abroad. The beggar-thy-neighbor policy states that the domestic monetary expansion will cause the exchange rate to depreciate, then net exports rise, and then the domestic output increases. However, domestic net exports are associated with a worsening foreign trade balance that implies a decline in output abroad, but this is not in line with the results of this study which resulted in a positive response of Indonesia's output to export shocks from China's long-term expansion.

The results of this IRF support the research of Fernald, Edison, & Loungani (1999) on economic relations and export performance between China and other Asian countries, that China's export growth is positively correlated with other Asian countries' export growth through shifting share of China's export market and impacting the expansion of the export market share of other Asian countries, including Indonesia.

Figure 7 shows the IRF result of Indonesian economic fluctuation due to the shock of one standard deviation from the import shock of the Chinese monetary expansion. Indonesia's output response to China's shock rate of imports is negative. At the beginning of the Indonesian response period the output was negative (0.07%) which in the next period increased the response to reach the highest positive response up to 0.51% in the 21st period, then decrease the response to continue to reach the highest negative response that is equal to 0.45% in the 51st period. Then in the long run the response fluctuates and leads to a negative response and does not approach the balance (convergent) but does not disappear and is under balance.





**Figure 7.** Indonesian Economics Fluctuation Response (Riil GDP) Towards Structural Shock of China's Import  
Source: data processed

The IRF results do not match with basic model of Mundell-Fleming-Dornbusch (MFD). The MFD model states that the monetary expansion that leads to an increase in domestic

revenues will increase the demand for imports which in turn leads to an increase in foreign trade balance (Indonesia). But the result of this negative response means that import changes due to China's monetary expansion will have an impact on Indonesia's output decline. This supports research conducted by Yang (2014) China's economic impact on South Africa's economy that China's import growth causes the total import of Africa from China to increase, so that demand for South African local products declines and then lower the trade balance.

### Forecast Error Variance Decomposition (FEVD) Analysis

FEVD in the SVEC model is used to determine the shock (shock) of what variables most affect the variation of other variables studied. Table 3 shows the response of economic fluctuations in the first 20 periods.

**Table 3.** *Variance Decomposition* Indonesian Economics Fluctuation

Periode	$\Delta LGDP\_INDONESIA$	$\Delta NILAITUKAR\_TIONGKOK$	$\Delta LNTB\_TIONGKOK$	$\Delta LEKSPOR\_TIONGKOK$	$\Delta LIMPOR\_TIONGKOK$	$\Delta LEKSPOR\_INDONESIA$	$\Delta LIMPOR\_INDONESIA$
1	100,00	0,00	0,00	0,00	0,00	0,00	0,00
2	96,00	0,00	2,00	1,00	0,00	0,00	1,00
3	85,00	1,00	3,00	6,00	3,00	2,00	1,00
4	65,00	2,00	4,00	21,00	4,00	3,00	1,00
5	54,00	2,00	3,00	32,00	4,00	3,00	1,00
6	46,00	2,00	3,00	40,00	4,00	2,00	3,00
7	40,00	2,00	3,00	44,00	3,00	2,00	6,00
8	35,00	2,00	4,00	48,00	3,00	2,00	7,00
9	29,00	4,00	5,00	50,00	3,00	2,00	8,00
10	25,00	6,00	7,00	49,00	2,00	1,00	9,00
11	22,00	8,00	8,00	47,00	2,00	1,00	12,00
12	21,00	10,00	9,00	45,00	1,00	1,00	13,00
13	18,00	11,00	9,00	44,00	1,00	1,00	15,00
14	17,00	13,00	9,00	43,00	1,00	1,00	14,00
15	15,00	14,00	9,00	41,00	1,00	1,00	19,00
16	15,00	14,00	9,00	40,00	1,00	1,00	20,00
17	14,00	15,00	9,00	39,00	1,00	1,00	21,00
18	13,00	16,00	9,00	39,00	1,00	1,00	21,00
19	13,00	16,00	9,00	37,00	1,00	1,00	22,00
20	12,00	17,00	9,00	37,00	1,00	0,00	23,00

Source: Data processed

The FEVD results show that the variation in Indonesian economic fluctuations is dominated by shocks or shocks of real output / GDP itself with a variance composition of 100% in the first period. In the subsequent period, Indonesia's economic fluctuations were still dominated by Indonesia's own output of 96% followed by China's current account balance of 2%, then China's export rate of 1%, and Indonesian imports 1%, and other variables by 0%. The FEVD results indicate that the current account's current account variable has a dominant contribution as a factor affecting the fluctuations of the Indonesian economy. Based on the FEVD result, it can be concluded that exchange rate transmission explains the Mundell-Fleming-Dornbusch (MFD) theory through expenditure-switching-effect in explaining the impact of the monetary expansion of China on the fluctuation of Indonesian economy.

## CONCLUSION

China's monetary expansion policy (yuan devaluation) has a negative and positive impact (mixed effect) on the Indonesian economy. The results of this study mean that China's expansionary monetary policy causes an expansion and recession in Indonesia's economic fluctuations, based on which transmission lines are affected.

The response of macroeconomic variables to the shock structure of China's monetary expansion policy (yuan devaluation) based on the Mundell-Fleming-Dornbusch (MFD) model mechanism shows; (2) the shock of the Chinese exchange rate is responded negatively (recession) and in accordance with the theory of MFD through the expenditure switching effect, (3) the shock of Chinese exports responded positively (2) the shock of the Chinese current account balance responded negatively (recession) and in accordance with the theory of MFD expansion), not in accordance with MFD theory, (4) Chinese import shock responded negatively (recession), not in accordance with the theory of MFD.

The more dominant shock transmission lines of devaluation policy in influencing the fluctuation of the Indonesian economy are the Chinese current account transactions which are explained by the Mundell-Fleming-Dornbusch (MFD) theory, through the expenditure switching effect resulting in a decrease in Indonesia's output ( recession).

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