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THE EFFECT OF WORLD OIL PRICE FLUCTUATION, RUPIAH EXCHANGE RATE AND WORLD RICE PRICES ON RICE PRICES IN INDONESIA

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Abstract

Movements in world oil prices and world rice prices as well as world finances tend to increase, which will create risks in controlling economic growth. The objectives of this study are: To explain the effect of fluctuations in world rice prices, world oil prices, and the Rupiah exchange rate with rice prices in Indonesia. Analyzing the response of the variables of world oil prices, Rupiah exchange rates and world rice prices, if there is a shock to the rice price variable in Indonesia. Explain the extent to which the variables of world oil prices, Rupiah exchange rate and world rice prices can explain fluctuations in rice prices in Indonesia. The data used is secondary data time series from the year 19 80 s / d 2019. The VAR model is used to analyze the relationship between world oil price variables, Rupiah exchange rate and world rice prices to rice prices. The Rupiah exchange rate has a positive and significant effect on the price of rice and corn, while the world oil price and world rice price have no significant effect on the price of rice and corn. The results of the impulse response function , shocks in the rupiah exchange rate resulted in high depreciation of rice and corn prices compared to world oil prices and world rice and corn prices, while the results of the Forecast Error Variance Decompotion showed that the rupiah exchange rate had a large contribution to rice and corn prices. Domestic compared to world oil prices and world rice prices

Keywords: World Oil, World Rice, Rupiah Exchange Rate, Rice Price, VAR

1. PRELIMINARY

Developments in world oil and financial prices as well as world rice prices will certainly greatly affect the Indonesian economy. The volatility of world oil and rice prices as well as world finances which tend to increase will pose risks in controlling economic growth. In addition, the volatility that occurs will also push up the prices of goods in the domestic market. The price increase will have implications for higher inflation. Inflationary pressures that occur will encourage an increase in interest rates set by Bank Indonesia (BI).

The same thing was also expressed according to Riyadh MI. (2009) stated that uncontrolled inflation will result in a decrease in people's purchasing power and create uncertainty for economic actors in decision making. As a result, people find it difficult to make decisions related to consumption, investment and production, which in turn has an impact on the decline in economic growth of a region.

In Indonesia, the development of rice prices in recent years shows the intensity of fluctuations that are becoming more frequent and more unpredictable. In addition to seasonal factors such as holidays and harvest seasons that routinely occur every year, fluctuations in rice prices are

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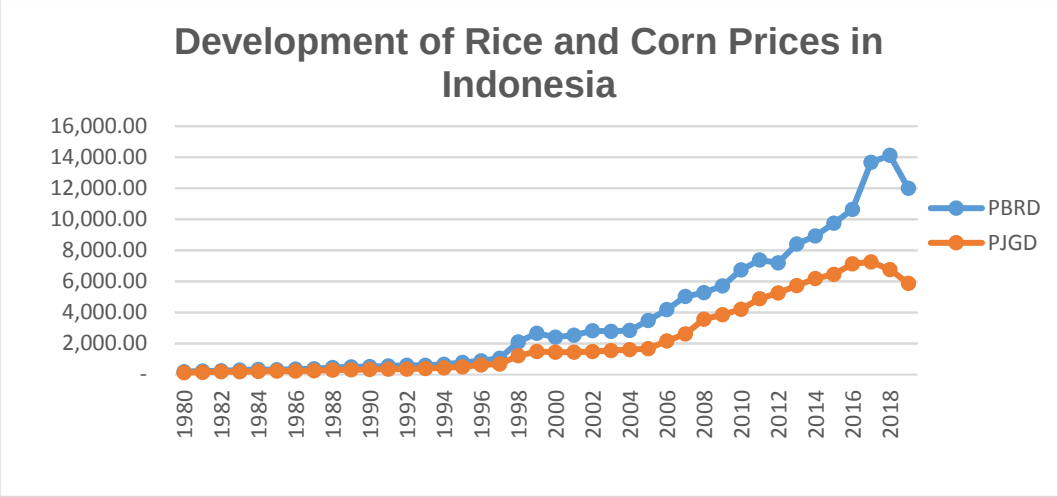
also driven by changes in fuel oil (BBM) price policies which indirectly affect the cost of production and distribution of agricultural commodities, trade policies, minimum wages, and other external factors such as commodity prices in international markets and currency exchange rates (World Bank Jakarta, 2014; Prastowo, Yanuarti, and Depari, 2008; World Bank Jakarta, 2011).

Figure 1: Development of Domestic Rice and Corn Prices 1980-2019



Food is the most important basic human need and its fulfilment is part of human rights guaranteed in the 1945 Constitution of the Republic of Indonesia as a basic component contained in Law No. 18 of 2012 concerning Food. Therefore, the fulfilment of a country's food needs is an absolute must. The importance of food cannot be separated from the concept of food security.

According to Ariani (2007), the concept of food security has three scopes, namely: (1) Availability of food which includes production, reserves and income; (2) Distribution or accessibility includes physical and economic; (3) Consumption includes quality and safety as well as individual nutritional coverage. Therefore, food availability is not only seen from the aspect of physical affordability but also from the economic aspect, which is affordable by people's purchasing power.

Fluctuations in food prices have always been a routine problem every year. The increase in food prices is the main driver of inflation in Indonesia. The movement of food prices, whether uncontrolled or under control, is an anomaly in itself. This is because when the price of fuel fell in February - March 2015 even the world food prices fell, the price of food in Indonesia actually experienced a significant spike, namely up to 17 percent, not only rice prices rose but other basic necessities, especially corn, chili, chicken and beef other factors that can also cause food prices to increase are the rupiah exchange rate against other countries' currencies, especially the United States dollar (USD). Indonesia's food supply is still very dependent on imports

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Research purposes

1. What are the fluctuations in world oil prices affect the price of rice and corn in Indonesia
2. Does the fluctuation of the rupiah exchange rate affect the price of rice? And corn in Indonesia
3. Does the world price of rice and corn affect the price of rice and corn in Indonesia

2. LITERATURE REVIEW

Food Price Stabilization

The positive relationship between market integration and economic development is widely accepted in economics. The neoclassical argument states that market expansion and integration leads to increased productivity through the spread of fixed costs, economies of scale and an increase in the division of labour. There is, however, something else that makes more integrated markets possible for economic development: namely through price stabilization. Timmer (1996) states that 'when food prices fail stabilized and food security has not been realized, political stability and economic growth will be threatened' (1996: 46). Timmer (1989a, 1996) discusses a number of reasons why stabilization of food prices is necessary (see also Dawe, 1997).

a. First, unstable prices lead to flight investment in physical capital. Price volatility means that the investment becomes risky. This results in lower than optimal investment by society as a whole. For example, the community (especially farmers) will benefit from investing in irrigation because it will increase technological development. However, given the fluctuations in food prices, investing in this would be too risky for the farmer, as he was not sure he would profit in the future from these uncertain prices.

b. Second, price volatility encourages the substitution of savings and working time for consumption and recreation. Of course this increases the welfare of farming families, but the shift in the allocation of time and resources is not optimal for economic growth.

c. Third, price volatility will lead to transaction costs in reallocating consumers' budgets when prices change. This is a very important consideration, especially for consumers who are classified as small or medium income. For example, if food constitutes 20-30 percent of consumer spending, then a doubling of food prices would require a reallocation of one-fourth of that consumer's total spending.

d. The fourth reason why unstable rice prices can affect economic growth is its later relationship with macroeconomic variables. For example, at the start of Indonesia's economic growth process in the late 1960s, food accounted for a quarter of GDP and a third of employment. In this economic situation, instability in food prices can be the cause of macroeconomic instability which in turn reduces economic growth For the relationship between macroeconomic instability and economic growth refer to Dawe (1996) and Barro, Sala-Martin (1995)

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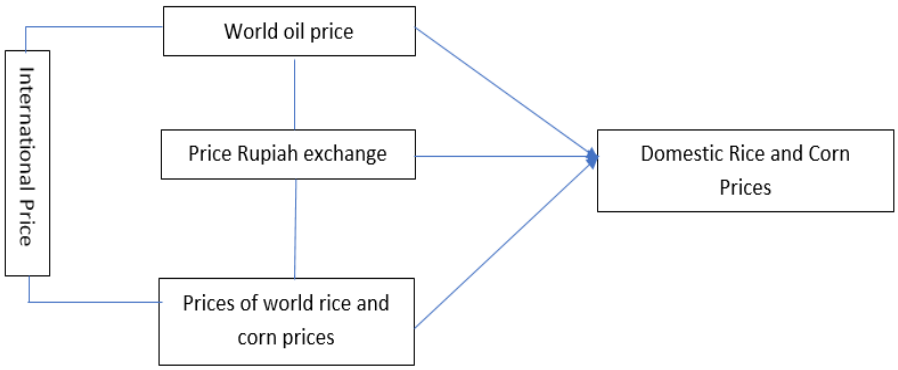
e. Lastly, price volatility affects the industrial sector. The stability of wage prices can only be achieved if food prices are stable. When this happens, many labour-intensive investments emerge as technological efficiency increases in low-wage countries. Furthermore, if stable rice prices contribute to a stable political environment in which investors can form safe long-term expectations, an overall increase in investment can be achieved.

According to Wiranto AE 2017, the exchange rate and gross domestic product affect the retail prices of the main commodities of rice, soybeans and sugar. Inflation only has a significant effect on the retail price of the main food commodity soy, besides that it does not have a significant effect on the main food commodity, rice, and sugar. Soybeans and rice are vulnerable commodities, while rice and sugar are classified as resistant to exchange rate fluctuations. Likewise, according to Ayu TK, 2019, world oil prices can affect local rice prices in Indonesia through high shipping costs on import activities. In addition, world rice commodity prices have also been proven to affect the prices of all rice commodities in Indonesia, while according to Pertiwi VA 2017 results the analysis shows that rice price volatility at the producer level is low and price volatility at the consumer level is high. The same thing according to Seno P 2016 in the long term, crude oil prices can affect domestic rice prices, world rice and wheat prices and indirectly affect domestic wheat prices. In the short term, crude oil prices can affect domestic rice prices. Fuel subsidies can minimize the transmission of volatility from crude oil prices to rice commodity prices. In addition, this study also reveals that domestic rice, soybean and wheat prices are vulnerable to price shocks for these commodities in the market the world because Indonesia imports these commodities in large quantities in order to meet domestic demand. Therefore, based on the results of the study, the Indonesian government should consider application of fuel subsidies for rice producers in order to reduce the impact of volatility in world crude oil prices. In addition, the government must also improve the performance of rice and soybean production, as well as reduce consumption of national wheat in order to minimize imports of commodity commodities them.

Fluctuations in world oil prices, the rupiah exchange rate and world rice prices in the long term will affect the price of rice, which in itself will affect the price of rice in the country.



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3. RESEARCH METHODS

The type of data used is time series data with a time period from January 1980 to December 201 9. Data sources come from International Financial Statistics (IFS), Central Statistics Agency (BPS), Bank Indonesia (BI), Ministry of Agriculture, World Development Indicator (WDI), and other relevant national and international institutions. For commodity prices, it uses commodity price data on world markets which is taken annually from Global Financial Data (GFD). As a comparison (verification), it also uses commodity price data from the World Bank, IMF and UNCTAD. The program used is the E-views version 10 software

Data Stationarity Test

Augmented Dickey Fuller test can be done by adding trend and intercept. The criteria for accepting the hypothesis are the same as for the DF test by comparing the statistic with McKinnon Critical Values. The Augmented Dickey Fuller Test equation according to Enders (1995) can be written as follows:

$$\Delta y_t = \alpha_0 + \gamma y_{t-1} + \sum_{i=2}^{p} \beta_i \Delta y_{t-i+1} + \epsilon_t \quad \text{..... (1)}$$

(Enders, 2004) suggests choosing a VAR model that has the smallest Akaike Information Criterion (AIC) and Schwartz Bayesian Criterion (SBC). AIC is stated as follows:

$$AIC(p) = T \log |\sum| + 2N \quad \text{.....(2)}$$

VAR Model models

The assumption that must be met in the VAR method is that all dependent variables must be stationary (mean, variance and covariance are constant) and all residuals are white noise, i.e., have zero mean, constant variance and are independent of each other. Mathematically the VAR model can be written in the form of a general equation as below (Enders, 2004):

$$\mathbf{X_t = A_0 + \sum_{i=1}^{k} A_i X_{t-1} + \mu_t} \quad \text{..... (3)}$$

So the equation model is as follows:

a. Rice

$$\text{PBRD} = \alpha_{11} + \alpha_{12}\text{PBRD}_{t-1} + \alpha_{13}\text{FLUC OIL}_{t-1} + \alpha_{14}\text{FLUC ER}_{t-1} + \alpha_{15}\text{PBRW}_{t-1} + \vartheta_{1t} \quad \text{..... (4)}$$

b. Corn

$$\text{PJGD} = \alpha_{11} + \alpha_{12}\text{PJGD}_{t-1} + \alpha_{13}\text{FLUC OIL}_{t-1} + \alpha_{14}\text{FLUC ER}_{t-1} + \alpha_{15}\text{PJGW}_{t-1} + \vartheta_{1t}$$

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Structural Vector Autoregressive (SVAR) Models

The model used to test fluctuations in world rice prices against fluctuations in domestic rice prices which can have a direct impact on world oil prices, fuel oil, the rupiah exchange rate can be stated as follows:

$$\begin{bmatrix} a_{11} & a_{12} & a_{13} & a_{14} \\ a_{21} & a_{22} & a_{23} & a_{24} \\ a_{31} & a_{32} & a_{33} & a_{34} \\ a_{41} & a_{42} & a_{43} & a_{44} \end{bmatrix} \begin{bmatrix} PBRD_t \\ FLUC\ OIL_t \\ FLUC\ ER_t \\ PBRW_t \end{bmatrix} = \begin{bmatrix} b_{11} & b_{12} & b_{13} & b_{14} \\ b_{21} & b_{22} & b_{23} & b_{24} \\ b_{31} & b_{32} & b_{33} & b_{34} \\ b_{41} & b_{42} & b_{43} & b_{44} \end{bmatrix} \begin{bmatrix} PBRD_{t-1} \\ FLUC\ OIL_{t-1} \\ FLUC\ ER_{t-1} \\ PBRW_{t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{PBRDt} \\ \varepsilon_{FLUC\ OILt} \\ \varepsilon_{FLUC\ ERt} \\ \varepsilon_{PBRWt} \end{bmatrix}$$

..... (5)

Impulse Response Function This study was conducted to determine the dynamic response of each variable: world oil prices, rupiah exchange rates and world rice prices. In addition, the impulse response function aims to isolate a shock to be more specific, meaning that economic variables can only be affected by certain shocks or shocks, otherwise the specific shock is cannot be known but shock in general.

Forcast Error Variance Decomposition carried out in this study to see the magnitude (percent) of the variation of the world oil price model, the Rupiah Exchange Rate and world rice prices, influenced by shocks for each variable. Thus, it is expected to know the relative role of each shock in explaining a variable of world oil prices, Rupiah exchange rate and world rice prices, which are related to the achievement of price stabilization targets and their impact on the economy.

4. RESULTS AND DISCUSSION

Data Stationary

Time series empirical analysis, the main problem faced is that the data encountered is not stationary (non-stationary). Working with non-stationary variables will produce spurious regression results, and further conclusions drawn are less or meaningless. Therefore, the first step that must be done is to test and make the data stationary.

Table 1: Unit Root Test (Level) Rice

Variable	ADF value	McKinon's Critical Value			Information
		1%	5%	10%	
LPBRD	-0.801455	-3.61045	-2.93898	-2.60793	Not Stationary
LFluc Oil	-0.886034	-3.61045	-2.9389	-2.6079	Not Stationary
LER	-1.692494	-3.61045	-2.9389	-2.6079	Not Stationary
DPBRW	-1.627146	-3.61045	-2.93898	-2.60793	Not Stationary

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Table 2: Unit Root Test (Level) of Corn

Variable	ADF value	McKinon's Critical Value			Information
		1%	5%	10%	
PJGD	-1.147783	-3.6155	-2.9411	-2.6090	Not Stationary
Fluc Oil	-0.886034	-3.61045	-2.9389	-2.6079	Not Stationary
LER	-1.692494	-3.61045	-2.9389	-2.6079	Not Stationary
PJGW	-1.5460	-3.6104	-2.9389	-2.6079	Not Stationary

Based on the results from Table 1, it can be seen that the data on world rice prices (LPBRD), world oil prices (LFluc Oil), rupiah exchange rates (LER) and world rice prices (LPBRW) are not stationary at the critical levels of 1%, 5%, and 10%. . Because the data for the other five variables are not stationary, it is necessary to continue with the unit root test on the first difference.

Table 3: Unit Root Test (First Difference) Rice

Variable	ADF value	McKinon's Critical Value			Information
		1%	5%	10%	
DLPRBD	-4.857690	-3.62102	-2.94342	-2.61026	**stationary 5%**
DLFluc Oil	-5.67891	-3.6155	-2.94114	-2.60906	**stationary 5%**
DLER	-5,20434	-3.61558	-2.94114	-2.60906	**stationary 5%**
DLPBRW	-5.374302	-3.61558	-2.94114	-2.60906	**stationary 5%**

Table 4: Corn Unit Root Test (First Difference)

Variable	ADF value	McKinon's Critical Value			Information
		1%	5%	10%	
PJGD	-4,21514	-1.61558	-2.94114	-2.60906	**stationary 5%**
Fluc Oil	-5.67891	-3.6155	-2.94114	-2.60906	**stationary 5%**
LER	-5,20434	-3.61558	-2.94114	-2.60906	**stationary 5%**
PJGW	-5,20474	-3.61558	-2.94114	-2.60906	**stationary 5%**

Based on the results of the unit root test at the integrated degree level of one I(1) or first difference, all data are stationary. This is reflected by the ADF value which is smaller than the McKinnon critical value (Table 2).

5.1 Optimum Lag Test

Testing the amount of lag The optimum to be used in the analyzed variables is based on the smallest or minimum Akaike Information Criterion (AIC) or Schwart criterion (SC) Criterion, namely at lag 1 (one). This can be seen in Table 3.

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Table 5: Selection of Rice VAR System Lag Length

lag	LogL	LR	FPE	AIC	SC	HQ
1	65.12678	NA	7.70e-07*	-2.729265*	-2.025479*	-2.483625*
2	79.94777	23.05488	8.44e-07	-2.663765	-1.256193	-2.172485
3	85.04485	6.796103	1.67e-06	-2.058047	0.053311	-1.321127

Table 6: Selection of lag length for maize VAR system

lag	LogL	LR	FPE	AIC	SC	HQ
1	71.27625	NA	5.47e-07	-3.070903	**-2.367116***	-2.825262*
2	90.50099	29.90515*	4.70e-07*	**-3.250055***	-1.842482	-2.758774
3	99.95051	12,59936	7.29e-07	-2.886139	-0.774781	-2.149218

5.2 Autoregressive Vector Model

From the results of the selection of the optimum lag, the VAR equation model with lag 1 is obtained whose estimation results are as follows:

a. Rice

D(LPBRD) = 0.3181*D(LPBRD(-1)) - 0.0024*D(LFLUC_OIL(-1)) + 0.4206*D(LER(-1)) + 0.0041*D(LPBRW(-1))

The biggest contribution to domestic rice prices is the rupiah exchange rate of 0.42 percent, meaning that if the rupiah depreciates, the domestic rice price will increase by 0.42 percent. . Changes in the exchange rate have a direct effect on the development of prices of goods in the country while world rice prices and world oil prices have a small contribution to domestic rice prices, that is, if world rice prices and world oil prices increase, domestic rice prices will increase by 0.0041 percent and 0.0024 percent, respectively.

b. Corn

D(LPJGD) = 0.4052*D(LPJGD(-1)) + 0.0353*D(LFLUC_OIL(-1)) + 0.3452*D(LER(-1)) - 0.0034*D(LPJGW(-1))

The biggest contribution to the domestic corn price is the domestic corn price itself, which is 0.40 percent. According to Pertiwi (2017) corn price fluctuations at the consumer level are higher than at the producer level. Then followed by the Rupiah exchange rate, where the rupiah exchange rate is an indicator of domestic prices that is, if the exchange rate of the rupiah depreciates, then the domestic price of corn increased by 0.34 percent,

According to Ayu TK, 2020 that higher oil prices are not the main factor for higher food prices but demand and supply factors are the trigger for rising food prices, this is in line with Nazlioglu (2011) in South Africa does not prove there is friction between global oil prices and prices of agricultural commodities. Based on the statistical test shows that the exchange rate of the rupiah against the price of rice (3.26) and corn (2.89) significant effect on the 95% confidence level. This agrees with Abbott et al, 2008; Baffes & Dennis 2013; Dillon & Barrett, 2016; Harri et al 2009; Nazlioglu & Soytas, 2011, 2012, Nugraheni, 2014) which states that one of the

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fundamental factors driving changes in food commodity prices is the exchange rate, while world oil prices and world rice and corn prices have no significant effect on domestic rice and corn prices. as well as the F-test test that the price of rice, world oil prices, the rupiah exchange rate and world rice prices together have no significant effect on domestic rice and corn prices at the 95 percent confidence level.

High world oil prices are due to the global energy crisis, rising world oil prices make the cost of the state to pay for oil subsidies to be high or increase, if the increase is long, there can be an adjustment of domestic vehicle fuel and avtur, thus the price of fuel oil (BBM) can be higher in stimulating the domestic economy so that the cost of food transportation becomes high as well as the increase in world rice prices according to Jong Wanich and Park (2011) that rising food prices have a considerable impact on overall consumer prices because food has a large share. This is quite large for consumption in developing countries, this is not significant because it occurs in the short term so that the increase in domestic rice and corn prices is always intervened by the government by opening market operations. While the coefficient of determination ($r^{2)}$ of world oil prices, rupiah exchange rates and world prices of rice and corn is only able to provide an explanation for domestic rice and corn prices of 7 and 4 percent.

Table 7: VAR Model Effect of World Oil Prices, Rupiah Exchange Rate and World Rice Prices on Domestic Rice Prices

Commodity	Rice		Corn	
	Coef	Tstat	Coef	Tstat
Food Price	0.3181	**[2,210]**	0.40	**[2.86]**
World Oil	-0.0024	[-0.02]	0.03	[0.42]
Rupiah exchange rate	0.4206	**[3.26]**	0.34	**[2.89]**
world food prices	0.0041	[0.03]	-0.003	[-0.02]
Rsquared	0.14		0.12	
Adj RSquared	0.07		0.04	
fstatistics		1.86		1.64

5.3 Impulse Response Function Analysis

Impulse response function aims to see the dynamic response of a variable in the event of a certain or specific shock to certain variables.

5.3.1 Domestic Rice Price

Domestic rice prices in the first year will result in a 12.55 percent increase in prices Meanwhile, the world oil price, the rupiah exchange rate and the world rice price did not change, thus pushing the price increase in the second year, the domestic rice price rose by 7.28 percent while the rupiah exchange rate increased by 5.99 percent as well as the world rice price increased by 0.0762 percent, while the world oil price experienced an increase of 0.0762 percent. a decrease of 1.54 percent, in the third year and above the domestic rice price increased in that year, the world oil price increased by 0.53 percent, the world rice price fell by 2.98 percent, to balance the magnitude of the rate of price increase, the central bank should implement a policy of

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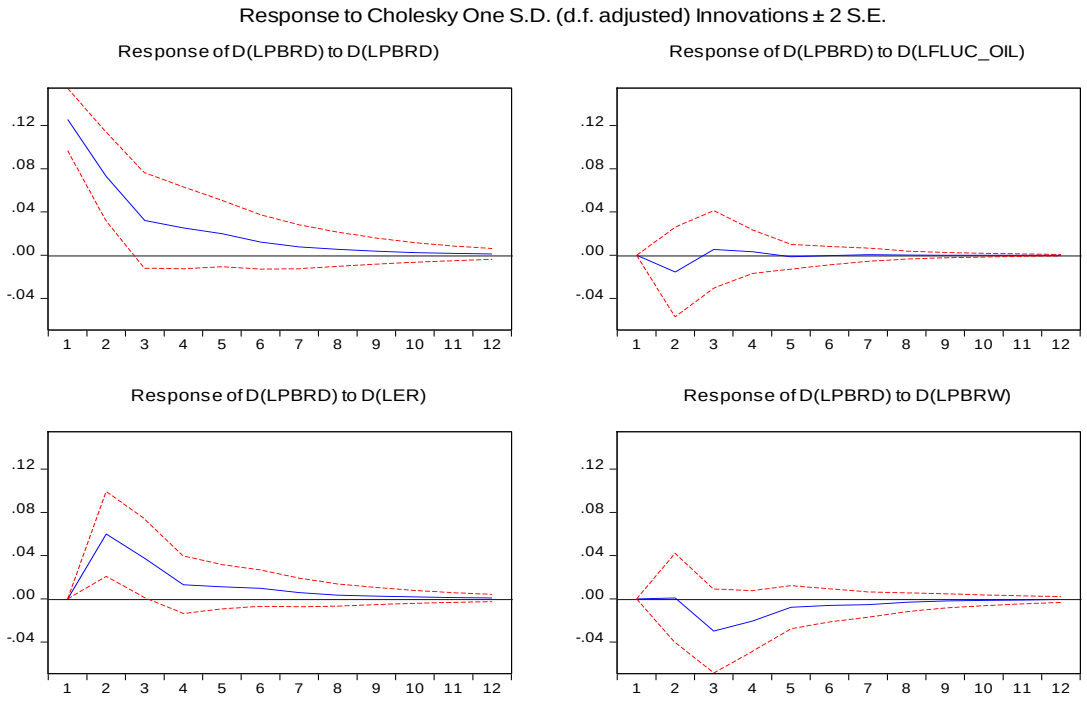
controlling the exchange rate rupiah by 3.74 percent by selling dollars to the market and increasing food exports

Table 8: Effect of Cholesky (df adjusted) one SD on Domestic Rice Prices

D (LPJGD) Innovation

Period	D(LPBRD)	D(LFLUC_OIL)	D(LER)	D(LPBRW)
1	0.125508	0.000000	0.000000	0.000000
2	0.072896	-0.015457	0.059960	0.000762
3	0.032046	0.005350	0.037422	-0.029854
4	0.025203	0.003258	0.013017	-0.020484
5	0.019966	-0.001467	0.011159	-0.007734
6	0.012163	-0.000445	0.009848	-0.006049
7	0.007677	0.000424	0.005766	-0.005290
8	0.005503	6.50E-05	0.003477	-0.003201
9	0.003760	-8.49E-05	0.002579	-0.001932
10	0.002443	9.04E-06	0.001787	-0.001406
11	0.001640	2.52E-05	0.001140	-0.000978
12	0.001121	-2.39E-07	0.000763	-0.000629
Cholesky Ordering: D(LPBRD) D(LFLUC_OIL) D(LER) D(LPBRW)				

Figure 2a: Responses to world oil prices, rupiah exchange rates and world rice prices to domestic rice prices



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5.4 Domestic corn price

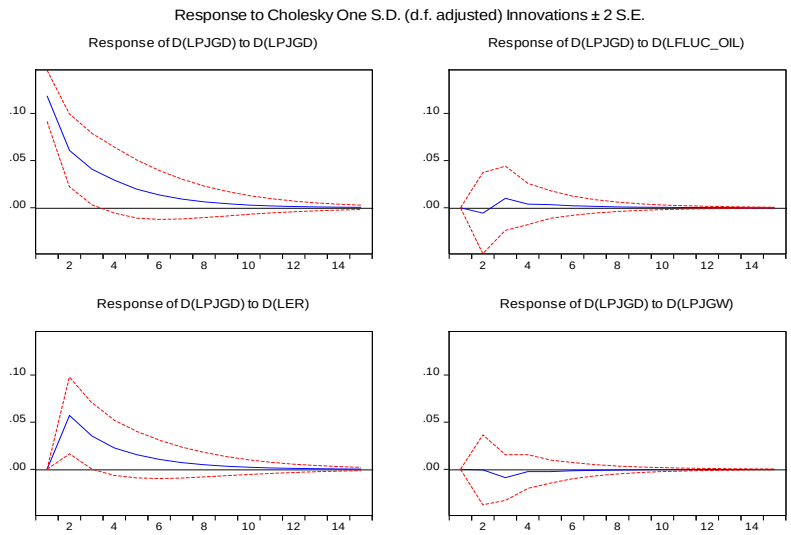
Table 9 shows that a shock of one standard deviation of the domestic corn price in the first year will result in an 11.87 percent increase in corn prices while world oil prices, the rupiah exchange rate and world food prices are not affected, thus pushing the domestic corn price down in the second year by 6 percent while world oil prices decreased by 0.05 percent, the rupiah exchange rate depreciated by 5.7 percent and world corn prices decreased by 0.005 percent. In the third year and above, corn prices began to decline positively by 4 percent until they reached the convergence point, while world oil prices rose by 1 percent, the exchange rate fell positively by 3.5 percent, while world corn prices fell by 0.08 percent.

Table 9: Effect of Cholesky (df adjusted) one SD on Domestic Corn Prices

D (LPJGD) Innovation

Period	D(LPBRD)	D(LFLUC_OIL)	D(LER)	D(LPBRW)
1	0.125508	0.000000	0.000000	0.000000
2	0.072896	-0.015457	0.059960	0.000762
3	0.032046	0.005350	0.037422	-0.029854
4	0.025203	0.003258	0.013017	-0.020484
5	0.019966	-0.001467	0.011159	-0.007734
6	0.012163	-0.000445	0.009848	-0.006049
7	0.007677	0.000424	0.005766	-0.005290
8	0.005503	6.50E-05	0.003477	-0.003201
9	0.003760	-8.49E-05	0.002579	-0.001932
10	0.002443	9.04E-06	0.001787	-0.001406
11	0.001640	2.52E-05	0.001140	-0.000978
12	0.001121	-2.39E-07	0.000763	-0.000629
Cholesky Ordering: D(LPBRD) D(LFLUC_OIL) D(LER) D(LPBRW)				

Figure 2b: Response of International Prices to Domestic Corn Prices



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5.5 Forecast Error Variance Decomposition

Forecast Error Variance Decompositon aims to see how much (percent) variations of the Industrial Production Index, money supply, Bank Indonesia certificates and world interest rates affect variations in the rupiah exchange rate and inflation. Thus, the analysis of Forecast Error Variance Decomposition is expected to provide a relative role for each shock to macroeconomic variables that affect variations in the rupiah exchange rate and inflation.

5.5.1 Domestic Rice Prices

Table 6 shows that domestic rice price fluctuations are dominantly determined by the shock to itself, which reached 100 percent, the contribution of other variables began to play a role in the second year where the contribution of world oil prices (D(lfluc_oil) in explaining rice price fluctuations was only 0.95 percent , while the rupiah exchange rate (D(ler) is 14.43 percent, the world rice price is only 0.0023 percent

In the 12th year, the effect of rice price shocks on him decreased over time, but was still very high, amounting to 76.51 percent; while the contribution of shocks to the variable world oil prices is 0.91 percent, Rupiah exchange rate is 17.80 percent and world rice prices is 4.75 percent. That is, the rupiah exchange rate is a major contribution to the increase in domestic rice prices

Table 6: Decomposition of Variations in World Oil Prices, Rupiah Exchange Rates and World Rice Prices Against Fluctuations in Domestic Rice Prices

Period	SE	D(LPBRD)	D(LFLUC_OIL)	D(LER)	D(LPBRW)
1	0.125508	100,0000	0.000000	0.000000	0.000000
2	0.157800	84.99992	0.959470	14,43828	0.002331
3	0.168071	78.21066	0.947114	17.68496	3.157269
4	0.171706	77.08937	0.943452	17.51897	4.448206
5	0.173401	76.91500	0.932253	17.59217	4.560568
6	0.174212	76,68854	0.924250	17.74841	4.638799
7	0.174557	76.57907	0.921190	17.78741	4.712326
8	0.174707	76.54625	0.919615	17.79635	4.737778
9	0.174777	76.53108	0.918900	17.80384	4.746187
10	0.174809	76.52271	0.918566	17.80780	4.750929
11	0.174823	76.51912	0.918419	17.80917	4.753292
12	0.174830	76.51763	0.918352	17.80977	4.754240
Cholesky Ordering: D(LPBRD) D(LFLUC_OIL) D(LER) D(LPBRW)					

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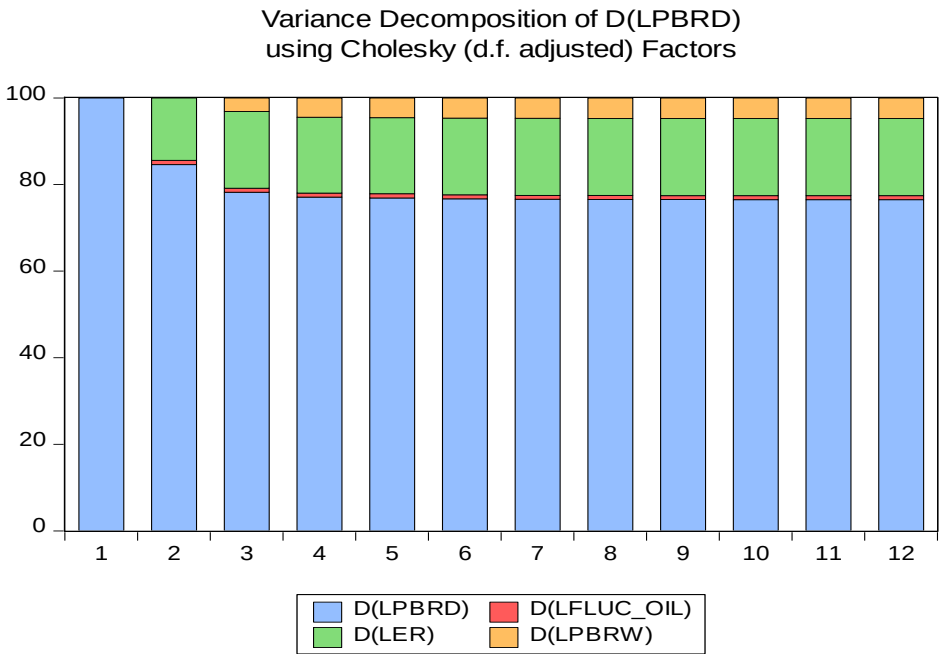
Figure 3: FEVD The Effect of World Oil Prices, Rupiah Exchange Rates and World Rice Prices on Domestic Rice Prices



Domestic Corn Prices

Table 6 shows that domestic corn price fluctuations are dominantly determined by shock to itself, which reached 100 percent, the contribution of other variables began to play a role in the second year where the contribution of world oil prices (D(lfluc_oil) in explaining corn price fluctuations was only 0.14 percent, while the rupiah exchange rate (D(ler) is 15.50 percent, the world corn price is only 0.0014 percent

In the 12th year, the effect of the corn price shock on him decreased over time, but was still very high, amounting to 78.54 percent; while the contribution of shocks to other international price variables increased but not as much as the contribution of the rupiah exchange rate. This means that in a free-floating exchange rate system, the variables of world oil prices and world corn prices have less effect in explaining fluctuations in the rupiah exchange rate, this reflects that the rupiah exchange rate tends to be exogenous.

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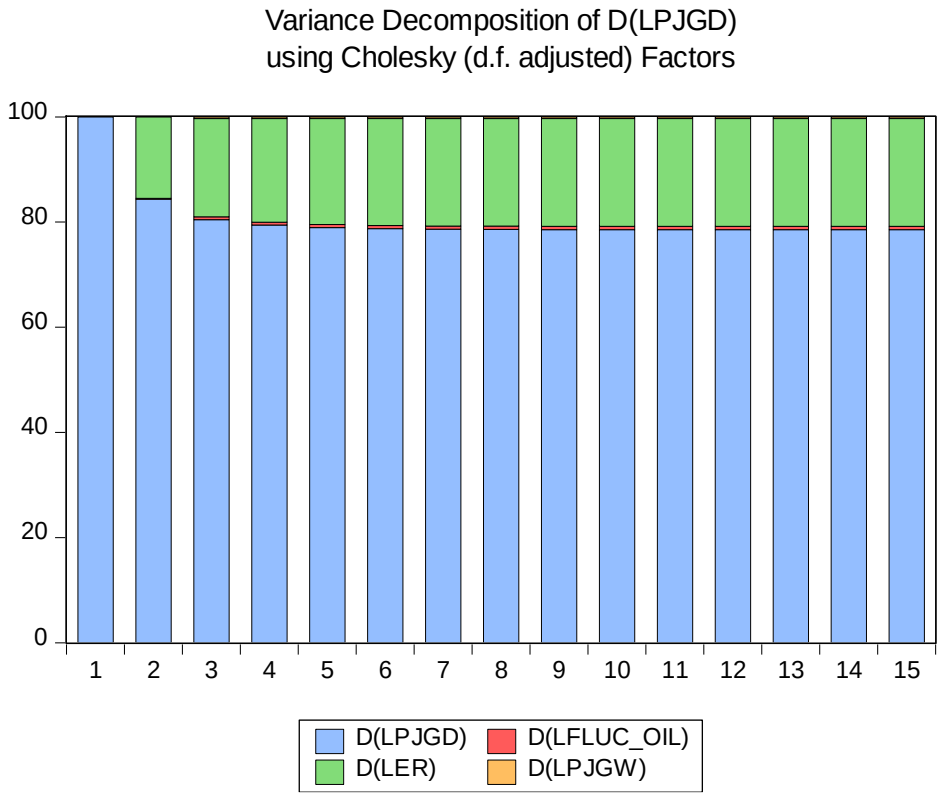
Table 6: Decomposition of International Price Variations on Fluctuations in Domestic Corn price fluctuations

Variance Decomposition of D(LPJGD):					
Period	**SE**	**D(LPJGD)**	**D(LFLUC_OIL)**	**D(LER)**	**D(LPGW)**
1	0.118667	100,0000	0.000000	0.000000	0.000000
2	0.145169	84.34969	0.148080	15.50082	0.001411
3	0.155485	80.44597	0.545701	18.69233	0.315997
4	0.159912	79.41124	0.577981	19.69042	0.320355
5	0.161933	78.93443	0.606686	20.12636	0.332520
6	0.162864	78.72664	0.616751	20.32057	0.336042
7	0.163296	78.63046	0.621813	20.40975	0.337978
8	0.163496	78.58624	0.624073	20.45087	0.338817
9	0.163589	78.56571	0.625133	20.46994	0.339215
10	0.163632	78.55618	0.625623	20.47880	0.339398
11	0.163652	78.55175	0.625852	20.48291	0.339484
12	0.163662	78.54969	0.625958	20.48483	0.339524

Figure 3 FEVD Effect of International Prices on Domestic Corn Prices



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6. POLICY CONCLUSIONS AND IMPLICATIONS

6.1. Conclusion

1. Based on the var model equation, it shows that world oil prices and world rice prices have no significant effect on domestic rice prices while the rupiah exchange rate has a significant significant effect on domestic rice prices.
2. Based on the results of the impulse response analysis, it can be concluded that the depreciation of the rupiah exchange rate shock will be responded to by increasing domestic rice prices. Therefore, to balance the magnitude of the depreciation rate that occurs, the central bank should carry out monetary policy in the form of increasing SBI interest rates so as to encourage capital inflows which in turn can stabilize the rupiah exchange rate.
3. The results of forecast error variance decomposition show that the domestic rice price (D (LPBRD) is dominantly determined by the shock to itself, which reaches 100 percent, while the rupiah exchange rate (D (LER) is 14.43 percent. World oil prices (D (LFLUC_OIL) of 0.95 percent and world rice prices (D (LPBRW) of 0.0023 percent

This indicates that the rupiah exchange rate tends to be exogenous so it is difficult to control directly, while the price of rice is still relatively possible to control through increasing production and productivity of the agricultural sector so that it is expected to be able to improve farmers' welfare and increase national rice security and increase availability by building rice supply. And rice reserves in each district as part of the rice logistics and sustainable rice system so that it is expected to ensure sufficient supply of rice for the population and increase foreign exchange through exports.

6.2. Policy Implication

To anticipate the occurrence of rice prices, it is hoped that there will be cooperation between the ministry of trade and the provincial government, city districts, rice task force, BULOG having the same data base. So that it can take the following steps, namely 1) identifying the adequacy of basic necessities in the region, 2) conducting direct monitoring of people's markets and modern retail, Bulog warehouses and distribution in each province and region, 3) monitoring supply availability and price stability staple goods to the market intensively.Based on the results of the Impulse analisis analysis Response Functions and Forecast Error Variance Decomposition of monetary policy instruments for achieving rupiah exchange rate stability is the SBI interest rate. Thus, in order to achieve the inflation target, Bank Indonesia can implement it with the SBI Interest Rate instrument as it has been used so far. Against the rupiah and controlling the capital outflow. In overcoming major shocks to international prices such as world oil prices, exchange rates and world food prices, the government is advised to focus on the most critical issues, especially global warming, which is estimated to be quite deep and broad in scope at the economic level. Therefore, efforts to improve food security should be prioritized. If the government expects price stability with conducive growth, then Bank Indonesia in terms of monetary policy needs to: 1) stay focused on the main target, namely inflation control, 2) must have the ability to predict inflation accurately so that the inflation

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target is achieved, 3) implement policies effectively consistent and transparent in order to increase public confidence in the policies set, and 4) improve the coordination of fiscal and monetary policy coordination so that the policies taken are more effective and efficient.

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