

Keynesian vs Monetaris Approach: Which Model Effectively Controls Indonesia's Economy?

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ABSTRACT

This study analyzes the phenomenon of the problem of different approaches in controlling the Indonesian economy. This study was able to predict using two different theories. Data analysis for long-term prediction uses Structural Factor-Augmented Vector Autoregression (SFAVAR). The result of the research shows that the model of controlling the rate of economic stability is done through inflation and export in short, medium and long-term. Policies are to control the poor in the short term through exports and inflation; in the medium term, foreign exchange reserves and exports; GDP and exports control long-term. Apparently, exports are very dominant in affecting economic stability.

Keywords: Exchange Rate, SBI, GDP, Domestic Credits, Exports, Foreign Exchange Reserves, Inflation, Poverty

1. INTRODUCTION

The Monetaris Approach to The Balance of Payment Theory (MABP) assumes that interacting factors find the real economic growth variables, foreign exchange rates and interest rates in the complete macro model [1][2]. According to Kavous[3] that through the monetarist market balance analysis to the Balance of Payment Theory (MABP) states that foreign exchange reserves may be affected by economic growth, gross domestic product, domestic credit,

foreign exchange rates, and interest rates. The existing problem shows the growth of foreign exchange reserves in 2005 decreased to 4% due to the high inflation rate, high inflation rate caused by the increase of fuel price [4]. In 2008, the growth of foreign exchange reserves decreased again by 43% due to the global crisis that hit the world. Moreover, in the following years foreign exchange reserves improved, but in 2013 foreign exchange reserves growth deficit of 14.29 % is caused by inflation.

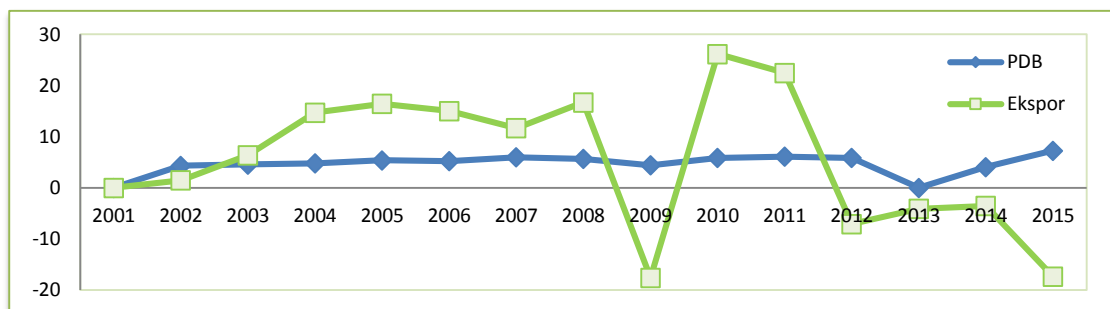


Figure 1: Indonesia Export and GDP Development

Based on the above graph note that the decline in GDP occurred in 2009, Indonesia's GDP growth fell 8.27% from a year earlier; this is due to the economic crisis that occurred in European countries, especially America[5][6]. The American economic crisis is increasingly creeping into the global economic crisis because the world's economy is connected to each other[7][2]. The chart above shows the economic growth of GDP and exports. It can be seen that GDP growth and exports from 2001 to 2006 increase, but the value is not so great. Moreover, in 2009 exports experienced a very large decline up to 17.60% caused by the impact of the global

economic crisis [4]. Similarly, GDP growth declined from a year earlier, GDP growth in 2009 reached 4.42%. Moreover, in 2013 the GDP declined considerably by almost 6% from the previous year. The growth of foreign exchange reserves in 2005 decreased to 4% due to the high inflation rate, high inflation rate caused by fuel price hike [4]. Moreover, in 2008 the growth of foreign exchange reserves decreased again by 43% due to the global crisis that hit the world. Moreover, in the following years, foreign exchange reserves improved, but in 2013 the growth of foreign exchange reserves experienced a deficit of 14.29% is due to price increases.

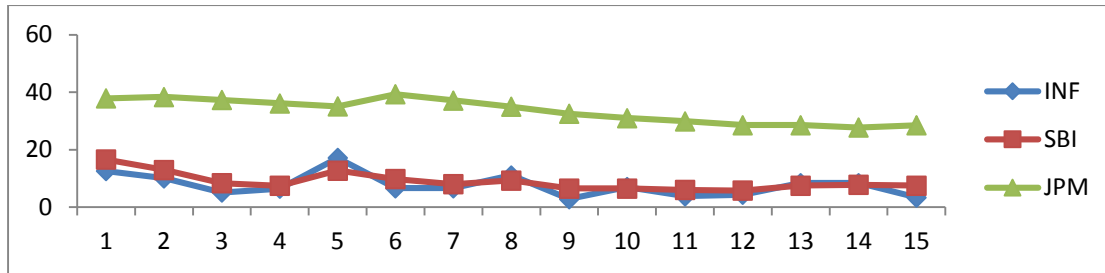


Figure 2: Development of Interest, Food Price Stability and Number of Poor People

The development of inflation and interest rates during the period 2001 to 2015 experienced various fluctuations. The highest inflation occurred in the year 2005 amounted to 17.11% followed by an increase in interest rates of 12.75% and inflation and interest rates in the period 2006 moved down to be in position 6.60% and 9.75%. In 2008 it rose to 11.06% and 9.25% due to the global crisis that hit the world so bad for the economy in Indonesia. During the period 2001-2015 the lowest inflation occurred in 2009 that amounted to 2.78% while the lowest interest rate that is in 2012 amounted to 5.75% but then increased in the period next year. One of the factors influencing the inflation rate in Indonesia is the BI Rate or in other words, BI Rate which becomes the signal for banks to set interest rates such as savings, deposits, and loans. According to Yodiatmaja [8], changes in the BI Rate will affect some macroeconomic variables which are then passed on to inflation.

2. THEORIES

2.1 The Keynesian Static Model

The Keynesian approach assumes that a country's foreign exchange reserves do not automatically reach its equilibrium, but it needs government intervention or policy to achieve its balance. It is also supported by the assumption that wage and price levels are rigid, so there must be intervention or policy action from the government to change them[1]. According to Keynesian Balance Of Payment Theory (KBPT) that to maintain the balance of foreign exchange reserves can be done through exchange rates (exchange rates), interest rates, GDP and domestic credit[9].

The relationship between economic growth and foreign exchange reserves can be explained through the multiplier effect transmission. According to Keynesian Balance Of Payment Theory (KBPT) that if for any reason aggregate income of a country increases, then through a multiplier process it may lead to increased imports. If an increase in imports is greater than

an increase in exports, then this could lead to a deficit in the NPI. Furthermore, it can reduce the country's foreign exchange reserves. Vice versa. Therefore, according to Keynesian Balance Of Payment Theory (KBPT), assuming *ceteris paribus*, the relationship between Economic Growth and foreign exchange reserve position is negative. According to Keynes nominal wages adjusted slowly to a certain magnitude so that the nominal wage rate is not an exogenous variable. If W is an exogenous variable, then W cannot adjust the supply and demand balance of labor. Labor supply [n^S] and labor demand [n^D] can be different, so the labor market becomes:

$$f'(n^D) = \frac{W}{P}, \quad (n^S) = h\left(\frac{W}{P}\right) \text{ and } W = \bar{W}$$

where \bar{W} = the value of W specified in the previous period. The Keynesian model states that labor usage is labor demand [$n = n^D$], so the amount of labor is determined by the demand for labor rather than between the demand and supply mechanisms of labor. The previous equation changed to:

$$f'(n) = \frac{\bar{W}}{P}$$

The previous equation shows the general price level relating to the quantity of labor used at specific nominal wage rates. The production function is related to the price level based on $y = f(n)$ and. The decreasing function of the labor force so that the relation of the real output of aggregate [y] to the general price level [P] is a positive relationship. It means an increase in the price level will decrease the real wage so that the use of labor increases and then increases the aggregate production. Merging will produce the following Keynesian aggregate supply model:

IS Model :

$$y = C[(y - \tau), R] + I(y, R) + g$$

$$\text{LM Model} : \frac{M}{P} = L(y, R)$$

$$\text{Production Function} : y = f(n)$$

$$\text{Marginal Productivity} : f'(n) = \frac{\bar{W}}{P}$$

$$\text{Demand for Labor} : n = h \left(\frac{\bar{W}}{P} \right)$$

The system of equations above will determine the five variables, namely variables y , R , n , P , and W , and real consumption of households and the real consumption of firms or investments is determined at certain P , y , R , n and W levels. How do the exogenous variables change M , g , and \square affect the balance of P , y , R , n , c , i and W ? On a fixed AS schedule, an increase in money stock will increase the LM schedule so that the AD's schedule goes up.

2.2 Moneris Approach

Monetary Approach to the Balance of Payment (MABP) analyzes foreign exchange reserves as a monetary phenomenon [1]. The Monetary Approach to the Balance of Payment (MABP) assumes that interacting factors determine the real Economic Growth, Foreign Exchange, and Interest Rate variables in a complete macro model. According to Kavous [3], through a monetary market balance analysis, the Monetary Approach to the Balance of Payment (MABP) states that the Foreign Exchange Reserves may be affected by GDP, Exchange Rate, and Rate. According to the Monetary Approach to the Balance of Payments (MABP), the factors that affect the Foreign Exchange Reserves are working through changes in the money stock. If there is a surplus, then the money will flow into the country, so the stock of money

The following equation is the SFAVAR calculation.

$$\begin{aligned} \text{KURS} &= \beta_{10}\text{KURS}_{t-p} + \beta_{11}\text{PDB}_{t-p} + \beta_{12}\text{EKS}_{t-p} + \beta_{13}\text{CDEV}_{t-p} + \beta_{14}\text{INF}_{t-p} + e1 \\ \text{PDB}_t &= \beta_{15}\text{PDB}_{t-p} + \beta_{16}\text{EKS}_{t-p} + \beta_{17}\text{CDEV}_{t-p} + \beta_{18}\text{INF}_{t-p} + \beta_{19}\text{KURS}_{t-p} + e2 \\ \text{EKS}_t &= \beta_{20}\text{EKS}_{t-p} + \beta_{21}\text{CDEV}_{t-p} + \beta_{22}\text{INF}_{t-p} + \beta_{23}\text{KURS}_{t-p} + \beta_{24}\text{PDB}_{t-p} + e3 \\ \text{CDEV}_t &= \beta_{25}\text{CDEV}_{t-p} + \beta_{26}\text{INF}_{t-p} + \beta_{27}\text{KURS}_{t-p} + \beta_{28}\text{PDB}_{t-p} + \beta_{29}\text{EKS}_{t-p} + e4 \\ \text{INF}_t &= \beta_{30}\text{INF}_{t-p} + \beta_{31}\text{KURS}_{t-p} + \beta_{32}\text{PDB}_{t-p} + \beta_{33}\text{EKS}_{t-p} + \beta_{34}\text{CDEV}_{t-p} + e5 \\ \text{JPM}_t &= \beta_{30}\text{INF}_{t-p} + \beta_{31}\text{KURS}_{t-p} + \beta_{32}\text{PDB}_{t-p} + \beta_{33}\text{EKS}_{t-p} + \beta_{34}\text{CDEV}_{t-p} + e5 \end{aligned}$$

Where:

- KURS = Rupiah Exchange Rate (Rupiah / Dollar)
- GDP = Gross Domestic Product (Billion Rupiah)
- EKS = Export (Million US \$)
- INF = Inflation (Percent)
- CDEV = Foreign Exchange Reserves (Billion US \$)

in the country increases. If there is a deficit, then the money will flow out of the country, so the stock of domestic money declined. This change of stock of money further leads to a change in the price level through changes in aggregate expenditures of the country. The increase/decrease in aggregate expenditure will affect the price level.

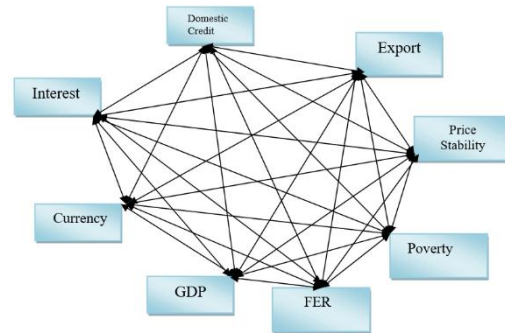


Figure 3: Long Term Prediction Framework (SFAVAR) Model

3. METHODOLOGY

The data analysis model uses simultaneous regression analysis with 3TLS and long-term analysis of Structural Factor-Augmented Vector Autoregression / SFAVAR. According to Rusiadi[10], if the majority or all variables have a simultaneous relationship, then it is better to use long-term analysis, one of which is SFAVAR. This test is conducted to determine whether there is a simultaneous relationship (interrelated) between variables, as exogenous variables and endogenous variables by including the time element (lag). This model can make the predictive pattern of financial market integration in the short, medium and long-term of simultaneous effect between variables.

JPM = The number of poor people (thousands of lives)

4. RESULT AND DISCUSSION

4.1 Factor-Augmented Vector Autoregression (FAVAR)

The FAVAR analysis is useful for filtering out possible factors analyzed in VAR. The following table is the result the analysis.

Table 1: FAVAR result

Factor Method: Maximum Likelihood						
Date: 09/24/17 Time: 13:07						
Covariance Analysis: Ordinary Correlation						
Sample: 2001 2015						
Included observations: 15						
	Unrotated Loadings		Communality	Uniqueness		
	F1	F2				
SBI	-0.810804	-0.037751	0.658829	0.341171		
PDB	0.752178	0.641833	0.977722	0.022278		
KURS	-1.02E-14	1.000000	1.000000	0.000000		
JPM	-0.758906	-0.576642	0.908454	0.091546		
INF	-0.620154	0.046858	0.386787	0.613213		
CDEV	0.877846	0.462846	0.984840	0.015160		
EKS	0.859655	0.391175	0.892024	0.107976		
KD	0.655441	0.747882	0.988930	0.011070		
Factor	Variance	Cumulative	Difference	Proportion	Cumulative	
F1	4.122928	4.122928	1.448271	0.606528	0.606528	
F2	2.674657	6.797585	---	0.393472	1.000000	
Total	6.797585	10.92051		1.000000		

The results of FAVAR mention that the variables worthy of further analysis are SBI, exports, GDP, foreign exchange reserves, food price stability and the number of poor people. It can be seen from the highest value of uniqueness. The next process is assumption test, that is the test of stationeries, cointegration test, lag stability test of structure and determination of optimal lag

level. Hence next step is to analyze VAR. This analysis is conducted to determine whether there is a simultaneous relationship (interrelated or mutual contribution) between variables, as exogenous variables and endogenous variables by incorporating the time element (lag). The following table is the VAR result.

Table 2: VAR result

Structural VAR Estimates	
Date: 09/24/17 Time: 14:03	
Sample (adjusted): 2002 2015	
Included observations: 14 after adjustments	
Estimation method: method of scoring (analytic derivatives)	
Failure to improve after 1 iterations	
Structural VAR is just-identified	
Model: $Ae = Bu$ where $E[uu'] = I$	
Restriction Type: short-run text form	
@e1 = C(1)*@u1	
@e2 = C(2)*@e1 + C(3)*@u2	
@e3 = C(4)*@e1 + C(5)*@e2 + C(6)*@u3	
@e4 = C(7)*@e1 + C(8)*@e2 + C(9)*@e3 + C(10)*@u4	
@e5 = C(11)*@e1 + C(12)*@e2 + C(13)*@e3 + C(14)*@e4 + C(15)*@u5	
@e6 = C(16)*@e1 + C(17)*@e2 + C(18)*@e3 + C(19)*@e4 + C(20)*@e5 + C(21)*@u6	
where	
@e1 represents CDEV residuals	
@e2 represents EKS residuals	

@e3 represents INF residuals
 @e4 represents JPM residuals
 @e5 represents PDB residuals
 @e6 represents SBI residuals

	Coefficient	Std. Error	z-Statistic	Prob.
C(1)	0.100000	0.018898	5.291503	0.0000
C(3)	0.100000	0.018898	5.291503	0.0000
C(6)	0.100000	0.018898	5.291503	0.0000
C(10)	0.100000	0.018898	5.291503	0.0000
C(15)	0.100000	0.018898	5.291503	0.0000
C(21)	0.100000	0.018898	5.291503	0.0000

Estimation Proc:

=====
 LS 1 1 CDEV EKS INF JPM PDB SBI @ C
 VAR Model - Substituted Coefficients:

=====
 CDEV = - 0.0361440054087*CDEV(-1) + 0.222392397719*EKS(-1) - 1909.61544246*INF(-1) - 2392.00599739*JPM(-1) + 0.0291258881434*PDB(-1) + 1646.97416103*SBI(-1) + 67693.9106172

EKS = 0.733478626543*CDEV(-1) + 0.457919859731*EKS(-1) + 1538.62461681*INF(-1) + 2324.76512894*JPM(-1) - 0.00783804131747*PDB(-1) - 5486.58990158*SBI(-1) - 814.087596557

INF = - 7.38626841056e-05*CDEV(-1) - 1.29604949841e-05*EKS(-1) - 0.236666367619*INF(-1) - 0.632999432998*JPM(-1) - 3.85069742952e-06*PDB(-1) - 0.291589699414*SBI(-1) + 47.4361124066

JPM = 4.10688561001e-05*CDEV(-1) - 3.09128222468e-05*EKS(-1) + 0.366175944747*INF(-1) + 0.628570530254*JPM(-1) - 1.94994097616e-06*PDB(-1) - 0.0725497005242*SBI(-1) + 14.7902258703

PDB = 1.40201909684*CDEV(-1) - 1.12649372767*EKS(-1) + 5030.18761402*INF(-1) + 9981.61914328*JPM(-1) + 1.14815871145*PDB(-1) - 5051.99673219*SBI(-1) - 483745.513021

SBI = - 5.56345989762e-06*CDEV(-1) - 2.03540251107e-05*EKS(-1) + 0.00989907896717*INF(-1) - 0.28146725305*JPM(-1) - 1.75788824129e-06*PDB(-1) + 0.196061115082*SBI(-1) + 22.4526846297

Table 3: Summary of SVAR analysis results

Equation	Biggest contribution 1	Biggest contribution 1
CDEV	Export	Price Stability
Export	Inflation	Foreign exchange reserves
Food Price Stability	Export	GDP
The number of poor people	Inflation	GDP
GDP	Inflation	The number of poor people
SBI	Foreign exchange reserves	GDP

The previous table shows that the largest contribution to food price stability is determined by exports and GDP, while the number of poor people is contributed by exports and GDP as well.

4.2 Impulse Response Function (IRF) Analysis

The impulse response function is to see the response of other variables to the change of one variable in the short, medium and long-term.

Estimates made for IRF are focused on the response of a variable on the change of one standard deviation from the variable itself or other variables contained in the model.

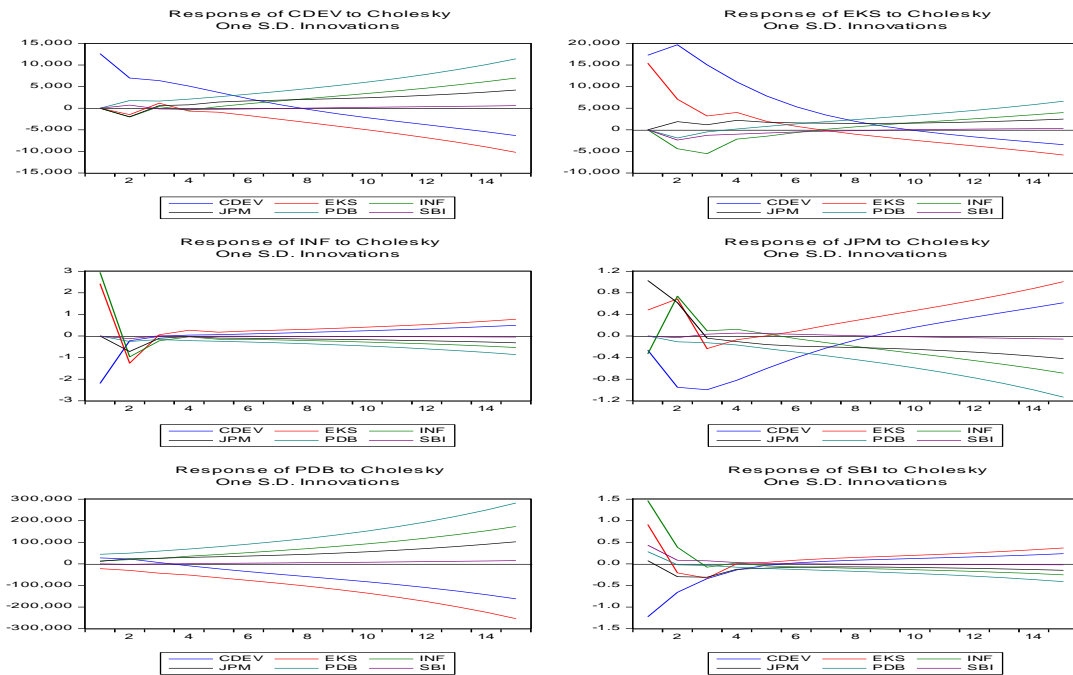


Figure 4: Impulse Response Function Chart

Table 4: Response of All Variables Against Other Variables

Policy Reco	INF			JPM		
	1	5	15	1	5	15
CDEV	-	+	+	-	-	+
EKS	+	+	+	+	+	+
INF	+	-	-	-	+	-
JPM	0	-	-	+	-	-
PDB	0	-	-	0	-	-
SBI	0	-	-	0	+	-

Based on table 4, it is known that the stability of food prices is increasing in the short term responded positively by exports and inflation while foreign exchange reserves respond negatively. In the medium term, foreign exchange reserves and exports respond positively while other variables respond negatively. Long-term still there is no change in response. The

increasing number of poor people will be responded positively by exports and responded negatively by foreign exchange reserves and inflation in the short term, medium-term increase in the number of poor people responded positively by exports. Inflation and SBI and long-term response positively responded by foreign exchange reserves and exports and responded negatively to inflation, GDP, and SBI.

4.3 Forecast Error Variance Decomposition (FEVD) Analysis

Variance decomposition aims to know the presentation of the contribution of each variable to a variable in the short, medium and long-term so that it can be used as a recommendation for policy making for control of these variables. Using the variance decomposition method in Eviews obtained the following results:

Table 5: Variance Decomposition of Food Price Stability

Period	CDEV	EKS	INF	JPM	PDB	SBI
1	24.88422	30.23695	44.87883	0.000000	0.000000	0.000000
5	21.31529	32.99904	42.40635	2.345434	0.862019	0.071870
15	18.74660	32.35719	35.06615	3.088267	10.66210	0.079688

Table 6: Policy Recommendation For Food Price Stability

Period	Biggest 1	Biggest 2
Short-term (Period 1)	INF 44,87%	EKS 30,24%
Medium-term	INF	EKS

(Period 5)	42,41%	32,99%
Long-term (Period 15)	INF 35,17%	EKS 332,36%

Based on Table 6, is known to control the rate of food price stability through inflation and export variables in the short, medium and long-term.

These results prove that exports as a variable affect economic stability [11][12][10].

Table 7: Variance Decomposition of Poor Population

Period	CDEV	EKS	INF	JPM	PDB	SBI
1	4.688898	15.71530	7.543757	72.05205	0.000000	0.000000
5	49.62501	12.65801	11.31783	24.47411	1.808308	0.116718
15	22.94357	23.67016	12.77412	12.33158	28.18505	0.095523

Table 8: Policy Recommendation Number of Poor People

Period	Biggest 1	Biggest 2
Short-term (Period 1)	EKS 15,54%	INF 7,54%
Medium-term (Period 12)	CDEV 49,62%	EKS 12,56%
Long-term (Period 24)	PDB 2818	EKS 23,67%

Table 8 shows that policies to control the poor in the short term through exports and inflation. In the medium term, foreign exchange and export and long-term reserves are controlled by GDP and exports. Exports are dominant in influencing the number of poor people [13][14]. There is a negative and solid relationship between economic growth and poverty which means that when economic growth grows, poverty decreases. Prasetyo[15], Putra [16] said economic growth affects the number of poor people [11][17][18] also reinforce the assertion that economic growth and inflation are very strong in influencing the number of poor people. Then Adila[19] and Aswani [4] say economic growth and exports affect the poor.

5. CONCLUSION

The result of the three equations shows that the foreign exchange reserve equation model has a better model of 94%, then the equation model The total poor population is 73% and the food price stability model is 71%. The most influential variables on the equation of foreign exchange reserves are GDP and exchange rate. The variables that most influence the equality of food price stability are interest and export rate. Variables that affect the number of poor people are GDP and domestic credit. The most significant contribution to food price stability is primarily determined by exports and GDP, while the number of poor people is contributed by exports and GDP as well. Food price stability is

sharply increasing in the short term positively responded by exports and inflation while foreign exchange reserves respond negatively. In the medium term, foreign exchange reserves and exports respond positively while other variables respond negatively. Long-term still there is no change in response. The increasing number of poor people will be positively responded by exports and negatively by foreign exchange reserves and inflation in the short term, medium-term increase in the number of poor people positively responded by exports. Inflation and SBI and long-term response positively by foreign exchange reserves and exports and responded negatively to inflation, GDP, and SBI. The control of the rate of food price stability is done through inflation and export variables in the short, medium and long-term. Policies to control the poor in the short term through exports and inflation, in the medium term foreign exchange reserves and exports and long-term controlled by GDP and exports. Export is very dominant in influencing the number of poor people.

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