

Impact of Monetary Policy and Fiscal Policy on Gross Domestic Product in Indonesia

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ABSTRACT

This study aims to determine which policies are effectively implemented between monetary policy and fiscal policy for Indonesia's gross domestic product. The data used is the annual Secondary time series data from 1990-2020. Research variables are estimated using a quantitative approach that is two Stage Least Square (TSLS) model. Policy is said to be more effective if the policy is able to affect the increase in gross domestic product higher than other policies. The ability of the policy to influence the increase in gross domestic product is indicated by the magnitude of the variable significance value of the policy. The results showed that the monetary policy represented by the variable amount of money in circulation amounted to 0.00 and fiscal policy represented by the variable government spending amounted to 0.07. So it can be concluded that monetary policy will be more effective in affecting gross domestic product compared to fiscal policy. Based on the values obtained, then confirm the findings of the Mundell-Fleming theory which states that a small open economy with a floating exchange rate system is more effective using monetary policy than fiscal policy.

Keywords: *Monetary Policy, Fiscal Policy, Two Stage Least Squares, Gross Domestic Product, Mundell Fleming.*

INTRODUCTION

The achievement of gross domestic product is influenced by the effectiveness of monetary policy and fiscal policy

implemented in parallel. The optimization of both policies is very important to support Gross Domestic Product. Expansionary fiscal policy without the support of expansionary monetary policy, will not give birth to a high Gross Domestic Product (GDP). One of the monetary policy instruments implemented by Bank Indonesia is the money supply and the Bank Indonesia benchmark interest rate (BI Rate). Meanwhile, the fiscal policy instruments run by the government are government expenditure and tax revenue. Monetary policy management aims to maintain the level of inflation by managing/regulating the circulation of money and interest rates that can tend to increase in the community and fiscal policy management aims to maintain price stability of goods and services and boost gross domestic product (Saragih, 2015).

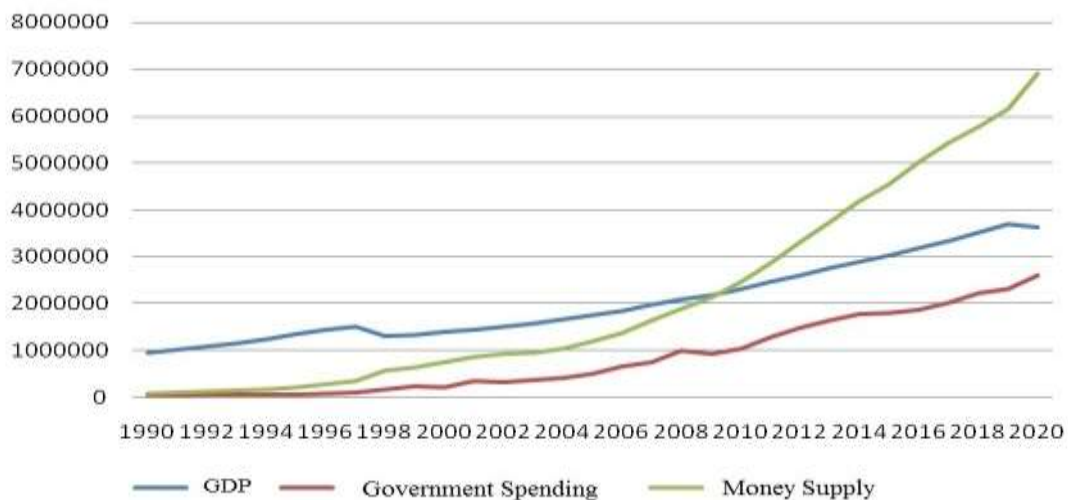
According to Mankiw (2014: 203) one of the best ways to measure the progress of a country is to look at how fast its gross domestic product is. If a country's economy is stable, it can be said that the country is developed, while if the economy is deteriorating, then the country cannot be said to be developed.

It is known that there are two main macroeconomic policies, namely fiscal and monetary policies that can be used by economic managers to manage the health of an economy in this case Gross Domestic Product. Monetary policy and fiscal policy

complement each other. Monetary experts believe that monetary policy exerts a greater impact on economic activity, while Keynesians believe that fiscal policy rather

than monetary policy exerts a greater influence on economic activity thereby stimulating Gross Domestic Product rapidly (Khosravi and Karimi, 2010).

Graph 1 Development Trend Of GDP, Government Spending, And Money Supply



According to the World Bank Report (2016) fiscal policy through government spending instruments for infrastructure has encouraged growth to move slowly, estimated at 5.1% in 2016 and along with the limited space for fiscal stimulus in 2017, the government has encouraged monetary policy stimulus to increase economic activity.

Gross domestic product in 2018 was recorded at 5.17%, an increase compared to the previous year's growth of 5.07%. This is inseparable from the positive impact of the policy mix pursued by Bank Indonesia and the government in responding to global uncertainty (Bank Indonesia, 2018).

Amid the global economic slowdown in 2019 which is influenced by the dynamics of trade wars and geopolitics, falling commodity prices, as well as economic slowdown in many countries. The mix of monetary policy and fiscal policy is considered effective in keeping Gross Domestic Product positive (Ministry of Finance, 2020).

The contraction in gross domestic product in 2020 was inseparable from the negative impact of the corona virus pandemic which made household consumption fall (BPS, 2020). According to Purwanto (2020), the government's strategy in national economic

recovery is carried out by taking comprehensive fiscal and monetary policies. Government policies, especially policies in the fiscal and monetary fields are very influential on the Gross Domestic Product of a country. Policies related to government spending and the money supply can affect a country's economy. Therefore, the government (real sector) and the central bank (monetary sector) always make policies that are tailored to the development of national economic dynamics from year to year. These policies are expected to spur an increase in the country's Gross Domestic Product (Atmojo, 2018).

Gross domestic product is still an area of interest to academics and policymakers although it is also one in which extensive theoretical and empirical research has been conducted. The reason for this particular interest is the important role of gross domestic product in the improvement of the economic, social and political well-being of people across nations. There is a wealth of material available in the literature that addresses the various determinants of Gross Domestic Product (Jawaid et al, 2010).

LITERATURE REVIEW

Gross Domestic Product (GDP)

According to the Central Statistical Agency, gross domestic product is the amount of gross value added that arises from all sectors of the economy throughout the region. Value added is the value added from the combination of factors of production of raw materials in the production process minus the cost between GDP is often considered the best measure of the performance of the national economy. GDP is capable of summarizing economic activity in terms of a single currency in a given period of time. The value of GDP contains two kinds of perceptions, namely as the total economy of each person in an economy and as the total expenditure on the output of goods and services in the economy (Sariningrum, 2007).

Monetary Policy

In general, monetary policy is a process carried out by the monetary authorities of a country in controlling/controlling the money supply, by targeting interest rates with the aim of encouraging stability and Gross Domestic Product, including price stability and low unemployment. The definition above is in line with that stated by Litteboy and Taylor (2006: 198) that monetary policy is an effort/action of the Central Bank in influencing monetary developments (money supply, interest rates, credit and exchange rates) to achieve certain economic goals which include: Gross Domestic Product, currency stability and external balance and expansion of employment opportunities.

Fiscal Policy

Basically, fiscal policy has two main elements, namely taxation (Tax Policy) and expenditure (Expenditure Policy). Fiscal policy as one of the important macroeconomic policies in order to help minimize fluctuations in the business cycle; maintain a sustainable Gross Domestic Product, high employment opportunities; free from high or volatile inflation.

Rupiah Exchange Rate

The exchange rate is the price of one currency in another. For example, what is the price of rupees after converting to US dollars. Mishkin (2004) states that "the exchange rate is the price of one currency against another". Furthermore, Van Hoose & Miller (2007) state that the exchange rate of a country's currency is relative to the currency of another country.

Net Export

Net exports represent the difference between total exports and total imports of an omest (Case and Fair, 2007:387). If the export value is higher than the import value causes a positive net export balance or the state of the global trade balance is favorable, so that Y (income) rises. Conversely, if the value of exports is less than the value of imports causes a negative net export balance or the state of the global trade balance is detrimental, so that Y (income) decreases (Hamdy, 2001:19). There is a significant long-term and short-term positive relationship between monetary and fiscal policy and Gross Domestic Product. The results also show that monetary policy is more effective than fiscal policy in Pakistan.

Inflation

According to the Bank Indonesia website, inflation is defined as a general and continuous increase in prices within a certain period of time. Inflation occurs when the increase in the price of goods occurs widely, not just an increase in the price of goods on one or two items. For example, when the season is not rambutan fruit, rambutan prices will rise. The increase in the price of rambutan fruit is not followed by an increase in the price of other goods, it is not called inflation. The opposite of inflation is called deflation.

United States Gross Domestic Product

Titley (2012) mentioned gross domestic product is a continuous increase in the total output or real GDP of an economy. Todaro (2006) defines gross domestic product as a

steady process by which the production capacity of an economy increases over time to generate ever greater levels of national income.

Human Capital

Lengnick Hall & Cynthia A. (2003: 3) states “human capital is the knowledge, how, skills and capabilities of individuals in organizations. Human capital reflects the competencies people bring to their work”. This means that human capital is how to know the skills and abilities of individuals in the organization.

BI Rate

According to Bank Indonesia (2012) the BI Rate is a policy interest rate that reflects the monetary policy stance set by Bank Indonesia and announced to the public. This BI Rate will then be adjusted to keep inflation stable and low. The mechanism by which the BI Rate operates to influence the

ultimate goal of monetary policy in the form of inflation is referred to as the monetary policy mechanism.

Government Spending

Government spending is one of the components of fiscal policy that aims to increase investment, increase employment opportunities, maintain economic stability and create an even distribution of income through regular spending and development spending.

Money Supply

According to Mankiw (2003) money is defined as a supply of assets that can be immediately used to make transactions. Meanwhile, according to Mishkin (2008) money is something generally accepted in payment of goods and services or payment of debts. In traditional economics, it is defined as any generally accepted medium of exchange.

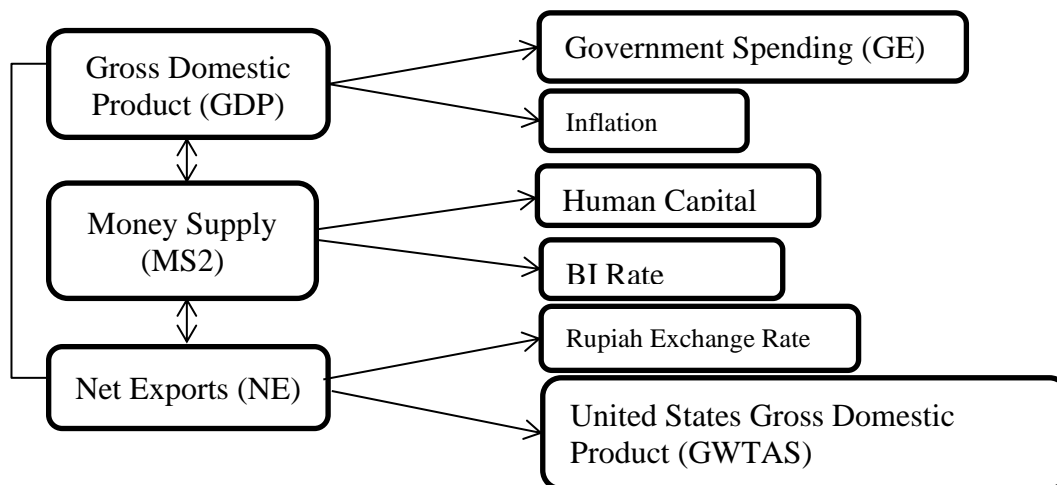


Figure 1. Conceptual Framework

Hypothesis

Based on background research and the relationship between variables, the research hypothesis:

1. Government Spending Effect Gross Domestic Product
2. Money Supply Effect On Gross Domestic Product
3. BI Rate Effect Gross Domestic Product
4. Rupiah Exchange Rate Effect Gross Domestic Product
5. Human Capital Effect Gross Domestic Product
6. Net Exports Effect Gross Domestic Product
7. Inflation Effect Gross Domestic Product
8. United States Gross Domestic Product Effect On Gross Domestic Product
9. Monetary Policy Is More Effective Against Gross Domestic Product

MATERIAL AND METHODS

The scope of this study is a study of economics with a quantitative approach that includes variables gross domestic product, BI rate, money supply, government spending, inflation, rupiah exchange rate, net exports, human capital and Gross Domestic Product of the United States.

The type of data used in this study is secondary Data. Secondary Data used is data that is recorded in a structured form of time series data (time series). This study uses annual data ranging from 1990-2020 obtained from several sources including: the Central Statistics Agency (BPS), the Ministry of Finance, Bank Indonesia, and other data sources such as books, journals, and previous research results.

The data analysis method used is the estimation Model formed will be analyzed using Eviews 10 data processing package with simultaneous model, which will be solved by Two Stage Least Square (TSLS) approach. In this study there are two types of variables, namely endogenous variables and predetermined variables or independent

variables in simultaneous equations where the value is determined outside the model (Gujarati, 2003). Endogenous variables in this study are: gross domestic product (GDP), net exports (NE), and the money supply (MS2), while the predetermined variables in this study are: government spending (GE), Rupiah exchange rate (ER), BI Rate (BIRA), Human Capital (HC), inflation (INF), United States Gross Domestic Product (GWTAS).

RESULTS

Identification Test

In accordance with the classification of variables in the simultaneous equation, the identification test of simultaneous equations in this study as shown in Table 1.

Test Order Condition

Order condition test method is one of the necessary prerequisites in order to identify a simultaneous equation model. The results of identification with the order conditions are as follows:

Table 1 Identification Of Simultaneous Equations

| Equation | K | k | K-k | M | m-1 | Description |
|------------------------|---|---|-----|---|-----|-----------------|
| Gross Domestic Product | 8 | 4 | 4 | 3 | 2 | Over Identified |
| Net Export | 8 | 2 | 6 | 3 | 2 | Over Identified |
| Money Supply | 8 | 2 | 6 | 3 | 2 | Over Identified |

The simultaneous equations in this study are overidentified. Overidentified equations solved with TSLS. TSLS is a single equation method with correlation between disturbance variables and independent variables, so that the OLS technique is applied to structural equations separately, so that simultaneous bias can be eliminated.

Rank Condition Test.

To find out whether these equations are identified or not, one must look for a matrix of order 2x2 of coefficients that are not in Equation 1 but are in another and then look for the determinant. The Matrix is as follows:

$$A = \begin{bmatrix} 0 & -\beta_{24} \\ -\beta_{33} & 0 \end{bmatrix}$$

$$A = (0 \times 0) - \beta_{24} \times (-\beta_{33})$$

$$A = 0 - (-\beta_{24})(-\beta_{33})$$

$$A = -\beta_{24}\beta_{33}$$

Det A ≠ 0 which means the equation of economic growth is an identified equation. Based on the identification of order and rank conditions, it is concluded that the equation of economic growth is identified because the order and rank conditions are met.

Two Stage Least Square

The results of simultaneous equation regression with TSLS method using progameviews 10 are as follows:

Gross Domestic Product (IS) Equation Model.

From the results of the estimated gross domestic product equation, R² value is

obtained by 99%, which means that the overall independent variables included in the equation is very capable to explain the variation of gross domestic product.

From the results of the regression of gross domestic product shown by Figure 1 can be seen that the government expenditure variable (LOG(GE)) does not significantly affect. Where the probability value of T calculated by 7% is greater than the confidence level of 5%. The coefficient value of 7% means that government spending has a positive effect on gross domestic product in Indonesia.

The money supply (LOG (MS2)) has a significant effect. Where the probability value of T calculated by 0% is less than the confidence level of 5%. With a coefficient of 32% which means that the money supply has a positive effect on gross domestic product in Indonesia.

Net export (LOG (NE)) effect is not significant. Where the probability value of T calculated by 62% is greater than the confidence level of 5%. With a coefficient value of -1% which means that net exports have a negative effect on economic growth in Indonesia.

Figure 2 Estimated Gross Domestic Product (IS) Equation

| Dependent Variable: LOG(GDP) | | | | |
|--|-------------|--------------------|-------------|----------|
| Method: Two-Stage Least Squares | | | | |
| Date: 12/22/22 Time: 09:34 | | | | |
| Sample: 1990 2020 | | | | |
| Included observations: 31 | | | | |
| Instrument specification: LOG(GE) LOG(ER) BIRA INF LOG(HC) GWTAS | | | | |
| Constant added to instrument list | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | 9.447229 | 0.531655 | 17.76947 | 0.0000 |
| LOG(GE) | 0.072256 | 0.039351 | 1.836184 | 0.0783 |
| LOG(MS2) | 0.327822 | 0.045971 | 7.131065 | 0.0000 |
| LOG(NE) | -0.013783 | 0.027587 | -0.499614 | 0.6217 |
| INF | -0.005855 | 0.000697 | -8.395764 | 0.0000 |
| DUMMY | -0.440032 | 0.066469 | -6.620132 | 0.0000 |
| R-squared | 0.995221 | Mean dependent var | | 14.44585 |

Inflation (INF) is significant. Where the probability value of T calculated by 0% is less than the confidence level of 5%. With a coefficient value of -0% which means that inflation has a negative effect on economic growth in Indonesia.

Money supply equation (LM) Model

From the estimation of the money supply equation, the value of R² is 99%, which means that all independent variables included in the equation are very capable of explaining the variation in the money supply. LM models are as follows:

Figure 3 Estimation Result Of Money Supply Equation (LM)

| Dependent Variable: LOG(MS2) | | | | |
|--|-------------|--------------------|-------------|----------|
| Method: Two-Stage Least Squares | | | | |
| Date: 12/22/22 Time: 09:58 | | | | |
| Sample: 1990 2020 | | | | |
| Included observations: 31 | | | | |
| Instrument specification: LOG(GE) LOG(ER) BIRA INF LOG(HC) GWTAS | | | | |
| Constant added to instrument list | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | -7.931023 | 6.411560 | -1.236988 | 0.2271 |
| LOG(GDP) | -1.295167 | 0.777321 | -1.666193 | 0.1077 |
| LOG(NE) | 0.132643 | 0.094811 | 1.399022 | 0.1736 |
| LOG(HC) | 2.535067 | 0.370804 | 6.836671 | 0.0000 |
| BIRA | -0.003168 | 0.005226 | -0.606179 | 0.5497 |
| R-squared | 0.992064 | Mean dependent var | | 13.90399 |

From the regression results for the money supply equation in Figure 3 shows that gross domestic product (LOG (GDP)) effect is not significant. Where the probability value of T

calculated by 10% is greater than the confidence level of 5%. The coefficient value is -129% which means that the gross

domestic product has a negative influence on the money supply in Indonesia.

Net export (LOG (NE)) effect is not significant. Where the probability value of T is 0.17% greater than the confidence level of 5%. With a coefficient value of 13% which means that net exports have a positive effect on the money supply in Indonesia.

Human capital has a significant impact. Where the probability value of T calculated by 0% is less than the confidence level of 5%. With a coefficient value of 253% which means that human capital has a positive effect on the money supply in Indonesia.

BI rate (BIRA) effect is not significant. Where the probability value of T calculated by 54% is greater than the confidence level of 5%. With a coefficient value of -0% which means that the BI rate has a negative effect on the money supply in Indonesia.

The International Trade Equation (BP) Model

From the result of international trade equation estimation, R² value is 43%, which means that the whole independent variable included in the equation is quite capable to explain the variation of net export. BP models are as follows

Figure 4 Estimation Results Of International Trade Equation (BP)

| Dependent Variable: LOG(NE) | | | | |
|--|-------------|--------------------|-------------|----------|
| Method: Two-Stage Least Squares | | | | |
| Date: 12/22/22 Time: 10:00 | | | | |
| Sample: 1990 2020 | | | | |
| Included observations: 31 | | | | |
| Instrument specification: LOG(GE) LOG(ER) BIRA INF LOG(HC) GWTAS | | | | |
| Constant added to instrument list | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | 55.36620 | 40.30207 | 1.373781 | 0.1812 |
| LOG(GDP) | -4.110455 | 3.583158 | -1.147160 | 0.2618 |
| LOG(MS2) | 0.805249 | 1.808172 | 0.445339 | 0.6598 |
| LOG(ER) | 0.295003 | 1.596775 | 0.184749 | 0.8549 |
| GWTAS | -0.124734 | 0.076053 | -1.640080 | 0.1130 |
| R-squared | 0.431052 | Mean dependent var | | 9.515886 |

From the regression results of Figure 4 for the international trade equation shows that the LOG gross domestic product (GDP) effect is not significant. Where the probability value of T calculated by 26% is greater than the confidence level of 5%. With a coefficient value of -411% which means that gross domestic product has a negative effect on net exports in Indonesia.

The money supply (LOG (MS2)) has no significant effect. Where the probability value of T calculated by 65% is greater than the confidence level of 5%. With a coefficient value of 80% which means that the money supply has a positive effect on net exports in Indonesia.

The rupiah exchange rate (LOG (ER)) effect is not significant. Where the probability value of T calculated by 85% is greater than the confidence level of 5%. With a coefficient value of 29% which means that

the rupiah exchange rate has a positive effect on net exports in Indonesia.

The growth of the United States economy (GWTAS) is not significant. Where the probability value of T calculated by 11% is greater than the confidence level of 5%. With a coefficient value of -12% which means that US economic growth has a negative effect on net exports in Indonesia.

Classic Assumption Test

Econometric tests of classical assumption deviations are performed to produce a BLUE estimator. Econometric tests that need to be done are multicollinearity, heteroscedasticity, and autocorrelation tests.

Multicollinearity Test

Multicollinearity test used is auxiliary regression. Where the criterion is that if R² regression main equation is greater than R²

parsial independent variables, then it is free from multicollinearity.

Table 2 Multicollinearity Test Results

| Structural Similarities | R ² Main | R ² Partial | Description |
|-------------------------|---------------------|---------------------------|-------------|
| Gross Domestic Product | 0,99 | 0,92; 0,99; -4,41; 0,85; | Freed |
| Money Supply | 0,99 | 0,98; 0,38; 0,99; 0,22; | Freed |
| International Trade | 0,43 | -0,92; 0,96; 0,94; -4,45; | Happened |

From Table 2, it can be seen that only the international trade model has multicollinearity, while the other equations are multicollinearity-free. According to Cristoper achen (Gujarati, 2003) multicollinearity will not break the classical assumption of regression. In models that contain multicollinearity, the resulting estimation coefficients will remain BLUE and produce consistent coefficients and minimum standard error.

Autocorrelation Test

Autocorrelation test aims to determine whether there is a serial relationship between error terms periode t-1 with period t. Autocorrelation test in this study using Breusch-Godfrey LM Test.

Table 3 Autocorrelation Test Results

| Structural Similarities | Prob. Chi-Square | Description |
|-------------------------|------------------|-------------|
| Gross Domestic Product | 0,3658 | Freed |
| Money Supply | 0,1155 | Freed |
| International Trade | 0,3912 | Freed |

The results of the LM test in Table 3 show that all mundell-fleming equation models do not experience autocorrelation. This means that the error term of period t-1 does not correlate with the error term of Period t.

Heteroscedasticity Test

The next diagnostic test is testing for Variant variability, where the CLRM assumption requires a constant value of variance or homoscedasticity. The test used is by using White's test for heteroskedasticity test.

Table 4 Heteroscedasticity Test Results

| Structural Similarities | Prob. Chi-Square | Description |
|-------------------------|------------------|-------------|
| Gross Domestic Product | 0,1661 | Freed |
| Money Supply | 0,1094 | Freed |
| International Trade | 0,3041 | Freed |

The test results can be seen in Table 4 where the test results show that all models in the

system of simultaneous equations show homoscedasticity. This means that the variance of the error term is constant, so an efficient and unbiased estimator can be obtained.

DISCUSSION

Impact of Monetary Policy and Fiscal Policy

Fiscal policy variables represented by government spending have no significant effect compared to monetary policy variables represented by the money supply have a significant effect, so that monetary policy is more effective in affecting gross domestic product. The results of this study are in line with Mundell Fleming's theory which is used as a theoretical basis. The Mundell-Fleming Model states that a small, open economy with a floating exchange rate system is more effective at using monetary policy than fiscal policy. Indonesia is a small open country with a floating exchange rate system, so the results of this study confirm the findings of Mundell-Fleming.

The results of this study are in line with the findings of Noor Cholish, using a simple IS-LM model and ECM analysis techniques, found that monetary policy is more effective than fiscal policy. The fiscal policy multiplier is 0.6 and the monetary policy multiplier is 2.6.

A similar study was conducted by Teguh Santoso. The results of Teguh Santoso's research corroborate the Mundell-Fleming hypothesis that monetary policy is more effective than fiscal policy. This can be seen from how significant the money demand variable is to national income at a=5%, while government spending is significant at a=10%.

Andersen and Carlson (1970), Carlson (1978), Hafer (1982), Dewald and Marchon

(1978) in Triyono and Yuni Prihadi Utomo (2004) stated that monetary policy is more dominant than fiscal policy instruments. Similarly, studies conducted in Canada, West Germany, France, Italy, Japan, and the United Kingdom showed results that placed monetary policy more determinant over gross domestic product than fiscal policy instruments.

CONCLUSIONS

In the IS equation, GDP that reflects output influences positively and significantly the variable of money supply. Meanwhile, government spending variables have a positive and insignificant effect. Variable inflation has a negative and significant effect on GDP. The negative influence of inflation variables indicates the occurrence of the Keynes Effect in the Indonesian economy. The net export variable also had a negative, but not significant, effect on GDP.

In the LM equation, GDP is positively and significantly influenced by human capital. While the net export variable has a positive and insignificant effect on GDP. However, the variable BI rate has a negative and insignificant effect on GDP.

In the BP equation, all research variables have no significant effect on GDP. The variables of money supply and rupiah exchange rate affect GDP positively. Meanwhile, the variable gross domestic product of the United States has a negative effect on GDP in Indonesia.

Monetary policy in the form of regulating the money supply (money demand) proved to be more significant in increasing GDP from the demand side, where there was a positive and significant relationship at the 1 percent confidence level between the variable money demand (M2) and GDP from the demand side. Fiscal policy through government spending variables also has a positive and significant impact on GDP, but with a greater level of confidence than monetary policy, which is 10 percent. Thus, the findings support the Mundell-Fleming model, in which monetary policy exerts a greater and more effective influence on increasing GDP,

while fiscal policy exerts less influence on increasing GDP than monetary policy. Fiscal policy has little effect on GDP growth, as a result of the crowding out effect.

Declaration by Authors

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