EFFECTIVENESS OF MONETARY TRANSMISSION MECHANISM OF INTEREST TRANSMISSION POLICY: Investigation of NAIRU (Non-accelerating Inflation Rate of Unemployment) as an Alternative Target of Monetary Policy in Indonesia 2006-2019

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Abstract

The purpose of this research is to conduct an analysis of NAIRU (Non-Accelerating Inflation Rate of Unemployment) as an alternative monetary policy target with a study on the mechanism of monetary policy transmission in the interest rate pathway in Indonesia. This type of research is applied research so that the data used are secondary data with several variables from macroeconomic and monetary variables. The method used in this study is the first to estimate NAIRU using the Ball-Mankiw approach and to estimate the relationship between NAIRU and Inflation using VECM. The results of this study indicate that in the mechanism of monetary policy transmission of the interest rate path when using alternative NAIRU objectives, it is evident that Inflation and NAIRU have a tradeoff in both the short and long term.

Keywords: NAIRU, Phillips curve, Transmission Mechanism

INTRODUCTION

Monetary policy and fiscal policy have a short-term end goal, which is to maintain a balance in the macroeconomy which consists of achieving a low and stable inflation rate, a high level of economic activity (production) and stability in the balance of payments. This is the ideal end goal of macroeconomic policy, however, not all aspects of the target can be achieved in full and at the same time. In order to achieve these final goals in addition to fiscal policy, monetary policy also plays an important role. So the question arises whether monetary policy can affect the real economy in addition to its effect on prices? If so, then through what transmission mechanism does the influence of monetary policy on the real economy occur (Bernanke and Blinder: 1992 and Taylor, 1995). A monetary policy that can touch the real sector is a complex process because money is closely related to almost all aspects of economic life.

For us as members of society, inflation and unemployment are two very familiar conditions because they have long been perceived as two undesirable things happening in people's daily lives. Even though we realize it or not, inflation is the number one enemy of society. This is because there is not a single member of society that is pro with inflation or an increase in the average price of goods and services that we need in our daily lives. If inflation is the enemy of

society number one, the enemy of society number two is unemployment. The reason is also clear, unemployment is a problem that continues to accumulate, increasing from year to year.

In achieving the ultimate goal of monetary policy, in addition to monitoring the development of various real economic variables such as consumption, investment and export imports and all economic sectors on a periodic basis. Monitoring was also carried out on the effectiveness of the monetary policy transmission mechanism to the real sector, which is generally through several monetary policy transmission mechanisms. The monetary policy transmission mechanism basically describes how the monetary policy pursued by the central bank influences various economic and financial activities so that it can finally reach the final goal set. The transmission of monetary policy to economic growth and inflation has long been recognized to have taken place with long and varied time lags (Friedman and Schwartz, 1963). This is due to the transmission of monetary policy related to the pattern of relationships between various economic and financial variables that always change in line with the economic development of the country concerned.

Developing countries in Asia, such as Thailand and the Philippines, also formally use a monetary policy framework with a single target for inflation. Inflation Targeting is a monetary policy framework in which the inflation target is explicitly announced to the public and monetary policy management is directed in such a way that the inflation target can be achieved within a certain time horizon. Meanwhile, there are a number of interrelated reasons regarding Inflation Targeting. Theoretically and empirically, there has been an agreement among academics and practitioners, in this case the competent authority, Bank Indonesia, that the long-term perspective of the only macroeconomic variable that can be influenced by monetary policy is inflation, while its impact on output can be ignored (Miranda, 2001).

Whereas the NAIRU concept or the extension of the Non-Accelerating Inflation Rate Unemployment is the lowest unemployment rate that can be enjoyed or achieved without experiencing the risk of rising inflation. Theoretically NAIRU refers to a decrease in the unemployment rate accompanied by an increase in the estimated inflation rate, or it can be said that trade-offs occur between the inflation rate and unemployment. Two goals of economic policymakers are low and stable inflation and low unemployment rates, but often these two goals are conflicting. In almost all developing countries the problem of inflation and unemployment is still a fundamental problem. The unemployment rate will have an impact on a country's economic growth if the impact cannot be addressed immediately. If the unemployment rate increases it will have an impact on the slowdown in achieving economic development. The impact of this increase in unemployment is that the real income achieved by the community will be lower than the potential income or income that should be. Furthermore, if the community's real income decreases, it will affect the decrease in the amount of tax. In the end, if the amount of tax decreases, the funds for economic activities will also be reduced and result in development activities also not able to grow.

Furthermore, several relevant studies regarding this discussion are research conducted by Cioran in 2014 which stated that the main objective of monetary policy is price stability which is reflected in the inflation rate. The results of his research entitled Monetary Economy Policy,

Inflation and the Causal Relationship between the Inflation and the Some of the Macroeconomic variables suggest that there is a positive relationship between interest rates and inflation whereas inflation has a negative relationship to the unemployment rate.

Whereas for research in other countries concerning inflation and unemployment rates, Ngoo Yee Ting and Loi Siew Ting in 2009 found that there is a two-way relationship between the unemployment rate and national output in the Malaysian case. Furthermore, Rubcova also conducted research in 2010 which stated that there was no relationship between output and unemployment rates in the case of the Baltic States because the data was not reliable and the sample size was small and the labor market structure was rigid and the inelastic level of unemployment to shifting output. Based on the background above, the formulation of the problem in this research is:

What is the effectiveness of the monetary policy transmission mechanism in the interest rate path in Indonesia towards the alternative target of NAIRU (Non-Accelerating Inflation Rate of Unemployment) and the Inflation monetary policy target in Indonesia?

LITERATURE REVIEW
Monetary Policy Transmission Mechanism
The implementation of monetary policy cannot be done separately from other macroeconomic policies, such as fiscal policy, sectoral policies and other policies, all of which will lead to the achievement of a final policy, namely social welfare.

How a monetary policy touches the real sector is a complex process because money is closely related to almost all aspects of life in the economy. This process is referred to as the monetary policy transmission mechanism. The transmission mechanism of monetary policy or the central bank acts using monetary instruments in the implementation of monetary policy until it is seen the effect on economic activity, both directly and in stages.

In monetary economic theory, the mechanism of monetary policy transmission is often called a black box (Mishkin, 1995), because the transmission of monetary policy in question is largely influenced by three factors, including:

1. Changes in the behavior of central banks, banks, economic actors in various economic and financial activities.

2. The length of the time lag or time lag from the action of the monetary authority until the achievement of the final target of monetary policy.

3. Changes occur in the transmission channels of monetary policy itself, in accordance with economic and financial developments in the countries concerned.

The Simple Phillips Curve

The Phillips curve theory shows that changes in inflation are influenced by economic conditions relative to their productive capacity and other factors. Productive capacity can be measured by potential output which is a function of the natural rate of unemployment. Natural unemployment is the level of unemployment that is consistent with the provision of full employment.

The Keyness's theory has suggested that the economy in a recession can reduce unemployment by expanding aggregate demand, so fiscal policy tends to provide a stronger instrument than monetary policy. High unemployment in the 1930s in Britain occurred when demand was low and in 1950 there was an increase or expansion which subsequently increased unemployment. The Phillips curve illustrates the relationship between the unemployment rate and the rate of change in wages or salaries.

Graph 2.1. *The Simple Phillips Curve*
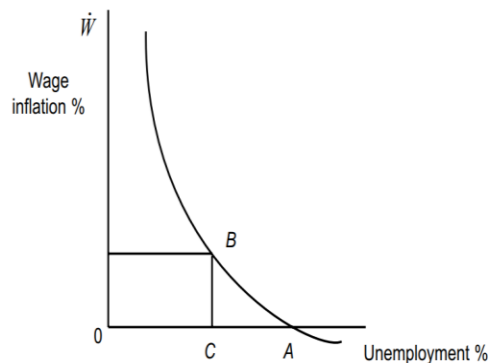
Source: Bain and Howell, 2002

The implication is that the economy operates at various levels of employment and its consequences on output, the unemployment rate can be reduced without increasing inflation and if the government wants the economy to continue running below the unemployment rate as desired, new inflation will occur.

The Phillips curve coupled with expectations is bad news for governments that want to control unemployment by managing aggregate demand. This implies that increasing aggregate demand can reduce unemployment but only in the short term. Every attempt by the government to reduce unemployment below its natural rate of unemployment will increase inflation. It could even be worse, that an increase in inflation could disrupt the price mechanism and reduce economic efficiency (higher inflation means fluctuating inflation and increase the chance of erroneous inflation expectations).

The Friedman and Phelps models provide experience in many developed countries in the 1970s and have an effect on increasing demand by the government for the limitations of government policy so that the government begins to pay more attention to the supply side of the economy.

Non-Accelerating Inflation Rate of Unemployment (NAIRU)

NAIRU theoretically refers to a decrease in the unemployment rate with an increase in the estimated inflation rate. NAIRU can also be defined as an unemployment rate that occurs when the inflation rate does not accelerate. This means that the unemployment rate that occurs when there is no tendency for inflation to change. This was first stated by Franco Modigliani and Lucas Papademos in 1975 which is about NIRU (Non-Inflationary Rate of Unemployment) as a concept of the natural rate of unemployment previously proposed by Milton Friedman.

Monetary policy carried out with the assumption of NAIRU is usually sufficient to involve the possibility of an increase in unemployment in the economy to prevent an increase in inflation above the predetermined target number. The initial form of NAIRU was found in Abba P. Lerner's work in 1951 which stated that the low level of labor achieved through aggregate demand was different from the high level of labor with added income policies (wage and price controls). Friedrich von Hayek believes that a government that seeks to achieve full employment will accelerate inflation because some of the skills or skills each person is considered worthless.

The concept began to emerge after the popularity of the observed Phillips curve and summarized the negative correlation between the unemployment rate and the inflation rate (measured as annual nominal wage growth) for a number of industrialized countries. This correlation then convinced some analysts that it was impossible for the government, simultaneously to target low unemployment with price stability or low and stable inflation. Therefore, the role of the government is to find a point in the trade-off between unemployment and inflation that matches the domestic social consensus.

The reverse analysis conducted by Friedman and Phelps is that government macroeconomic policies, especially monetary policies are driven by low unemployment targets and this will cause inflation expectations to change. The result is that the inflation rate will continue while unemployment will not. So the result of this perception is that government economic policy or at least monetary policy should not be affected by any unemployment rate below the critical level, natural level or NAIRU.

In short, the NAIRU theory states that if the unemployment rate is above NAIRU with output below its potential level, inflation will fall. However, if the unemployment rate is below NAIRU with the level of actual output above potential output, then inflation is expected to rise. Before 1995 the Fed estimated NAIRU to be around 6%, but with a decline in the unemployment rate to around 4% at the end of the 1990s, without an increase in inflation and even a slight decline, leading to some criticism which questioned the value of the Phillips curve theory. According to them the Phillips curve theory no longer applies or alternatively they believe that there is great uncertainty about the value of NAIRU, which has fallen below 5% for reasons that are considered unclear. The current Phillips curve theory is very controversial, and many economists believe that the theory is not used as a guideline for conducting monetary policy.

Prior Research

Research on the mechanism of monetary policy transmission has been carried out, both domestically and abroad, for developed and developing countries. But in this research, monetary

policy transmission is associated with other than the monetary policy's final target, namely inflation, but it is also associated with one indicator of macroeconomic growth, namely unemployment. Therefore, there may be rarely or no previous studies that discuss exactly this. Because in Indonesia it does not use NAIRU's targets as targets of monetary and macroeconomic policies in Indonesia.

Zina Cioran (2014) has conducted research entitled "Monetary Policy, Inflation and the Causal Relation between the Inflation Rate and Some of the Macroeconomic Variables" where her research aims to identify the relationship that exists between inflation rates and some macroeconomic indicators in Europe. This research is more focused to reveal the cause and effect relationship

occurs between the inflation rate and the monetary policy interest rate and the relationship that occurs between the inflation rate and the unemployment rate using the regression method. This study found a significant direct relationship between monetary policy interest rates and inflation which then made interest rates an efficient instrument for the central bank to prevent inflation. And there is a significant and inverse relationship between inflation and unemployment. And this shows that the inflation rate is an effective instrument in preventing an increase in unemployment.

Jaroslav Horvath and Jiansheng Zhong in 2019 conducted a study entitled "Unemployment Dynamic in Emerging Countries: Monetary Policy and External Shocks". This study aims to calculate the impact that occurs when external demand, interest rates and uncertainty on emerging market economies experience a shock or shock. And this study found that external shocks have a considerable impact on macroeconomic fluctuations in emerging market economies and in part on the domestic market. Declining external demand, interest rates and uncertainty are more likely to lead to high unemployment, lower stock market returns and depreciation of the domestic currency.

Mewael F. Tesfaselassie and Malik H. Wolters conducted a research in 2018 entitled "The Impact of Growth on Unemployment in a Low vs. High Inflation Environment. This study shows that nominal price stickiness helps reconcile model predictions with experience. Faster growth has been shown to cause lower unemployment when inflation is relatively high, as was the case in the 1970s. In general, signs of the effect of growth on unemployment are shown to depend on inflation. There is an inflation threshold below (above) where faster growth leads to higher (lower) unemployment. The prediction of this model is supported by empirical analysis based on US and European data.

Based on a review of the theoretical basis and previous research that has been explained previously, the hypothesis that can be formulated for research is that it is suspected that the mechanism of monetary policy transmission in the interest rate path in Indonesia will effectively influence the final monetary policy target of Inflation and the NAIRU alternative targets in Indonesia.

RESEARCH METHODS

Research Approach

Based on a literature review, this study will use a descriptive quantitative research approach which is a test of hypotheses using measured data. Next will be obtained the parameter value of the effect of changes in economic variables to other economic variables as well as an explanation of the economic assumptions to get a conclusion about the correlation between variables.

This research uses time series data methodology and data testing using Granger Causality and VAR (Vector Autoregressive) or VECM (Vector Error Correction Model). As used by Copelman (2000) and Rousseau and Xiao (2007). The approach was chosen with the consideration that specifically Granger Causality is used to test the causality between output variables with financial system variables and to see the long-term relationship of each variable, while for VAR and VECM it is used to see the intensity and speed of adjustment or the response of each variable in research.

In the VAR model the basic form treats all variables symmetrically without distinguishing independent variables or dependent variables. In the VAR model all variables in a study are considered endogenous variables.

Furthermore the variables used in this study are as follows: rBI (Bank Indonesia Interest Rate or BI 7 Day Repo Rate), rDepo (Deposit Interest Rate), Loan Interest Rates, Aggregate Demand represented by Consumption and Investment, Output Gap, Inflation, and Unemployment.

Data Analysis Method

This research uses the time series methodology with the Vector Autoregressive (VAR) approach if the data used is stationary and not cointegrated, or uses the VECM (Vector Error Correction Model) approach if the data used is stationary and there is cointegration.

VAR or VECM is used to analyze the effectiveness and impact of a policy, and in this study it is used to measure the impact that occurs in the transmission of monetary policy expectations in Indonesia, namely by knowing the value or magnitude of the influence of a variable due to a shock given from another variable or from the variable itself. In addition, this method is also able to show the time lag needed for each variable responding to a shock. The VAR or VECM model can also be used to see the dynamic impact of monetary policy in addition to measuring the impact of monetary policy transmission on expectations on inflation in Indonesia.

Furthermore, for the method of estimating NAIRU in Indonesia, this study uses the Ball Mankiw approach. Where the process assumes expected inflation to be the same as inflation in the previous period and subsequently extracts NAIRU using the Hodrick Prescott filter, this is because NAIRU is not observed directly (unobservable). This research uses the Ball-Mankiw Approach because the Ball Mankiw Approach is a standardized approach to estimate NAIRU and is suitable for the character of economic variables in Indonesia.

Vector Error Regression Model (VECM)

Vector Error Regression Model is an econometric method used to test between variables in models that have a dynamic impact (Ozcelebi, 2011). From the estimation of the VECM model, it can be seen Impulse Response Function (IRF) and Variance Decomposition (VD). Where in this test can be seen how much the contribution of each variable to the decomposition of other variables. The VECM equation that will be used in this study are as follows:

$$\Delta NAIRU_t = \alpha_{70} + \alpha_{y7}\, ECT + \sum_{i=1}^{p} \alpha_{71,i}\, \Delta rBIRATE_{t-i} + \sum_{i=1}^{p} \alpha_{7,i}\, \Delta rDEPO_{t-i}$$
$$+ \sum_{i=1}^{p} \alpha_{73,i}\, \Delta rPINJAMAN_{t-i} + \sum_{i=1}^{p} \alpha_{74,i}\, \Delta PACI_{t-i}$$
$$+ \sum_{i=1}^{p} \alpha_{75,i}\, \Delta OUTPUTGAP_{t-i} + \sum_{i=1}^{p} \alpha_{76,i}\, \Delta INFLASI_{t-i} + \sum_{i=1}^{p} \alpha_{77,i}\, \Delta NAIRU_{t-i}$$
$$+ \varepsilon_{y7,t}$$

$$\Delta INFLASI_t = \alpha_{60} + \alpha_{y6}\, ECT + \sum_{i=1}^{p} \alpha_{61,i}\, \Delta rBIRATE_{t-i} + \sum_{i=1}^{p} \alpha_{62,i}\, \Delta rDEPO_{t-i}$$
$$+ \sum_{i=1}^{p} \alpha_{63,i}\, \Delta rPINJAMAN_{t-i} + \sum_{i=1}^{p} \alpha_{64,i}\, \Delta PACI_{t-i}$$
$$+ \sum_{i=1}^{p} \alpha_{65,i}\, \Delta OUTPUTGAP_{t-i} + \sum_{i=1}^{p} \alpha_{66,i}\, \Delta INFLASI_{t-i} + \sum_{i=1}^{p} \alpha_{67,i}\, \Delta NAIRU_{t-i}$$
$$+ \varepsilon_{y6,t}$$

Ball-Mankiw Approach

The Lawrance Ball formulation known as "the conventional wisdom" is a standard model commonly used in the NAIRU model and is widely discussed in textbooks. We are often urged to recognize varieties in the mainstream economy using qualifications such as "monetarist" or "New Keynesian," but we think that, regardless of the variety, the essence is basically the same, regardless of the right label. In this view, the inflation rate is seen as a result of conflicts over the distribution of income between workers (trade unions) and capitalists (companies). This follows from the wage negotiation process where workers negotiate wages for money designed to give them a certain standard of living, while companies set prices as exogenous markers on expected variable costs that include labor costs.

Because in Indonesia does not have NAIRU data, in this study, researchers estimated the value of NAIRU using the Ball-Mankiw approach. NAIRU can be estimated by a value that is constant (does not change all the time) or values that vary (time varying NAIRU). However, if more

attention is paid to the economy that is not static but dynamics occur in its components so it makes sense when NAIRU is an estimated value that changes over time (NAIRU time varying) as a reflection of the economy at certain points of time. Therefore, in this study

the writer will estimate the time varying NAIRU using the Ball Mankiw approach, which in the process assumes expected inflation is the same as inflation in the previous period and then extracts NAIRU using the Hodrick Prescott filter, this is because NAIRU is not observed directly (unobservable).

DISCUSSION RESULT

Before explaining further about the results of the research, the results of the NAIRU calculations were presented using the Ball Mankiw approach and the results can be seen in Graph 4.1 below that the NAIRU Indonesia's Estimation with the Ball Mankiw Approach.

Graph 4.1: NAIRU Movement and Unemployment Open 2006-2019
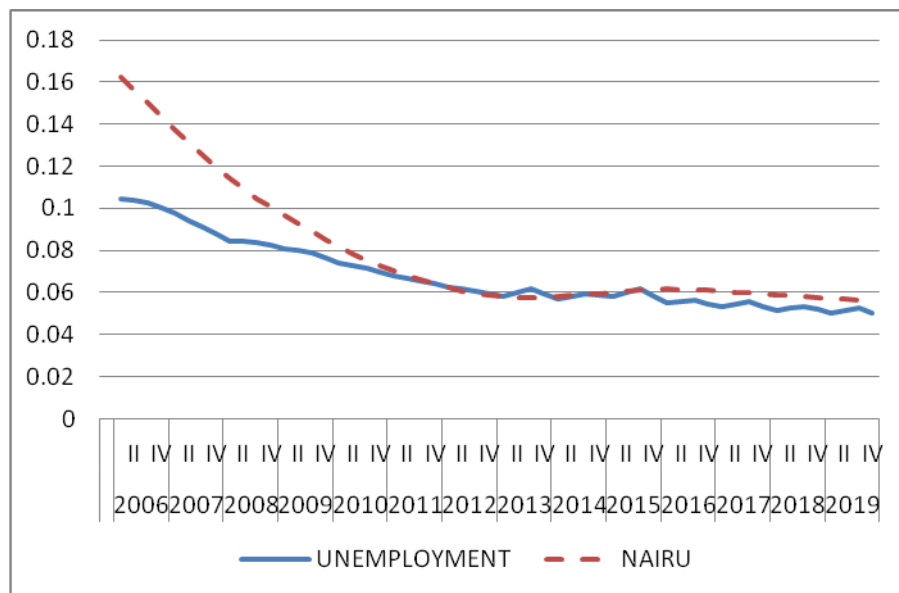
From the results of the NAIRU estimation test on Eviews and some NAIRU estimation theories from previous studies, it can be illustrated in the graph above. The graph above shows the movement between the open unemployment rate and the estimated NAIRU in Indonesia in 2006 to 2019. From the graph above it can be seen that the movement between NAIRU and the open unemployment rate is more stable from 2010 to 2019.

Based on the graphic image above, if NAIRU moves above the open unemployment rate as in early 2006 to 2010, this indicates an increase in aggregate demand so that it impacts on the price level increase and the increase in inflation that occurs compared to expected inflation. Whereas if the NAIRU value is below the level of open unemployment as in 2013, this indicates that the inflation rate is lower than expected inflation. This decrease in inflation is a consequence of the

decline in aggregate demand, resulting in more labor being absorbed and this will ultimately lead to higher open unemployment.

Then from 2010 to 2015 the gap between the estimated NAIRU and the open unemployment rate in Indonesia is not too far away. This indicates a decrease in aggregate demand as a result or effect of government policy or the economic crisis that occurred. The gap between NAIRU and the level of open unemployment which is not too wide also indicates that the economy in Indonesia has been directed so that the inflation rate and the level of open unemployment are not too high and more stable by using a combination of economic policies that is quite appropriate.

**VECM (*Vector Error Regression Model)Estimation Result*

Tabel 4.1: R-Squared

Variabel	BIrate	rDEPO	rPINJAMAN	Investasi	Konsumsi	OutputGap	Inflasi	NAIRU
R-Squared	0.613261	0.768409	0.719500	0.898621	0.698699	0.838070	0.702462	0.999997

Source: Data processed with Eviews 8.0

From the table above, it can be seen the value of the contribution of each variable in the monetary mechanism transmission mechanism of the interest rate channel in Indonesia. It can be compared the contribution of NAIRU variables has a greater value than the Inflation variable. This explains that the NAIRU variable can explain all the variables in the interest rate path is greater than the other variables that is equal to 99.9% and the remaining 0.1% is explained by other variables outside the model or error.

$$
\begin{aligned}
\Delta INFLASI_t = {} & 1,885210 - 0,142845\,ECT_{t-1} + 0,271516\,\Delta BIRATE_{t-1} \\
& + 1,290293\,\Delta DEPO_{t-1} + 0,235331\,\Delta PINJAMAN_{t-1} \\
& + 8,6606\,\Delta INVESTASI_{t-1} + 5,1406\,\Delta KONSUMSI_{t-1} \\
& - 4,8106\,\Delta OUTPUTGAP_{t-1} + 0,096324\,\Delta INFLASI_{t-1} \\
& + 6144,237\,\Delta NAIRU_{t-1} - 0,736345\,\Delta BIRATE_{t-2} + 0,078622\,\Delta DEPO_{t-2} \\
& - 2,276216\,\Delta PINJAMAN_{t-2} - 4,1106\,\Delta INVESTASI_{t-2} \\
& + 5,1506\,\Delta KONSUMSI_{t-2} - 1,5605\,\Delta OUTPUTGAP_{t-2} \\
& + 0,177764\,\Delta INFLASI_{t-2} - 4,451,440\,\Delta NAIRU_{t-2} + \varepsilon_t
\end{aligned}
$$

Furthermore, the results of the VECM test on the interest rate path can be concluded in the short term and in the long term. For the short run effect, it can be concluded that the effect of NAIRU on inflation in the second lag has a negative effect of -4.41%. This means that if there is an increase in NAIRU by 1 percent in the previous two periods it will cause inflation to decrease by 4.41%. This shows the trade off that occurred between inflation and NAIRU on the mechanism of monetary policy transmission in the interest rate channel in Indonesia.

$$\Delta NAIRU_t = 7,4505 - 4,3406\, ECT_{t-1} - 3,3306\, \Delta BIRATE_{t-1} + 4,9306\, \Delta DEPO_{t-1}$$
$$- 1,3405\, \Delta PINJAMAN_{t-1} - 1,6510\, \Delta INVESTASI_{t-1}$$
$$+ 1,3910\, \Delta KONSUMSI_{t-1} - 1,8710\, \Delta OUTPUTGAP_{t-1}$$
$$+ 2,6205\, \Delta INFLASI_{t-1} + 1,954133\, \Delta NAIRU_{t-1} - 8,1908\, \Delta BIRATE_{t-2}$$
$$+ 4,0006\, \Delta DEPO_{t-2} - 1,2305\, \Delta PINJAMAN_{t-2} - 1,7910\, \Delta INVESTASI_{t-2}$$
$$+ 6,3911\, \Delta KONSUMSI_{t-2} - 9,4211\, \Delta OUTPUTGAP_{t-2}$$
$$+ 1,0206\, \Delta INFLASI_{t-2} - 0,920921\, \Delta NAIRU_{t-2} + \varepsilon_t$$

Then for the short-term estimation results show that the Inflation variable in the first lag has a positive effect on the NAIRU variable at a critical value of 5% of 2.62%. It means, if there is an increase of 1 percent in the previous period, it will increase NAIRU by 2.62%. Then for the short-term estimation results show that the Inflation variable in the first lag has a positive effect on the NAIRU variable at a critical value of 5% of 2.62%. It means, if there is an increase of 1 percent in the previous period, it will increase NAIRU by 2.62%.

$$\Delta NAIRU_t = 0,046124 - 0,005302\, \Delta INFLASI_{t-1} - 0,000921\, \Delta BIRATE_{t-1}$$
$$- 0,000433\, \Delta DEPO_{t-1} - 0,003799\, \Delta PINJAMAN_{t-1}$$
$$+ 4,1408\, \Delta INVESTASI_{t-1} - 3,9508\, \Delta KONSUMSI_{t-1}$$
$$+ 4,3708\, \Delta OUTPUTGAP_{t-1} + \varepsilon_t$$

Furthermore, for the long-term relationship or influence that occurs between inflation and NAIRU in the monetary policy transmission mechanism, the interest rate path is in the long run NAIRU has a negative relationship to inflation of 0.005%. This means that if there is an increase in inflation of 1 percent then in the long run it will cause the value of NAIRU to decrease by 0.005%.

As for the discussion on the Impulse Response Function test on the monetary policy transmission mechanism of the interest rate path shows that the response of the NAIRU variable has a negative movement direction. So if inflation experiences a shock or shock, the effect of NAIRU movement tends to decrease. As for the influence of the inflation variable if NAIRU experiences a shock, the direction of movement tends to rise or be positive.

Table 4.2: Variance Decomposition Test Results for NAIRU

Period	1	2	3	4	5	6	7	8	9	10
NAIRU	100%	95%	84%	70%	62%	56%	51%	48%	45%	43%
INFLASI	0%	1%	9%	20%	27%	31%	35%	37%	39%	40%

Source: Data processed with Eviews 8.0

From the results of variance decomposition, it can also be seen that all predictions of the contribution of the variance percentage of each variable to the final target of inflation and

NAIRU alternative targets in the transmission mechanism for monetary policy are expected in Indonesia in the next 10 periods.

The result is a prediction of the contribution of the percentage of the variable NAIRU to the change in the NAIRU variable itself by 100% in the first period. While in the tenth period, the magnitude of the contribution of the NAIRU variable variant to the change in the variable itself was 43% and the percentage of inflation by 40%, the remaining 17% was explained by other variables in the model.

Table 4.3: Results of Variance Decomposition Tests for Inflation

Period	1	2	3	4	5	6	7	8	9	10
NAIRU	8%	8%	16%	30%	38%	40%	40%	40%	40%	39%
INFLASI	92%	82%	66%	51%	41%	37%	34%	32%	32%	30%

Source: Data processed with Eviews 8.0

Furthermore, the results of the Variance Decomposition test for Inflation for the transmission mechanism of monetary policy for the interest rate path are prediction of the contribution of the percentage of inflation variance to changes in the inflation variable itself by 92% in the first period and 8% explained by the NAIRU variable. Whereas in the tenth period the percentage contribution of the inflation variant to the change in the inflation variable itself was 30%, and was explained by the NAIRU variable by 39% while the rest was explained by other variables in the model.

Research Implications

Monetary policy is not something that stands alone, but there is interdependence on various variables in a country's economy. On the one hand, monetary policy is much influenced by various factors in the economy, and on the other hand monetary policy also directly affects monetary and financial conditions which in turn will affect the real sector conditions. The implementation of monetary policy transmission mechanism cannot be done from other macroeconomic policies, such as fiscal policy, sectoral policies or other policies.

Furthermore, because this study discusses the comparison between the final target of inflationary monetary policy and the alternative target of NAIRU, it can be seen that the value of the percentage of NAIRU is higher than inflation. This shows that the NAIRU variable has a greater influence than inflation on the transmission mechanism of monetary policy in the interest rate channel in Indonesia. The NAIRU variable can be used as an alternative target for the monetary policy transmission mechanism because the NAIRU variable has a direct influence on the real sector compared to the influence of the Inflation variable on the real sector. If NAIRU is used as an alternative target for monetary policy, monetary policy will be more effective in influencing macro policy objectives and stabilizing economic growth.

Next because in this study Inflation and NAIRU have a trade off or negative relationship, the implication is the first, that the economy can run at various levels of employment and its consequences for output. Then the second, it can be suggested that unemployment can decrease

or decrease without an increase in inflation to a certain unemployment rate or NAIRU. Next for the third implication, the government can choose to run the economy at an even lower unemployment rate if the government wants it but with the consequent increase in the cost of inflation.

Finally, why can't Indonesia use the NAIRU concept even though the NAIRU concept can be further developed in the economy in Indonesia? This is because, an analysis of the growth model shows that NAIRU-based policies on curbing real wages and deregulating the labor market can actually suppress accumulation and growth, steadily advance technology, and thus significantly inhibit productivity growth without reducing unemployment. These effects are found to occur in economies led by high wages, but we have seen that NAIRU-based policies are likely to reduce the growth of labor productivity in profit-driven systems as well.

CONCLUSION

From the results of the research that has been carried out, it can be concluded that by using the basis of the Phillips curve theory, the alternative target of NAIRU has a greater influence on the mechanism of monetary policy transmission in the interest rate path in Indonesia compared to the final target of inflationary monetary policy in Indonesia. This is because NAIRU has a direct influence on the real sector such as wages and labor, compared to inflation which has a faster effect on prices. Furthermore, NAIRU also has a greater influence on the transmission mechanism of monetary policy in the interest rate path in Indonesia compared to macroeconomic variables in models such as the output cap and Bank Indonesia reference rates.

Next are some suggestions that can be delivered from this research, both for academics and policymakers. The first suggestion for academics or further research can complement this research by using another approach in carrying out NAIRU estimates and with more complete case studies. Whereas suggestions for policymakers are expected to be more considerate of NAIRU's alternative targets for upgrading Indonesia's monetary policy targets. By using NAIRU's alternative targets, the government can help solve solutions in the high unemployment rate and monetary authorities can also stabilize the Rupiah value based on real sector movements such as consumption and income.

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