THE IMPACT OF INFLATION TARGETING PROVISIONS ON THE INDONESIAN ECONOMIC GROWTH

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ABSTRACT

The Inflation Policy Regulations use Bank Indonesia certificate interest rate variables, inflation and core inflation. The aim of this study is to determine the effect of inflation targeting policy variables on Indonesia's economic growth. This research method uses primary data and uses the Vector Error Correction Model (VECM) method. The results of the study show that investment credit interest rates, inflation GAP, GDP GAP, inflation and GDP have an effect on economic growth.

***Keywords**: Inflation Targeting Provisions, Economic Growth*

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INTRODUCTION

Economic growth is an indicator of whether a country is successful in implementing its economic policies. Economic growth is also known as a long-term increase in the ability of a country to provide more and more goods to its population, this ability increases according to technological and other advances (Kuznetz, 1971). One of the things the government has done is implementing monetary policy to achieve sustainable economic growth. Increasing national income every year is the goal of every country. Economic growth must go hand in hand, namely with good cooperation between the government, the public and the central bank as a determinant of monetary policy within a country. The measurement of national income, namely Gross Domestic Product, is by calculating the value of goods and services produced by a country in one year. Positive economic growth indicates an increase in the economy whereas if it is negative it indicates a decline (Mahendra, 2012). In accordance with Law no. 23 of 1999 concerning Bank Indonesia and has been amended to become Law no. 3 of 2004, Indonesia's monetary policy is intended to be able to influence the country's goals, namely stabilizing the exchange rate and maintaining its stability which implies price stability (inflation rate) and stability of the rupiah exchange rate so that later after achieving the intended target it will also have an impact on economic growth.

In Indonesia, it is currently using the Inflation Targeting Framework (ITF), which is a policy implemented by Bank Indonesia since 2005 until now. Inflation Targeting (IT) focuses on a specific inflation numerical target. IT was first implemented in New Zealand and Chile in 1990 then followed by Canada in 1991, and England in 1992. Monetary policy provisions are systematic rules for formulating monetary authorities that should determine or adjust policy instruments as a reaction to inter-economic variables monetary, financial, real sector banking implemented in Indonesia. The ITF has a distinctive feature, namely the announcement to the public of the inflation target to be achieved in a country, because explicitly low inflation is the goal of monetary policy (Samuelson, 2004; Hussein, 2010). In the Inflation Targeting provisions, nominal interest rates are set in line with changes in the independent variable, so that inflation is directed and reduces the possibility of an output gap occurring. The Inflation Targeting Framework is carried out in a forward-looking manner, namely changes in monetary policy are carried out by evaluating whether future inflation developments are still in line with the inflation target that has been proclaimed (Bank Indonesia, 2013). Substantially, inflation targeting, which is a policy in Indonesia, has the following characteristics (Mishkin, 2001): The Inflation Targeting Framework is carried out in a forward-looking manner, namely changes in monetary policy are carried out by evaluating whether future inflation developments are still in line with the inflation target that has been proclaimed (Bank Indonesia, 2013; Samuelson et al,2007). Substantially, inflation targeting, which is a policy in Indonesia, has the following characteristics (Mishkin, 2001): The Inflation Targeting Framework is carried out in a forward-looking manner, namely changes in monetary policy are carried out by evaluating whether future inflation developments are still in line with the inflation target that has been proclaimed (Bank Indonesia, 2013). Substantially, inflation targeting, which is a policy in Indonesia, has the following characteristics (Mishkin, 2001):

(1.) There is an open announcement with a real target (stating a clear figure) regarding the amount of inflation.
(2.) There is a strong institutional commitment to realize price stability as the main goal of monetary policy where the other goals are subordinate to this IT policy.
(3.) This policy uses various variables, not only monetary aggregates and domestic currency exchange rates which are used as information in setting policy instruments,
(4.) Improving transparency and monetary policy strategy through communication with the public and market regarding plans, objectives, and decisions taken by monetary authorities, and
(5.) Increasing central bank accountability to achieve the desired inflation target.

Monetary policy is consistent with the Inflation Targeting Framework, which includes four basic elements (Bank Indonesia, 2007): (1.) The use of the BI rate as a policy reference rate (2.) Anti-passive monetary policy formulation process. (3.) A transparent communication strategy, and (4.) Strengthening policy coordination with the government.

This framework is carried out by announcing to the public regarding the inflation target to be achieved in a certain period. *Inflation Targeting* aimed at achieving the inflation target for the next few years. The goal is to achieve low inflation. Then the central bank announces to the public the inflation target so that any policies taken will be in accordance with that target as a reference. The variables targeted each year are GDP and inflation to improve effectiveness and governance to achieve price stability to support social welfare and sustainable economic growth. The new monetary policy framework implemented by Bank Indonesia plays an important role in strengthening it so as to realize price stability. This framework not only enhances effectiveness and governance but also strengthen policy coordination with the government. The ITF uses policies based on interest rates, inflation and GDP.

Inflation Targeting was chosen for several reasons, namely:

(1.) Meet sound monetary principles.
(2.) In accordance with Law no.23/1999 which was subsequently revised by Law no.3/2004.
(3.) Research results show that the previous framework (Monetary Base Targeting) is considered increasingly difficult to implement because the economy is increasingly dynamic.
(4.) Empirical experience shows that the IT Framework can be implemented and is successful without increasing the output velocity.
(5.) Can increase the credibility of BI as inflation control through a commitment to achieving targets.

Basically the Inflation Targeting Framework (ITF) uses Bank Indonesia certificate interest rate variables, inflation and core inflation. This study seeks to analyze how the ITF variables applied when used in Indonesia, and to determine the impact on economic growth in Indonesia.

Problem Formulation

Based on the background of the problems above, the problems to be examined in this study are:

1. Knowing the influence of the Inflation Targeting Framework monetary policy variables based on inflation, core inflation and GDP on economic growth in the period 2009:01-2014:12.
2. Knowing the response of economic growth to the Inflation Targeting Provisions variables, namely inflation, core inflation and GDP for the period 2009:01-2014:12.
3. Knowing the percentage contribution of the variance of each variable in the Inflation Targeting Framework, namely inflation, core inflation and GDP to economic growth for the period 2009:01-2014:12

Formulation Hypothesis

H1. It is suspected that inflation has a positive effect on economic growth.
H2. It is suspected that core inflation has a negative effect on economic growth.
H3. It is suspected that GDP has a positive effect on economic growth.
H4. It is suspected that economic growth responds positively to the shock that occurs in the Inflation Targeting Provisions variable, namely inflation, core inflation and GDP for the period 2009:01-2014:12.
H5. It is suspected that the Inflation Targeting Provisions variables, namely inflation, core inflation and GDP contributed to economic growth in the period 2009:01- 2014:12.

METHODS

In this research, the type of data used is secondary data. This data comes from Bank Indonesia (www.bi.go.id), Central Bureau of Statistics (www.bps.go.id). The data used is time series data. The data analysis method used in this paper is a quantitative analysis method using the Vector Error Correction Model (VECM) to determine the effect of the independent variables on the dependent variable. By using the functional model, the following equation is obtained (Gujarati, 2003; Widarjono, 2007).

Y= f(X1,X2,X3,…Xn)

The functional function model can be formulated as follows:
inflation Targeting Framework(ITF)

GDP= (GDP, INF, P)
INF = Inflation
GDP = GDP
P = Core inflation

The general econometric model is as follows:

Inflation Targeting Framework:

$$GDP = \beta_0 + \beta_1 BI\ RATE + \beta_2\ INF + \beta_3\ P + \varepsilon_t$$

GDP = Indonesia's Gross Domestic Product

BI Rate= Bank Indonesia certificate interest rate (%)
INF = Inflation
P = Core inflation

The analysis begins with testing the non-stationarity of each variable using the test developed by Augmented Dickey Fuller and Phillips Perron. To answer the problems in this study, the analytical tool used in this research is VECM. The model used in the regression equation that uses time series data is related to the problem of stationarity and cointegrity between the variables in it.

The VECM models in this study are:

Pada *Inflation Targeting Framework* (ITF)

$$GDP_t = \gamma_0 + \sum_{i=1}^{n} \gamma_1 BIRATE_{t-1} + \sum_{i=1}^{n} \gamma_2 INF_{t-1} + \sum_{i=1}^{n} \gamma_3 P_{t-1} + \gamma_4 ec_{t-1}$$

FINDING AND DISCUSSION

Table 1 Test for stationarity in the application of the Inflation Targeting framework for the period 2009:01-2014:12

Variable	Intercept	Intercept and Trends	No Interception and Trends	Order
GDP	4.287330**	0.345766	4.263677**	1(0)
BI RATE	-1.291595	-1.569070	0.374215	1(0)
INF	-2.035005	-3.601541**	-0.585735	1(0)
P	-6.624693**	-5.383303**	-2.244931**	1(0)

** Significant with 95% confidence level

The results of the unit root test were carried out by formulating the elements of intercept, intercept and trend, and without intercept and trend with a 95% confidence level. The test results show that there are statistical values greater and less than MacKinnon, which shows that not all variables contain unit roots or in other words not all are stationary at the order level. In the BI RATE variable there is nothing that contains a unit root or is not stationary, while in the INF variable only intercepts that contain a unit root and on core inflation everything is stationary. Because the results of the unit root test show that not all variables contain unit roots, a stationarity test is performed on the first difference.

Table 2. ITF Unit Root Test Results with the first order difference period 2009:01-2014:12

Variable	intercept	intercept and Trends	No Interception and Trends	Order
	-4.229806**	-4.384799**	-4.281433**	1(1)
P	-6.210117**	-6.100511**	-6.263301**	1(1)
GDP	-7.330369**	-1.125054**	-1.342823**	1(1)

** Significant with 95% confidence level

The results of the unit root test at order first difference I(1) in the application of ITF 2009:01-2014:12 show that all stationary variables are integrated at order I(1). Then all variables can be used in further analysis.

Cointegration Test

The data used to estimate the equations used as models for this study are stationary and before estimating equations using certain methods, a cointegration test is carried out first. The cointegration test was carried out in order to obtain the relationship between variables in which all variables were stationary at the order of first difference. The test method uses Johansen. Long-term information is obtained by first determining the cointegration rank to find out how many social systems can explain the entire existing system. Cointegration testing in this study is based on trace statistics. If the trace statistics value is greater than the critical value of 5%, then the alternative hypothesis is accepted which states the number of cointegrating ranks.

Table 3. Cointegration Test Results at ITF

Hyhypothesis No	Trace Statistics	5% Critical Value
0	101.5133	47.85613
1	49.35030	29.79
2	13.40217	15.49
3	3.978996	3.84

Table 2 shows that the ITF equation model has four cointegrated vectors at the 95% confidence level. So that the equation model in this study can use the VECM model.

determinantand Lag Optimum

It is necessary to determine the length of the lag. Some economic events cannot directly affect other economic variables. It takes time (lag) for an economic variable to respond to shocks or shocks that occur in other variables. In determining the optimum lag can be done by using some information criteria. In this study using the Akaike Information Criterion, which is based on the shortest lag from the smallest AIC standard.

In addition, the use of optimum lag is also very important because in the system of equations it will be used as an exogenous variable. The use of optimum lag length is very useful for eliminating autocorrelation problems in VAR.

The optimum lag test results are as follows

Table 4. ITF Provisions Optimum Lag Test Results

Persame	AIC	Lag
Inflation Targeting Framework	8.999064*	3

From the results seen using the Akaike Information Criterion (AIC) method, it can be seen that Taylor's provisions indicate that all variables have an effect on economic growth. Based on the results of the optimum lag test, the model has an optimum lag in the ITF provisions, this indicates that simultaneously exogenous variables affect endogenous variables in the model.

Table 5. VECM estimation results at ITF

Miscellanybell	Long-term	Short Term (-1)	Short Term (-2)
BI RATE	-0.000330	0.039189	0.278395
	[-0.80855]	[0.35548]	[2.65425]
INF	478.4642	-1.034919	5.739381
	[3.37026]	[-0.33876]	[1.83752]
P	-1889,602	-10.58332	-6.016820
	[-1.31184]	[-1.41625]	[-0.82285]
GDP	1.000000	-0.715461	-0.579230
		[-5.77223]	[-4.66280]

To find out whether the variables used have an effect on long-term economic growth, a comparison of t-statistics and t-tables can be done. . The t-table value obtained is 1.980 for the one way test. The null hypothesis (H0) is rejected and Ha is accepted if t-statistics > t-table, the variable relationship is significant at the 5% level. From the estimation results, it can be seen that all independent variables have a significant effect on economic growth.

Impulse Response Function

Impulse Response Function analysis was used using 10 observation periods with the Cholesky Decomposition method. It is assumed that the use of the observation method is sufficient to represent short-term and long-term analytical observations.

Table 6. Variance Decomposition Analysis on Inflation Targeting Framework.

VD	S.E.	BI RATE	GDP	INF	P
1	0.147668	100,0000	0.000000	0.000000	0.000000
2	0.228233	97.94855	0.048153	0.512812	1.490488
3	0.292399	96.05286	0.032335	1.472637	2.442164
4	0.343170	95.12122	0.023506	2.476191	2.379084
5	0.382347	94.51082	0.018939	3.367451	2.102787
6	0.413112	93.91672	0.016233	4.157449	1.909596
7	0.438026	93.34812	0.014793	4.831092	1.805992
8	0.458436	92.87613	0.013782	5.364289	1.745802
9	0.474956	92.53291	0.012882	5.756742	1.697463
10	0.488139	92.29685	0.012232	6.034126	1.656794

The results of the variance decomposition shown in the following table that in the application of ITF, the movement of the BI RATE is influenced by the BI RATE itself, which reaches 100 percent. Until the last period, the movement of GDP was most influenced by GDP itself, which was 83.33 percent in the last period. Inflation affected the movement of GDP by 10.73 percent.

CONCLUSION

The results obtained from the VECM estimation in the Inflation Targeting Framework on economic growth are as follows:

1. In the long term, the BI RATE has a significant and positive effect on economic growth.

2. In the long run, core inflation has a significant and negative effect on economic growth. Core inflation goes down then economic growth will go up.

3. In the long run, inflation has a significant and positive effect on economic growth.

4. From the results of the Impulse Response function test, GDP responds positively to all variables in the Taylor Provisions and the variables in the application of the Taylor Provisions continue to increase continuously until the end of the observation period for both the inflation gap and investment credit interest rates.

5. The results of the Impulse Response Function test respo
nd positively to all variables in the Inflation Targeting Framework and the variables in the application of the Inflation Targeting Framework continue to increase continuously until the end of the observation period for both core inflation and GDP.

6. The results of the Variance Decomposition analysis show that besides GDP itself, the application of the variable that contributes the most is GAPINF, investment credit interest rates also make a positive contribution to GDP, where monetary policy will affect economic activity in the real sector. Each variable has a different contribution to other variables.

7. The results of the Variance Decomposition analysis show that the movement of GDP is most influenced by GDP itself. In addition, inflation contributed significantly.

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