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Linkage of Money Growth on Inflation and Economic Growth – Evidence from Indonesia

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Abstract
This study is about money growth, and its linkage on inflation and economic growth. It was found that money growth in the previous period affected by 0.1539 on changing of economic growth, inflation affected by -0.2637 on economic growth, and money growth affected changing of inflation by 1.0468. Money growth is a source of economic growth but it will then induce economic shocks stemming from inflation, then money growth must refer to normal growth. It was found that normal money growth is 16.7631%. Because deviation of money growth in a certain period from its normal growth will affect inflation and economic growth, money growth must be controlled by a small deviation from its normal growth. This method on determining normal money growth can be used as reference to Bank Indonesia in determining economic growth and inflation, and to commercial banks in determining interest rates.

Keywords: Economic Growth, Inflation, Money Growth, Normal Growth of Money

Hubungan Pertumbuhan Uang Beredar dengan Inflasi dan Pertumbuhan Ekonomi - Bukti dari Indonesia

Abstrak
Penelitian ini membahas mengenai pertumbuhan uang, dan hubungannya dengan inflasi dan pertumbuhan ekonomi. Hasil penelitian menunjukkan bahwa pertumbuhan uang pada periode sebelumnya berpengaruh sebesar 0.1539 terhadap perubahan pertumbuhan ekonomi, inflasi berpengaruh sebesar -0.2637 terhadap pertumbuhan ekonomi, dan pertumbuhan uang berpengaruh terhadap perubahan inflasi sebesar 1.0468. Pertumbuhan uang merupakan sumber pertumbuhan ekonomi namun kemudian akan menimbulkan guncangan ekonomi yang berasal dari inflasi, maka pertumbuhan uang harus mengacu pada pertumbuhan normal. Ditemukan bahwa pertumbuhan uang normal adalah sebesar 16.7631%. Karena deviasi pertumbuhan uang pada periode tertentu dari pertumbuhan normalnya akan mempengaruhi inflasi dan pertumbuhan ekonomi, maka pertumbuhan uang harus dikontrol dengan deviasi yang kecil dari pertumbuhan normalnya. Metode penentuan pertumbuhan uang normal ini dapat digunakan sebagai acuan bagi Bank Indonesia dalam menentukan pertumbuhan ekonomi dan inflasi, serta bagi bank-bank umum dalam menentukan tingkat suku bunga.

Kata Kunci: Pertumbuhan Ekonomi, Inflasi, Pertumbuhan Uang, Pertumbuhan Uang Normal

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INTRODUCTION

In economic system, money has a very important role. The role of money as a tool of transactions of goods and services (medium of exchange), as a unit of account, as a store of

value and as liquidity, then money has a very strategic role in the sustainability of economic development. Due to the importance role of money in economy, economic performance of each country is greatly influenced by the availability of money, both in the financial system and hold by the public (Mishkin, 2016). When there is sufficient money available in economic system, it could then stimulate economic growth, increasing economic performance of real sectors, and then reducing unemployment rate. Vice versa, when there is insufficient money available, the economy will be in a sluggish phase, and the economy will face contractionary situation (Beck & Poelhekke, 2017; Dornbusch et al., 2008; Mankiw, 2016; Ziegenbein, 2021).

Thus, the availability of money will greatly affect economic development. Due to the utility of money in economic circulation, the quantity of money is always changing from time to time. Measuring the growth of money becomes very important because it will affect the economy as a whole. High money growth will stimulate higher economic growth, and vice versa, if money growth decreases, economic growth will also decrease. Therefore, there is a direct positive relationship between money growth and economic growth.

However, the growth of money cannot be allowed to continue indefinitely instead of hoping that it will always have an impact on increasing economic growth. The higher the money growth continuously will actually worsen the economy by an increasing of inflation. A high inflation rate will then reduce economic growth due to the tradeoff between inflation and economic growth, but when the growth of money is too low will also have an impact on economic contraction or a decreasing of economic growth (Chu et al., 2017; Handa, 2009; Mishkin, 2007).

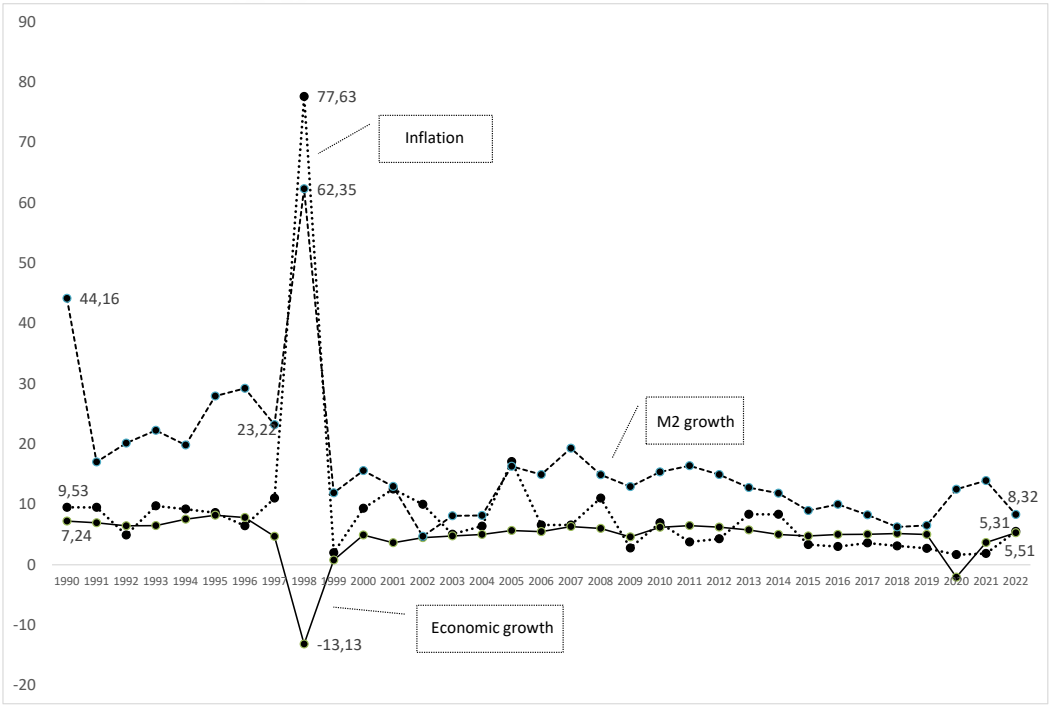
Based on data obtained in Indonesia economy over the last three decades from 1990 to 2022, average growth of money M2 is 16.75%, average of inflation rate is 8.88% and average of economic growth is 4.72% (Figure 1). Money growth and economic growth are relatively moving in the same direction, but inflation and economic growth are relatively moving in the opposite direction. When there is an increasing of money growth, economic growth tends to increase, and vice versa, when money growth decreases, economic growth also tends to decrease. The opposite takes place in the relationship between inflation and economic growth. When inflation increases, economic growth decreases, and vice versa, when inflation decreases, economic growth increases.

However, data presented in Figure 1 does not move as smoothly as described above. Based on data presented in Figure 1, when money growth increases in the previous period, changing of economic growth tends to increase. Meanwhile, when current inflation rate tends to be high, changing of economic growth tends to decrease. Although it does not always move in the same direction in every period, but in general there is a tendency for money growth moving in the same direction as inflation is. Referring to Figure 1, it is quite clear that inflation rate tends to move in the same direction as money growth does. High money growth tends to be followed by high inflation, and vice versa, when money growth is low, inflation also tends to be low. The growth of money will affect an increasing of economic growth, followed by an increasing of inflation rate that will further slowing down

economic growth due to the tradeoff between economic growth and inflation (Blanchard et al., 2015; Chipeniuk & Walker, 2020; Romer, 2012; Sipahutar, 2021).

This study is focused on examining Indonesia economy over the last three decades (1990 to 2022) to explore to what extent the relationship between money growth and inflation to economic growth, and to what extent the relationship between money growth and inflation. Although there are quite a lot of studies explaining the relationship between money growth, inflation and economic growth (Chipeniuk & Walker, 2021; Cho et al., 2021; Chu et al., 2017; Lee & Werner, 2018), this study also measures normal money growth which can be used as a reference to promote economic growth without an inflationary impact due to money growth. Through the normal growth rate of money, Bank Indonesia as a central bank can find out the impact of monetary policy on inflation and economic growth when predetermined money growth rate is corrected by normal growth rate of money.

Furthermore, through the normal growth rate of money, Bank Indonesia can predict future economic performance by finding out the impact of money growth when it is below or above the normal growth rate of money (Bernanke & Mihov, 1998; Lee & Werner, 2018; Mishkin, 2007). Thus, based on the relationship between money growth and inflation, the relationship between money growth, inflation and economic growth, and the measurement of the normal growth of money, this study can be used as a reference for controlling inflation. In addition, this study can also be used as a reference on how to achieve an increasing of economic growth without significant inflation shocks stemmed from an increasing of money growth.



Source: Indonesia Statistics (bps.go.id)

Figure 1. Real Economic Growth, Inflation and Money Growth from 1990–2022 (percent)

Based on the quantity theory of money, the quantity of money is directly proportional to price and output (Dornbusch et al., 2008; Handa, 2009; Mankiw, 2016; Romer, 2012):

$$MV = PY \text{ .... } (1)$$

where M is the quantity of money, V is the speed at which money moves from one owner to another due to transaction activities, P is price, and Y is output or aggregate income or aggregate spending, so PY is nominal Gross Domestic Product (GDP). Changes in MV will always be proportional to changes in PY or nominal GDP. If it is determined that $k = \frac{1}{V}$ and k is assumed to be constant, then:

$$M = k.PY \text{ .... } (2)$$

which has implications for the relationship between the quantity of money to price and output. An increasing of the quantity of money will be directly proportional to the increasing of nominal GDP or higher economic growth. Then, an increasing of nominal GDP is synonymous with an increasing of price and/or output. Therefore, an increasing of the quantity of money will promote higher economic growth, but induced higher inflation. Furthermore, the above equation can also explain the real money balance as $\frac{M}{P} = kY$ where $\frac{M}{P}$ is real money balance. Changes in real money balance stemmed from changes the quantity of money and/or changes of price, will be directly proportional to the changes of output at constant k.

However, the quantity of money supply is only determined by the central bank through various monetary policy instruments, and the supply of money is perfectly inelastic with respect to price. Monetary contraction policy will reduce price or disinflation, and monetary expansion policy will promote increasing of price or inflation according to the quantity theory of money mentioned above. Therefore, inflation will always be a monetary phenomenon as expressed by Milton Friedman (Bernanke, 2017; Cho et al., 2021; Handa, 2009; Maux & Scialom, 2013; Mishkin, 2007).

There for, the availability of money and the growth of money has a very strategic role to encourage an increasing of aggregate output and promoting economic growth. In addition to the quantity theory of money as mentioned in Equation (1), money balance can also be described by the *ISLM* model. An increasing of economic growth through an increasing of money growth can be explained by the *LM* model expressed as (Handa, 2009; Mankiw, 2016; Romer, 2012):

$$\frac{M}{P} = f\left(\underbrace{i}_{-}, \underbrace{Y}_{+}\right) \text{ .... } (3)$$

where *f(i, Y)* explains that real money balance as a function of nominal interest rate and output. The relationship between nominal interest rate and the real money balance is negative, while the relationship between output and the real money balance is positive. An increasing of money balance will reduce nominal interest rate, and vice versa, an increasing of money balance will increase output. Money balance will also affect inflation, interest rate and output. An increasing of real money balance will decrease interest rate, and then promote an increasing of economic real sectors through increasing of investment. An increasing of investment will then further increase the magnitude of economic aggregate which reflected by higher economic growth (Benhabib & Spiegel, 2000; Bernanke & Gertler, 1995; Levine, 2003; Levine & Zervos, 1998; Levine et al., 2000; Rioza & Valev, 2014).

Furthermore, while the real money balance affected nominal interest rate and output, the real money balance will also affect other factors such as yield on bonds, yield on stocks and expected inflation (Bernanke & Gertler, 1995; Bernanke & Gertler, 1999; Handa, 2009; Maux & Scialom, 2013; Mishkin, 2016; Rioza & Valev, 2014). These three factors are out of control of monetary authorities. Even though these factors are outside the monetary authority, the effect of these factors are still corrected by the real interest rate, then monetary authority can also influence them indirectly through nominal interest rate. Because the real interest rate is related to nominal interest rate according to Fisher's theory, in essence, money balance can still also be controlled by the central bank indirectly. Milton Friedman in his theory of money balance by including these three factors was expressed (Handa, 2009; Mishkin, 2016):

$$\frac{M}{P} = f\left(\underbrace{Y}_{+}, \underbrace{r_b - r_m}_{-}, \underbrace{r_e - r_m}_{-}, \underbrace{\pi^e - r_m}_{-}\right) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

where r_b is yield on bonds, r_e is return on equity/stocks, π^e is expected inflation, r_m is real interest rate. The positive and negative signs describe the variables relation to money balance.

However, even though the role of money is very important in the economy through an increasing of economic aggregate, a sustained increasing of output will have an impact on rising inflation due to the tradeoff between output and inflation as stated (Romer, 2012):

$$\pi_t = \pi_t^e + \lambda(lnY_t - ln\bar{Y}) + \varepsilon_t^s, \quad \lambda > 0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

where $\bar{Y}$ is the level of output associated with wages and employment that would prevail if price were fully flexible, or natural rate of output, and π^e is expected inflation or core inflation or underlying inflation. The $\lambda(lnY_t - ln\bar{Y}_t)$ term implies that at any time there is an upward sloping relationship between inflation and output, and the ε^s term capture supply shocks. Nevertheless, expected inflation $\pi_t^e = \pi_{t-1}$ then π_t^e does not need to be interpreted as expected inflation but as actual inflation in the previous period (Romer, 2012). Thus, money growth is initially needed to increase economic growth through lowering interest rate, but will eventually result an increasing of inflation. Therefore, it is necessary to know

how far the impact of money growth on economic growth and inflation so that the central bank can set strategic actions to control inflation shocks.

Regarding to the quantity theory of money mentioned above on Equation (1), even though the quantity of money is directly proportional to price, an increasing of money supply does not have a direct inflationary effect or increase inflation. Because of money supply is perfectly inelastic with respect to price, increasing of quantity of money will initially affect decreasing of interest rate, then stimulate an expansion of economic real sector and promote higher economic growth (Balk et al., 2020; Blanchard et al., 2015; Cho et al., 2021; Hassan et al., 2011; Romer, 2012; Ziegenbein, 2021). Thus, tradeoff between output and inflation is a transitory phase from the phenomenon of money growth to inflation. Due to the transitory phase, it is important to manage money growth rate in such a way that central bank can set policies to promote sustainable economic growth without any shocks stemmed from inflation (Aghion et al., 2010; Blanchard, 2018; Cho et al., 2021; Sipahutar, 2021).

In order to discuss the linkage of growth of money, inflation and economic growth in Indonesia economy, the structure of this paper is divided as follows. Section 2 describes method, Section 3 describes finding and discussion; and conclusion in Section 4.

METHOD

This study used Indonesia economic data from 1990 to 2022 about money growth M2 (in percentage), real economic growth (real Gross Domestic Product, in percentage), and inflation rate (consumer price index, in percentage) obtained from the Indonesia Statistics (www.bps.go.id). The selection of the 1990-2022 period was based on the consideration that during that period Indonesia experienced a monetary crisis in 1997/1998 and then the global financial crisis in 2008. As explained above, output growth is influenced by money growth and inflation. Increasing of money growth in the previous period will result a decreasing of interest rate, then promote increasing changes of output growth due to economic expansion of economic real sectors. There is a positive relation between money growth and economic growth. Meanwhile, there is a negative relation between inflation rate and economic growth. An increasing of inflation will distort economy. Therefore, estimated model for the relation between money growth and inflation on changing of economic growth is:

$$gY_t - gY_{t-1} = \emptyset_1 + \emptyset_2 gM2_{t-1} - \emptyset_3 \pi_t + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6)$$

where gY_t and gY_{t-1} are real economic growth at current and previous period, $gM2_{t-1}$ is money growth at previous period, $\emptyset_1$ is intercept, $\emptyset_2$ is coefficient that indicate the effect of money growth in previous period on changing of economic growth, $\emptyset_3$ is coefficient that indicate the effect of current inflation on changing of real economic growth, and ε_t is the residual variable.

Furthermore, based on Equation (5), there is a positive relation between economic growth and inflation. Meanwhile, based on the quantity theory of money in Equation (1),

quantity of money is directly proportional to price. Thus, money growth *gM2* has a positive effect to increase changing of inflation, and stated as:

$$\pi_t - \pi_{t-1} = \lambda_1 + \lambda_2 . gM2_t + \epsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7)$$

where π_t and π_{t-1} are inflation at current and previous period, $gM2_t$ is money growth at current period, λ_1 is intercept, λ_2 is the coefficient that indicate the effect of current money growth on changing of inflation, and ϵ_t is residual variable.

Furthermore, Phillips curve known as the modified Phillips curve or expectations-augmented Phillips curve, can be used to determine normal rate of unemployment or non-accelerating inflation rate of unemployment (NAIRU). NAIRU is a condition when inflation is stable, where $\pi_t - \pi_{t-1} = 0$. Using this approach, Equation (7) can be expressed as $\lambda_1 + \lambda_2 . gM2_t = 0$, and the level of money growth where inflation rate is stable is the normal growth of money or $\overline{g_n}M2$, expressed as:

$$\overline{g_n}M2 = -\frac{\lambda_1}{\lambda_2} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (8)$$

By entering Equation (8) into Equation (7), obtained:

$$\pi_t - \pi_{t-1} = -\lambda_2 . \overline{g_n}M2 + \lambda_2 . gM2_t$$

$$\pi_t - \pi_{t-1} = \lambda_2 \, (gM2_t - \overline{g_n}M2) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (9)$$

Equation (9) above explains the role of the normal growth rate of money $\overline{g_n}M2$ which can be used as a reference to keep stable inflation and promote higher economic growth without shocks stemmed from inflation. If money growth $gM2_t > \overline{g_n}M2$, then results higher inflation where $\pi_t > \pi_{t-1}$, if $gM2_t < \overline{g_n}M2$ then results lower inflation where $\pi_t < \pi_{t-1}$ or disinflation, and even toward deflation if it continues for several periods, and if $gM2_t = \overline{g_n}M2$ then there is a stable inflation, or $\pi_t = \pi_{t-1}$.

FINDING AND DISCUSSION

This study describes the relationship between money growth and inflation toward economic growth, the relationship between money growth and inflation, and the measurement of the normal growth of money, using data on the Indonesia economy for more than three decades, from 1990 to 2022. Therefore, the results and discussion are divided into two parts according to the focus of the discussion. The first part will discuss the relationship between money growth and inflation toward economic growth, and the second part will explain the relationship between money growth and inflation, as well as the measurement of normal growth of money.

Effect of Money Growth and Inflation to Economic Growth

Based on data obtained in Indonesia economy, money growth, inflation and economic growth were stationary at their level. This study used Ordinary Least Square (OLS) method to estimate relationship between money growth and inflation to economic growth (Table 1).

This study found that there is a positive relationship between money growth in the previous period $gM2_{t-1}$ and changes of economic growth $gY_t - gY_{t-1}$, and a negative relationship between inflation at current period π_t to changes of economic growth:

$$gY_t - gY_{t-1} = -0.3426 + 0.1539\, gM2_{t-1} - 0.2637\, \pi_t \quad \ldots\ldots\ldots\ldots \quad (10)$$

The relationship generated through data for more than three decades is consistent with the underlying economic theory background. Money growth at previous period $gM2_{t-1}$ resulted an increasing changing of economic growth by 0.1539 basis points, and the effect was significant by $p_{value} = 0.0013$ with a variance by 0.0431. Furthermore, current inflation π_t result a decrease changing of economic growth by 0.2637 basis points, and the effect is significant expressed by $p_{value} = 0.0000$ with a variance by 0.0377. Based on the estimated model above, 66.25% variance of changing of economic growth $gY_t - gY_{t-1}$ stemmed from money growth at previous period and inflation at current period. The relatively large R^2 explains that the factors of money growth and inflation play an important role in determining the variance of economic growth in such a way that these two factors become important determinant for economic policy to achieve planned economic growth.

During the period from 1990 to 2022, the average money growth in Indonesia that was 16.75% played a significant role on achieving economic growth by an average of 4.72%. However, because of the money growth is not the only one factor to influence the growth of output but also from many other factors including consumption, investment, government spending and net exports, then money growth indicator cannot be used separately as a tool for setting economic policies to lead economic growth (Aghion et al., 2010; Levine, 2003; Mishkin, 2007).

Table 1. *OLS Estimation on the Effect of Money Growth and Inflation to Economic Growth*

Dependent Variable: $\boldsymbol{gY_t - gY_{t-1}}$		
Sample (adjusted): 1991 2022		
Included observations: 32 after adjustments		
Variable	**Coefficient**	**Prob.**
$\emptyset_1$	-0.342637	0.7090
$\boldsymbol{gM2_{t-1}}$	0.153903	0.0013
$\boldsymbol{\pi_t}$	-0.263704	0.0000
R-squared	0.662523	
Adjusted R-squared	0.639248	

Furthermore, economic policy for determining money growth must also take into account the inflationary impact that it will be generated. Because of its role as a monetary authority, Bank Indonesia is the only one institution to determine of changing and influencing money supply, therefore, Bank Indonesia is also the only one institution that can determine shifting of money supply curve which is perfectly inelastic with respect to price and perfectly inelastic with respect to nominal interest rate. Even though monetary expansion and contraction policy which are entirely within the authority of Bank Indonesia for managing planned economic growth, Bank Indonesia has to be aware about increasing inflation stemmed from money growth (Blanchard et al., 2015; Levine et al., 2000; Levine et al., 2015; Mishkin, 2007). Due to the tradeoff between economic growth and inflation, sustainable economic growth at $Y_t > \bar{Y}$ will have an impact on increasing inflation. Thus, tradeoff between economic growth and inflation is a constraint function on maximizing money growth, expressed in:

$$max \ \frac{M}{P} = L\,(i, Y) \ \text{ subject to } \ \pi_t = \pi_t^e + \lambda(lnY_t - ln\bar{Y}) + \varepsilon_t^s \ldots\ldots (11)$$

According to the equation above, Bank Indonesia could be able to maximize real money growth (M/P) where *M* is money growth and *P* is price level that depends on interest rate *i* and economic growth *Y*. In order to achieve higher economic growth without shocks, there is constraint factor stemmed from inflation, where $\pi_t = \pi_t^e + \lambda(lnY_t - ln\bar{Y}) + \varepsilon_t^s$.

Effect of Money Growth to Inflation

Model estimation using OLS method for analyzing the relationship between money growth *gM2* and changes in inflation $\Delta\pi_t$ (Table 2) explained that there is a positive relationship between money growth at current period $gM2_t$ to changes in inflation $\pi_t - \pi_{t-1}$ stated as:

$$\pi_t - \pi_{t-1} = -16.7631 + 1.0468\, gM2_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (12)$$

The positive relationship is in accordance with the quantity theory of money in Equation (2). Changes in the quantity of money will always be proportional to changes in *PY,* where *P* is price level and *Y* is economic growth, so an increase in the quantity of money will also cause an increase in price or inflation.

Table 2. *OLS Estimation on the Effect of Money Growth to Inflation*

Dependent Variable: $\boldsymbol{\pi_t - \pi_{t-1}}$		
Sample (adjusted): 1991 2022		
Included observations: 32 after adjustments		
Variable	**Coefficient**	**Prob.**
$\boldsymbol{\lambda_1}$	-16.76309	
$\boldsymbol{gM2_t}$	1.046813	
R-squared	0.339829	
Adjusted R-squared	0.317823	

The money growth will affect change of inflation by 1.0468 basis points, and significant at five percent degree of error indicated by $p_{value} = 0.0005$ with a fairly large variance by 0.2664. The fairly large variance of money growth has implications to inflation fluctuation. Therefore, it is necessary to manage money growth that is not too volatile in such a way so that its effects on changing of inflation can be more controlled. Too large fluctuations in money growth will eventually cause economic shocks stemming from inflation.

Furthermore, 33.98% of the variance of changing of inflation stemmed from money growth as indicated by the coefficient of determination R^2. Other factors that affect inflation such as supply chain shocks, exchange rates shocks and administered prices shocks (prices that are regulated by the government) will also stimulate higher inflation. That is why that three factors need to be taken into account when monetary authority sets the growth rate of money. The high effect of money growth on changing of inflation ($\lambda_2 > 1$), is a very important indicator to take into consideration when Bank Indonesia determined money growth policies.

Model estimation on the effect of money growth on changing of inflation must be interpreted that the magnitude of changes in inflation is greater than the magnitude of money growth. In other words, the increasing of inflation at current period will be greater than inflation at previous period, and the magnitude will be greater than the magnitude of the increasing of money growth. The implication is that increasing of money growth is a significant source of inflation shocks, and therefore need to be managed more carefully (Aghion et al., 2010; Beck & Poelhekke, 2017; Blanchard et al., 2015; Chu et al., 2017).

Although the increasing of money growth is initially a stimulus for increasing other sources of economic growth such as consumption, investment and government spending, however, money growth will eventually have an inflationary impact by a higher magnitude than the magnitude of money growth. Therefore, it is necessary to find out the normal growth rate of money $\overline{g_n}M2$ and using it as a reference for determining money growth rate in each period. Based on $\overline{g_n}M2 = -\frac{\lambda_1}{\lambda_2}$, and by using the estimated model obtained in Equation (12), the normal growth rate of money can be determined. The normal growth rate of money in Indonesia is $\overline{g_n}M2 = 16.7631\%$, then Equation (9) becomes:

$$\pi_t - \pi_{t-1} = 1.0468\ (gM2_t - 16.7631) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ (13)$$

The normal growth rate of money then can be used as a reference when Bank Indonesia sets the growth rate of money in every period. The 16.7631% money growth is the normal growth rate of money when inflation is stable or $\Delta\pi_t = 0$. In this situation, the economy is not subject to shocks stemmed from inflation. The implication is that the tradeoff between economic growth and inflation can then fully be controlled. Therefore, if $\overline{g_n}M2 = 16.7631\%$, economic growth can continue to achieve higher economic growth without inflationary impact, and the unemployment rate can be directed to the NAIRU level or the natural rate. Furthermore, if money growth $gM2_t > 16.7631\%$, then money growth will

affect an increasing of inflation that eventually hamper further economic growth, and if money growth $gM2_t < 16.7631\%$, the economy will face disinflationary situation, and the impact on the economy will get worse if that situation continues, or the economy will fall into a deflationary which will be more difficult to control than inflation.

CONCLUSION

Money growth plays an important role in the Indonesia economy, especially in economic growth and inflation. Money growth at previous period is positively related to the changing of economic growth. Therefore, to promote higher economic growth, higher money growth is also needed. However, money growth has a positive effect on changing of inflation. Money growth in current period has a positive effect on changing of inflation with a coefficient greater than one. Therefore, money growth has a high inflationary effect.

Inflationary effect of money growth which has a negative effect on changing of economic growth, has an implication on disrupting economic growth. Therefore, money growth must refer to the normal growth rate of money. In this study, a normal growth rate of money is 16.7631%. Deviation of money growth in a certain period from normal growth rate of money will greatly affect inflation and have an impact on declining economic growth. Because deviation of money growth in a certain period from its normal growth will affect inflation and economic growth, money growth must be controlled in a small deviation from its normal growth. This method on determining normal money growth can be used as reference for Bank Indonesia in determining economic growth and inflation, and for commercial banks in determining interest rates. Although this study provides an alternative method for determining normal money growth, further studies are needed on measuring normal economic growth. Using normal money growth and normal economic growth will strengthen economic policy making and avoids fluctuations that worsen economy.

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