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# Linkage of Money Growth on Banks Credit – Evidence from Indonesia

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KEY W O R D S
Banks Credit,
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A B S T R A C T
This study explained the banks credit growth both in total and by usage for investment, working capital and consumer, related to monetary policy and bank view perspective. By using OLS method, estimate model explained that change of money growth affects positively total credit growth, investment and working capital credit. The coefficient of change of money growth is smaller than one to investment and working capital growth, ceteris paribus, where the banks reserves and discount rate are constant. The coefficient is still quite small compared to the role of banks as transmission monetary channel and the ability of banks as money multiplier. For consumer credit, there is not enough strong evidence to suggest that money growth has a positive effect on consumer credit growth. There is a negative relationship between money growth to consumer credit growth and significant at α = 10%. Therefore, because consumer credit does not have a multiplier effect on economic growth, banks expansivity in consumer credit should be restricted when Bank Indonesia implements a monetary expansion policy, and diverts greater credit disbursement to investment and working capital usages to promote economic growth.

## 1. INTRODUCTION

Banks are special entity in the economy. The existence of banks in economy will result an economic efficiency and increasing the escalation of various business entities. Banks have an ability as financial bridging to various business entities through their inherent intermediary role (Bernanke & Gertler, 1995). Potential investors who had excess liquidity will not necessarily lend their excess liquidity directly into various business sectors that require liquidity. Potential investors will be faced to limited ability and resources to evaluate various business sectors in terms of risks. Vice versa, potential borrowers who had shortage liquidity will not necessarily find potential investors directly to overcome the lack of their liquidity. Potential borrowers will always face inability to find investors, as well as their inability to convince investors to finance their shortage. Therefore, banks as financial intermediary has a very important role for increasing economic aggregate (Greenwald, Krainer & Paul, 2021; Hassan, Mauro & Ottaviano, 2017).

The role of financial intermediaries owned by banks cannot be separated from the ability of banks as money multiplier. The smaller the reserves set by the bank or by the central bank, the greater the money multiplier effect, and vice versa. The role of banks as money multiplier will trigger an increasing of money supply (M2) so

that banks can multiply their financing to various economic sectors which has implications to promote economic growth (Mishkin, 2007). Of course, the rate of money multiplier become an important indicator for the economy.

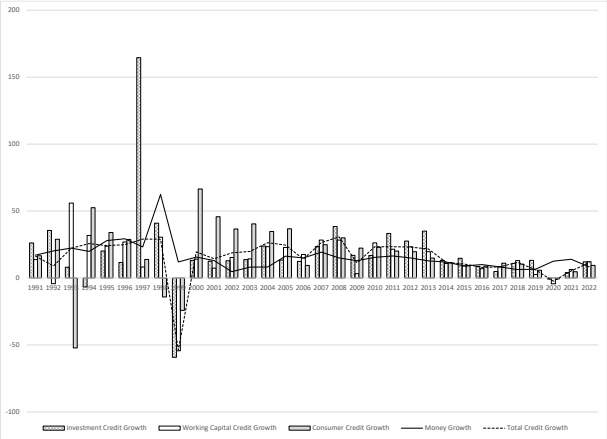


Figure 1. Money Growth, Banks Total Credit Growth and Banks Credit Growth by Usage in the Period of 1991–2022 (percent)
Source: Bank Indonesia (bi.go.id), The Financial Services Authority (ojk.go.id)

Based on Indonesia economic data obtained from 1991 to 2022 (Figure 1), the average growth of M2 was 15.89%, and the average of banks total credit growth was 15.43%. In general, the fluctuations of money growth are relatively similar to the fluctuations of banks total credit growth. Based on banks credit by usages, the average growth of banks investment credit and banks consumer credit were above the average of money growth and average banks total credit growth –they are 19.22% and 18.08% respectively–, while the average banks working capital credit growth was below the average of money growth and the average banks total credit growth. Banks working capital credit only grew by an average of 14.45% during the period mentioned above. The higher the growth of banks investment credit had a positive impact on the Indonesia economy in term of the role of investment to promote long-run economic growth and increasing higher employment rate.

If we look further at the growth rate in term of decades (Table 1), it is clear that the highest money growth occurred in the period of 1991-2000. Although banks total credit growth did not experience commensurately with money growth, but based on banks credit by usages, investment credit experienced the highest growth and relatively similar to the money growth. Furthermore, although the money growth experienced a drastic declining in the period of 2001-2010 compared to the previous decade, the banks total credit growth was the highest growth, and was followed by the highest growth of working capital credit and consumer credit. In the period of 2011-2022, the declining money growth was also followed by a decreasing of banks total credit growth, including a decreasing of banks credit by usages.

Table 1. Average money growth and banks credit growth in Indonesia in the period of 1991–2022 (percent)

| Period | Money Growth | Credit Growth | | | |
|---|---|---|---|---|---|
| | | Total | Investment | Working Capital | Consumer |
| 1991 - 2000 | 24,97 | 14,60 | 25,41 | 14,63 | 15,05 |
| 2001 - 2010 | 12,79 | 20,97 | 18,45 | 18,68 | 30,36 |
| 2011 - 2022 | 10,92 | 11,52 | 14,71 | 10,79 | 10,37 |
| 1991 - 2022 | 15,89 | 15,43 | 19,22 | 14,45 | 18,08 |

Furthermore, even though it appears that there is a quite similarity between money growth and banks total credit growth in the long run, but in the short run, there are a quite large fluctuations of their average growth. A higher money growth in the short run was not necessarily followed by a higher growth of banks total credit growth, and a lower money growth is not automatically followed by a lower banks total credit growth.

The same thing also appeared in banks credit by usage. A higher growth of banks total credit does not mean that there will also be a higher growth of banks credit by usage. When banks total credit growth was lower, there was a possibility that there was a higher growth of banks credits by usage, and even higher than the banks total credit growth.

As an institution that has a role on financial intermediation between individuals (and business entities) who have liquidity excess and individuals (and business entities) who have liquidity shortage, bank is able to minimize asymmetric information on both entities. The banks' ability to minimize and manage asymmetric information on various business entities is an inherent advantage of the banks. The privilege of banks on managing information asymmetry has a very meaningful impact on economy due to the reducing of transaction costs, then the economy will become more efficient and experienced higher productivity (Levine, 2003; Levine, Loayza & Beck 2000; Bernanke & Gertler, 1995). Therefore, the presence of banks in each country will become the engine of economic aggregate due to banks' ability to finance various economic sectors and promoting economic growth (Levine & Zervos, 1998).

Beside the role of banks in terms of minimizing information asymmetry and making the economy to be more efficient, banks are the important tool for monetary policy implementations. The monetary policy instruments stipulated by the central bank will only be meaningful to the real economic sectors by the role of banks as monetary transmission channel (Bernanke & Gertler, 1999; Bernanke & Mihov, 1998). Monetary expansion and contraction policies can only be actualized by the central bank in order to achieve monetary targets by the role of banks. Banks has capability to translate monetary policies through their banks operations in such a way that the monetary policies conducted by the central bank can achieve its objectives. Beside the importance of the role of banks in the economy, the health of the banks is also a very important indicator so that the economic aggregate can be managed properly (Sipahutar, Oktaviani, Siregar & Juanda, 2017; Sipahutar, Oktaviani, Siregar & Juanda, 2016; Maux & Scialom, 2013; Mishkin, 2007).

In implementation phase, both the monetary expansion and contraction policies conducted by the central bank will be reflected in lending activities by banks to the economic real sectors. Monetary expansion will be interpreted by banks through increasing lending portfolio due to the declining of interest rate, and vice versa, monetary contraction policies will be translated by banks through tightening lending portfolio due to the increasing of interest rate.

In term of lending activity, there is no clear benchmarking about the direction of banks credit growth by usages will be (investment credit, working capital credit and consumer credit). In a certain period, there is no guarantee that banks will allocate their credit portfolio by usage proportionally or not. Therefore, it will be found that the growth of one type of banks credit by usages can be higher than the other types, or it will be found that there will be a decreasing growth in one type of credit by usage while there will be an increasing growth in other types. This is an implication of the autonomy of banks management in their operational policies (Ogawa, 2020; Mollaahmetoglu & Akcali, 2019).

Furthermore, because banks are monetary policy transmission channel of the central bank, the effectiveness of monetary policy is closely

related to the response of banks to monetary policy. The higher the banks responsiveness to monetary policy will also generate the higher monetary policy effectiveness, and vice versa. When the central bank establishes an expansionary monetary policy in order to promote a higher economic growth which ultimately triggers a declining of interest rate in financial markets, then the real economic sectors will be more aggressive to borrow from banks and use that new liquidity to carry out business expansion (Lee & Werner, 2018; Rioja & Valev, 2014; Mishkin, 2007; Levine, 2003; Levine, Loayza & Beck, 2000). The increasing of liquidity stemmed from banks credit will further increase output and promote economic growth. Thus, the monetary expansion policy stipulated by the central bank in order to increase economic growth will become meaningful through the responsiveness of banks to monetary policy by their credit expansion. Then, there is a positive relationship between banks credit and economic growth (Kashyap & Stein, 2023; Heider & Leonello, 2021; Hassan, Sanchez & Yu, 2011; Bernanke & Gertler, 1995).

Based on banks credit by usages, credit is classified into investment credit, working capital credit and consumer credit. Although it is generally explained that banks credit was positively related to economic growth, various studies in the economics literature explained that only investment credit and working capital credit were positively related to economic growth, and the relationship was significant, meanwhile, consumer credit was negatively related to economic growth, and the relationship is also significant. Another study explained that there is a positive relationship between consumer credit and economic growth, but the relationship is not significant, then the positive relationship does not explain anything. Thus, it can be concluded that when the central bank planned a monetary expansion policy in order to promote a higher economic growth, banks should also increase their credit portfolio for investment and working capital usages higher than consumer credit (Chen, Liao, Liu & Liu, 2022; Bernanke, 2017; Beck & Poelhekke, 2017; Benhabib & Spiegel, 2000). An excessive allocation of banks to consumer credit will distort monetary expansion policy because banks consumer credit was negatively related to economic growth. In other words, an excessive allocation to banks consumer credit when the central bank conducted monetary expansion policies will actually decrease economic growth. Banks consumer credit will decrease disposable income of debtors, then decreasing overall private savings, decreasing overall investment, and ultimately decreasing economic growth (Sipahutar, 2018; Laine, 2021; Basci & Gherbi, 2020).

Monetary expansion and contraction policies were aimed to increase and decrease money supply in financial market and public sectors. Increasing and decreasing of money supply will certainly have an impact on the magnitude of banks' credit. Therefore, when central bank increases money supply, it will have implications for increasing money supply generated by banks, and vice versa. Thus, monetary expansion policy has a positive relationship to banks credit, and conversely, monetary contraction policy will reduce banks credit. Furthermore, an increasing of banks credit due to an increasing of money supply will promote economic growth, and vice versa (Bassetto & Sargent, 2020; Mishkin, 2007; Blanchard, Cerutti & Summers, 2015; Bernanke & Gertler, 1999).

This study will focus on explaining how far the relationship between money growth and the banks total credit allocated by Indonesia banks, and how far the relationship between money

growth and banks credit growth by usage. This study also found an overview of banks response to the monetary policy, as well as the implications to economic growth.

In order to discuss money growth and its implications on banks credit, the structure of this paper is divided as follows. Section 2 describes method, Section 3 is results and discussion; and conclusion in Section 4.

## 2. METHOD

This study used Indonesia economic data in the period from 1991 to 2022, consisting of money growth M2, banks total credit growth, and each banks credit growth by usages –investment credit, working capital credit and consumer credit– obtained from Bank Indonesia (bi.go.id), Financial Services Authority (ojk.go.id) and Statistics Indonesia (bps.go.id).

As explained above, banks credit growth is positively related to economic growth, and economic growth is positively related to monetary policy. Monetary policy will affect money growth, so banks credit growth is influenced by money growth. The best estimated model obtained is that change of money growth has a positive effect on banks credit growth. The higher the change of money growth will affect higher banks credit growth. The estimated model is expressed by:

$$g\mathrm{Cr}_t = \beta_1 + \beta_2\,(g\mathrm{M2}_t - g\mathrm{M2}_{t-1}) + \varepsilon_t \quad \ldots\ldots (1)$$

where $g\mathrm{Cr}_t$ is banks total credit growth at period $t$, $g\mathrm{M2}_t$ and $g\mathrm{M2}_{t-1}$ are money growth at period $t$ and period $t-1$, $\beta_1$ is intercept, $\beta_2$ is coefficient of effect of changes of money growth at period $t$ and period $t-1$ to banks total credit growth, and $\varepsilon_t$ is error term.

Based on banks credit by usages, there is a positive relationship between change of money growth and banks investment credit growth. The higher the change of money growth, the higher the banks investment credit growth. There is a positive relationship between change of money growth and banks working capital credit growth. The higher the change of money growth, the higher the banks working capital credit growth, and for consumer credit, there is a negative relationship between money growth and banks consumer credit growth. The best estimated model between each type of banks credit by usage and money growth are as follows:

$$g\mathrm{ICr}_t = \alpha_1 + \alpha_2\,(g\mathrm{M2}_t - g\mathrm{M2}_{t-1}) + \epsilon_t \quad \ldots\ldots (2)$$

$$g\mathrm{WCr}_t = \delta_1 + \delta_2\,(g\mathrm{M2}_t - g\mathrm{M2}_{t-1}) + \mu_t \quad \ldots\ldots (3)$$

$$g\mathrm{CCr}_t = \gamma_1 - \gamma_2 . g\mathrm{M2}_{t-1} + \tau_t \quad \ldots\ldots (4)$$

where $g\mathrm{ICr}_t$ is banks investment credit growth at period $t$, $g\mathrm{WCr}_t$ is banks working capital credit at period $t$, $g\mathrm{CCr}_t$ is banks consumer credit growth at period $t$, $\alpha_1$, $\delta_1$, and $\gamma_1$ are intercept, $\alpha_2$, $\delta_2$, and $\gamma_2$ are coefficient of effect of change of money growth to banks investment credit growth, banks working capital credit growth, and banks consumer credit growth, and $\epsilon_t$, $\mu_t$ and $\tau_t$ are error terms.

## 3. RESULT AND DISCUSSION

The estimate model explained in Table 2, one basis point change of money growth will increase of banks total credit growth by 0.89 basis point, while one basis point change of money growth will increase of banks investment credit growth by 0.85 basis point and banks working capital credit by 0.94 basis point.

The effect of changes of money growth are relatively similar both to banks total credit growth and banks investment credit growth. Therefore, based on estimate model, commercial banks of Indonesia are more responsive on allocating their working capital credit than investment credit when monetary expansion policies set upon Bank Indonesia. Meanwhile, estimate model explained that increasing of money growth in the previous period by one basis point will decrease banks consumer credit growth by –0.71 basis point.

The positive effect of change of money growth on banks total credit growth as well as on both banks investment credit growth and banks working capital credit growth are in line with Bank Indonesia's objective as the central bank through the framework of monetary expansion policy aimed to promote economic growth. In addition, although there is a negative effect of money growth to banks consumer credit growth, this estimated model has a positive impact on Bank Indonesia. The negative effect of money growth to banks consumer credit growth and also the negative effect of banks consumer credit to economic growth means that when Bank Indonesia set up expansionary policy, commercial banks should also restrict their credit allocation for consumer usage.

However, when banks continually respond to the monetary expansion policy by banks credit expansion in order to promote economic growth, economy will face an increasing of inflation rate. There is tradeoff between inflation and economic growth. An increasing of economic growth will then increase inflation, which distorts the economy. This economic situation must be countered by the central bank by increasing interest rate or monetary contraction policies, and then economic will face an unimportant fluctuation (Laine, 2021; Kashyap & Stein, 2023; Mishkin, 2007). Therefore, money growth cannot grow continually due to the inflationary effect that will actually reduce banks credit quality by an increasing of non-performing loans (Heider & Leonello, 2021).

Table 2. OLS model estimation on the effect of money growth on total credit, investment credit, working capital credit and consumer credit

| **Ordinary Least Square Method** | | | | | |
|---|---|---|---|---|---|
| Money Growth ($g$M2) to Total Credit Growth ($g$Cr) | | | Money Growth ($g$M2) to Investment Credit Growth ($g$ICr) | | |
| $g\text{Cr}_t = 15.65 + 0.89\ (g\text{M2}_t - g\text{M2}_{t-1})$ | | | $g\text{ICr}_t = 19.24 + 0.85\ (g\text{M2}_t - g\text{M2}_{t-1})$ | | |
| | Constant | $\Delta\ g\text{M2}_t$ | | Constant | $\Delta\ g\text{M2}_t$ |
| Std. Error | 1.98 | 0.16 | Std. Error | 5.57 | 0.46 |
| $p$-value | 0.00 | 0.00 | $p$-value | 0.00 | 0.07 |
| $R^2$ | 0.50 | | $R^2$ | 0.11 | |
| Adj.$R^2$ | 0.48 | | Adj.$R^2$ | 0.07 | |
| | | | | | |
| Money Growth ($g$M2) to Working Capital Credit Growth ($g$WCr) | | | Money Growth ($g$M2) to Consumer Credit Growth ($g$CCr) | | |
| $g\text{WCr}_t = 14.74 + 0.94\ (g\text{M2}_t - g\text{M2}_{t-1})$ | | | $g\text{CCr}_t = 29.58 - 0.71\ g\text{M2}_{t-1}$ | | |
| | Constant | $\Delta\ g\text{M2}_t$ | | Constant | $g\text{M2}_{t-1}$ |
| Std. Error | 2.45 | 0.20 | Std. Error | 7.30 | 0.38 |
| $p$-value | 0.00 | 0.00 | $p$-value | 0.00 | 0.07 |
| $R^2$ | 0.42 | | $R^2$ | 0.11 | |
| Adj.$R^2$ | 0.40 | | Adj.$R^2$ | 0.07 | |

In this case, banks are still faced asymmetric information in their credit management. Even though banks had a good ability to minimize asymmetric information, however, asymmetric information cannot be eliminated. As a monetary transmission channel, commercial banks cannot be separated from the banks' view, where their credit performance are greatly influenced by their financial performance. In other words, commercial banks still have to

reassure their credit quality before conducting response to monetary policies set up by the central bank.

Inflationary impact will occur if Bank Indonesia set up a sustainable expansionary monetary policy and if banks respond continually through credit expansion. In terms of banks credit, money growth needs to be managed properly so that money growth will not have a higher effect on increasing inflation. When the economy experiences inflationary effects due to money growth and credit growth, money growth needs to be managed toward the growth rate that is equivalent to normal money growth rate. Normal money growth is obtained if the inflation rate in the current period is equal to the inflation rate in the previous period. Therefore, money growth at normal growth rate does not have an inflationary effect (Lee & Werner, 2018; Hassan, Mauro & Ottaviano, 2017).

Furthermore, the effect of money growth, both on banks total credit and on each banks credit by usages, have the coefficient that less than one. At first glance, this explained that the effect of money multiplier is still based on the effect of decreasing interest rate, but has not been followed by reduction of the ratio of reserves held by banks. In this case, the monetary expansion policy only used the interest rate instrument. If Bank Indonesia used a decreasing interest rate simultaneously with other instruments such as reducing reserve requirement and discount rate, the banks response positively by increasing their credit growth, then the effect will definitely get a coefficient by more than one. However, if the coefficient is more than one, then economy will also experience an increasing inflation rate.

The mechanism for banks credit expansion can be explained through the relationship between the demand for and supply of money in money market. Even though the money supply is perfectly inelastic with respect to interest rate, but due to a shift in the money supply curve as a result of money growth, interest rate will decrease in the new equilibrium. The responsiveness of banks in addressing this monetary policy by increasing the supply of money to the real economic sectors the promote a higher economic growth.

Banks investment credit has the highest growth over the last three decades than banks working capital credit and banks consumer credit, but the coefficient of the effect of change of money growth to banks investment credit growth is smaller than banks working capital credit. The variance of the coefficient of the effect of change of money growth to banks credit investment growth is larger than the variance to banks working capital credit growth, and the significance level of these coefficients of change of money growth are $\alpha = 10\%$ for banks investment credit, while $\alpha = 5\%$ for banks working capital credit. This explained that banks investment credit growth still needs to be further increased. In other word, banks need to be even more expansive on investment credit. As in the previous section where investment credit is really needed for long run economic growth, then the money growth must be allocated to banks investment credit higher than banks working capital credit.

Based on the estimate model in Table 2, there is a negative relationship between money growth in the previous period and banks consumer credit growth in the current period, and significant at $\alpha = 10\%$. Meanwhile, there is found that over the last three decades, the banks consumer credit growth has been quite high, even higher than banks working capital credit growth. Since banks investment credit growth

and working capital credit growth are positively related to money growth, there is a possibility that banks consumer credit growth will also be positively related to money growth (Laine, 2021; Sipahutar, 2018; Levine, 2003). Although the estimate model on the negative relationship between money growth and banks consumer credit growth is the best model, however, a better interpretation is that there is not enough strong evidence to conclude that money growth can trigger an increasing of banks consumer credit growth. This leads to the implication that when Bank Indonesia establishes a monetary expansion policy that results in declining of interest rate, banks are more aggressive in carrying out their credit for investment and working capital usages, or that the real economic sectors respond directly to the monetary expansion policy by increasing their demand for credit, both for investment and working capital usage because the profitability of the real economic sectors will become higher due to lower interest rate.

## 4. CONCLUSION

The growth of banks credit both in total and by usages for investment, working capital and consumer cannot be separated from the monetary policy set by the central bank and from the banks' view perspective regarding banks performance. On the estimate model obtained in this study, it is explained that money growth greatly affects banks total credit growth, and credit growth to both banks investment credit growth and banks working capital credit growth. In the estimate model, it is obtained that the magnitude of the coefficient of the effect of change of money growth is smaller than one on the growth of banks investment credit and banks working capital credit –ceteris paribus– both banks reserve ratio and discount rate are considered to be constant. The magnitude of the coefficient can be considered to be quite small when it is related to the role of banks as a transmission channel for monetary policy and the ability of banks as money multiplier.

For banks consumer credit, there is not enough strong evidence to suggest that money growth has a positive effect to banks consumer credit growth. This is shown by the estimation model which explains that there is a negative relationship between money growth and banks consumer credit growth. The estimated model cannot be interpreted as obtained by the model because it is not in accordance with the basic economic theory where money growth will reduce interest rate and decrease interest rate, then increasing banks credit. However, because consumer credit does not have a multiplier effect on economic growth, it is better for banks if banks expansivity on consumer credit must be restricted when Bank Indonesia implements a monetary expansion policy, and then diverts banks credit disbursement for investment and working capital usages to promote economic growth.

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