

Whether the Bank Lending Channel Can Work? Evidence from Foreign Banks in Indonesia¹

Al Muizzuddin Fazaalloh*
Brawijaya University
almuiz.wang@ub.ac.id

Sasongko
Brawijaya University

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ABSTRACT

The study examines the problem of how the transmission of monetary policy through the lending channel can be addressed by foreign banks in Indonesia. In fact, many studies were conducted to examine the monetary transmission of lending channel has resulted in different conclusions. There are at least two conflicting opinions, first: the lending channel through a bank can work with small asset or capitalization; and second: this transmission cannot work through a bank that has large asset or capitalization. The method used in this study is panel regression. In this present study, the data were obtained from the monthly period between 2002:1 to 2007:12. Ten foreign banks publicized on the website of Bank Indonesia were observed. This study found that the transmission of lending channel can work on a foreign bank that has a small asset or capitalization. In contrast, for a foreign bank that has large asset or capitalization is not working.

Keywords: Monetary Policy, Bank Lending Channel, Foreign Banks.

1. BACKGROUND

Every monetary authority throughout the world must truly realize that the significance of understanding the transmission mechanism of monetary policy. Understanding this particular mechanism is not easy since it requires many evidences and relevant testing on how the transmission works. This study tries to prove how the transmission mechanism of monetary policy works. In this case, the transmission mechanism generally explains how monetary policy can affect the real sector of economy (including the output and unemployment) by changing the amount of money supply and short-term interest rate (Ireland, 2005).

By understanding the meaning and transmission mechanism of monetary policy, thus understanding how this mechanism works is essential. Hernando and Martinez-Pages (2001) argues that although there has been a number of research conducted on transmission mechanism of monetary policy, however the details on how this mechanism works is not yet fully understood.

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Recent literatures emphasize more specifically on the role of credit channel in the transmission of monetary policy since it is considered as more relevant. Altunbas et al. (2002), based on the existing empirical and theoretical studies, assert that monetary policy shocks affects the output of real sector through the credit channel by means of interest rate instrument. In this particular credit channel, monetary policy affects the economic activities by not only controlling the short-term interest rate but also changing the credit availability.

Credit channel is divided into two sub-channels namely balance sheet channel and bank lending channel. Bernanke and Gertler (1995) provide an explanation dealing with these two sub-channels. They assert that balance sheet channel emphasizing on the potential impact is caused by the change in monetary policy on borrowers. On the other hand, bank lending channel more focusses on the effect that may occur as a result of actions taken by the central bank on the loan offer (supply of loan).

To be more focused, this study tries to prove how the transmission mechanism of monetary policy can work primarily through credit channel concerning with bank lending channel. In addition, the underlying reason for choosing this credit channel is based in the existing related literatures and previous studies for proving that the policy of central bank affects the output as started by a shift in supply of loan. The basic concept of this bank lending channel is that the response on loan offer as a result of monetary policy shocks depends on the specific characteristics owned by the bank itself due to the imperfect characteristic of financial market (Bichsel and Perrez, 2004).

The paper is organized as follows. Section 2 reviews transmission of Bank Lending Channel (BLC) in many literatures. Section 3 discusses the general overview of the balance sheet of foreign banks in Indonesia. Section 4 presents the empirical methodology, while the results are discussed in Section 5. Finally, Section 6 concludes.

2. LITERATURE REVIEW

In some literatures, credit channel is divided into two sub channels namely balance sheet channel (BSC) and bank lending channel (BLC). Concerning with these two sub channels, Bernanke and Gertler (1995) state that BSC emphasizes on the potential impact caused by the changes in monetary policy on the side of the borrowers of bank funds. In contrast, BLC focuses more on the effect which might be occurred as a result of actions performed by the central bank on the supply loan.

In more detail, Kishan and Opiela (2000) define BSC and BLC as follows. In credit channel, information related to financial frictions can create gap between the internal and external cost financing. The contractive monetary policy can change the gap for borrowers by involving high information costs in two ways. First, the policy may weaken the balance of borrowers (increasing the service debt and lower in the value of its collateral asset) so that it causes the decrease on their ability to be able to borrow funds from bank. It is the explanation of BSC. Second, contractive monetary policy can cause the decrease on deposit financing from bank loan funding (caused by the compulsory reserve). In this case, if the bank is unable to raise the funding source

for the granting of loan, then the policy will cause the decrease in bank's supply of loan and affect the bank-dependent borrowers.

The mechanism of BLC is as follows:

$$M\downarrow \Rightarrow DE\downarrow \Rightarrow LN\downarrow \Rightarrow I\downarrow \Rightarrow Y\downarrow$$

By the time the central bank conducts contractive monetary policy, money supply will go down, then the bank's deposit will be lowered which subsequently leads to the decrease on the amount of disbursed loan. This decrease will make private sector and consumers or communities that depend on bank loans are unable to find other sources of loan except from the bank by reducing the purchases of durable capital goods for investment activities, which ultimately will reduce the activities of the real sector of economy (Golodniuk, 2005).

Literature presented in this empirical study is the results of studies that show empirical evidence on the bank lending channel (BLC) from several countries in the world. Empirical evidence on the existence of the BLC begins with some research conducted by a number of researchers in 1990s. In this case, the main study was carried out in America aimed at examining the response of bank loan, other assets, and deposit to the monetary policy stance which is used as a proxy of the federal funds rate. Furthermore, the research conducted is to investigate whether monetary policy has a different impact on the bank, which is distinguished from its characters: the difference in terms of the size of assets, asset size and liquidity, asset size and capital strength. All of the findings of these studies reveal that BLC may exist from the operation of the monetary transmission through small banks. The strength of BLC can also be transmitted through small banks that are relatively illiquid and have low capital ratios to assets (under capitalization).

3. GENERAL OVERVIEW OF THE BALANCE SHEET OF FOREIGN BANKS IN INDONESIA

In describing the general overview of foreign banks' balance sheets, the foreign banks are distinguished into several groups of bank, either based on the size of assets or capitalization. However, before explaining the general overview, the results of bank grouping based on the size of assets and capitalization are presented.

Based on the size of assets, 10 foreign banks that become the sample of this research can be grouped into two: (1) bank with small size of assets (small assets), and (2) bank with large size of assets (large assets). There are 4 banks categorized into the former bank group while there are 6 banks categorized into the latter group. This can be seen in Table 1 below.

See Table 1 in APPENDIX

Next, based on the size of capitalization, there are two bank groups: (1) bank with small capitalization (small cap rate), and (2) bank with large capitalization (big cap rate). There are 5 banks categorized into the former bank group while there are 5 banks categorized into the latter group. This can be seen in Table 2 below.

See Table 2 in APPENDIX

4. RESEARCH METHOD

4.1 Scope of the Research

This study analyzes monetary policy transmission through bank lending channel.

4.2 Type of the Research

As for the type of research, the researcher uses descriptive and quantitative approach in analyzing BLC transmission. The descriptive approach aims to systematically and accurately describe the facts and characteristics concerning with population or a certain area. On the other hand, quantitative approach emphasizes the analysis on numerical data processed by statistical method

4.3 Type and Source of Data

This study employs secondary data in the form of panel data or combination of time series and cross section data. The study takes the monthly period from 2002:1 to 2007:12. The total of observation used is 10 foreign banks published on Bank Indonesia website. Thus, the total of panel data is 720.

The data employed in this study are obtained from financial statements of foreign banks and monetary policy reports published on Bank Indonesia website.

4.4 Data Analysis Method

Based on the initial purpose of the study, data panel regression model is applied to analyze the research data. In addition, econometric estimation model is designed in order to explain the responses of foreign banks in the transmission of bank lending channel. The model is designed by referring to literature based on the model proposed by Kishan and Opiela (2000) and other related literature. The specifications of econometric model designed for this study can be seen as follows.

The model of data panel regression in this study is as follows.

$$\Delta LOAN_{it} = \alpha_i + \beta_1 \Delta LOAN (4)_{it} + \beta_2 \Delta SEC_{it} + \beta_3 \Delta SEC (4)_{it} + \beta_4 \Delta DEPO_{it} + \beta_5 \Delta BIR_{it} + \beta_6 \Delta BIR (4)_{it} + u_{it} \quad (3.4)$$

Where:

$$\Delta LOAN_{it} = \text{Changes in total credit}$$

$$\begin{aligned} \Delta LOAN (4)_{it} &= 4^{th} \text{ lag from changes in total credit} \\ \Delta SEC_{it} &= \text{Changes in total securities ownership} \\ \Delta SEC (4)_{it} &= 4^{th} \text{ lag from changes in total securities ownership} \\ \Delta DEPO_{it} &= \text{Changes in total deposit} \\ \Delta BIR_{it} &= \text{Changes in BI Interest Rate (1 month)} \\ \Delta BIR (4)_{it} &= 4^{th} \text{ lag from changes in BI Interest Rate (1 month)} \end{aligned}$$

In BLC transmission, it is suggested that banks are divided into several groups based on the size of assets and capital sufficiency which will show the shift of loan offer when monetary policy shocks occur. In order to analyze the distinction of cross-section in bank financing and decision to grant a loan, this research divides the banks into two bank groups based on the size of assets. These groups are: (1) Banks with total assets less than IDR 10 million (or small banks) and (2) banks with total assets of IDR 10 million or more (or large banks).

After dividing the banks into bank groups based on the size of assets, next they are divided based on the capital sufficiency. Capital sufficiency is measured by the ratio of capital to total assets of the bank (capitalization rate). For this category, there are two bank groups: (1) banks with capitalization rate which are less than 5% (below cap rate) and (2) banks with capitalization rate of 5% or more (above cap rate).

4.5 Research Variables and Operational Definition

This study employs 7 variables consisted of 1 dependent variable and 6 independent variables. These variables include:

1. Changes in total credit (Δ Loan)

That is the changes in total loans granted by bank to borrowers and expressed in percentage.

2. Changes in total securities ownership (Δ SEC)

That is the changes in securities held by bank and expressed in percentage.

3. Changes in total deposit (Δ DEPO)

That is the changes in total bank deposits and expressed in percentage.

4. Changes in BI interest rate (1 month) (Δ BIR)

That is the changes in BI interest rate imposed by monetary authorities as a signal of monetary policy and expressed in percentage.

In this model, the use of 4th lag from several variables is to get the value of white noise residuals. In other words, it is to avoid non-constant variable in the consequent model estimation. On the

other hand, the percentage change of each variable is to avoid the issue of spurious correlation (Gambacorta, 2001).

5. RESULTS

The results of regression model estimation of panel data of foreign banks in this study are grouped based on two bank characteristics, namely the size of assets and capitalization. Furthermore, as for the size of assets, the estimation results are grouped into two: (1) the model of small-assets bank group, and (2) the model of large-assets bank group. The same applies to the size of capitalization; the estimation results will be grouped into two: (1) the model of small-cap bank group, and (2) the model of large-cap bank group.

5.1 The Estimation Results of the Model of Bank Group Based on the Size of Assets

The estimation results of the model of bank group based on the size of assets are divided into two, they are: (1) the model of small-assets bank group, and (2) the model of large-assets bank group. Furthermore, the estimation results can be seen in table 3 below.

See Table 3 in APPENDIX

✓ The Model of Small-Assets Bank Group

In the model of small-assets bank group, the regression estimation result of fixed-effect of panel data shows R^2 value of 0.131. This means that those seven independent variables are able to explain the dependent variable by 13.1 % and the rest is explained by other variables excluded in the model. Next, the probability value of F-statistic of 0.051 shows significant result, with standard deviation (the level of error) of 5%.

As for the significance or the effect of each independent variable on dependent variable, there are only 3 significant variables, they are SEC (4) with standard error of 10%, BIR with standard error of 10%, and BIR (4) with standard deviation of 5%, while the other four independent variables show no significant results in affecting the variable of changes in credit (LOAN).

The regression coefficients of each significant variable are as follows:

- 0.016 SEC (4), meaning that the increase in total securities ownership changes by 1 unit will result in the increase in total credit changes (LOAN) by 0.016 over the next four months, *ceteris paribus*.
- 0.070 BIR, meaning that the rising of BI rate changes by 1 unit will result in the increase in current credit changes (LOAN) by 0.070, *ceteris paribus*.
- -0.818 BIR (4), meaning that the rising of BI rate changes by 1 unit will result in the decrease in total credit changes (LOAN) by 0.818 over the next four months, *ceteris paribus*.

In the individual coefficient values of each bank, Bank of America (BOAM) has the smallest average credit changes, while the biggest average credit changes are in The Bangkok Bank Comp. LTD. (BANG).

✓ The Model of Large-Assets Bank Group

In the model of large-assets bank group, the regression estimation result of fixed-effect of panel data shows R^2 value of 0.048. This means that those seven independent variables are able to explain the dependent variable by 4.8 % and the rest is explained by other variables excluded in the model. Furthermore, the probability value of F-statistic of 0.097 shows significant result, with standard deviation of 10%.

As for the significance of each independent variable in influencing dependent variable, there are only 2 significant variables, namely 4th lag from changes in total securities ownership (SEC 4) with standard deviation of 1% and 4th lag from changes in total deposit (DEPO 4) with standard deviation of 5%, while the other five independent variables show no significant results.

The regression coefficients of each significant variable are as follows:

- -0.006 SEC (4), meaning that the increase in total securities ownership changes by 1 unit will result in the decrease in credit changes (LOAN) by 0.006 over the next four months, *ceteris paribus*.
- 0.109 DEPO (4), meaning that the increase in total deposit changes by 1 unit will result in the increase in total credit changes (LOAN) by 0.109, *ceteris paribus*.

5.2 The Estimation Results of the Model of Bank Group Based on the Size of Capitalization

The estimation results of the model of bank group based on the size of capitalization are divided into two, they are: (1) the model of small-cap bank groups, and (2) the model of large-cap bank groups. Furthermore, the estimation results can be seen in table 4 below.

See Table 4 in APPENDIX

The Model of Small-Cap Bank Group

In the small-cap bank group, the regression estimation result of fixed-effect of panel data shows R^2 value of 0.085. This means, the seven independent variables were able to explain the dependent variable at 8.5 percent, and the rest is explained by other variables not included in the model. Then for the value of the F-statistic probability that the magnitude of 0.097 indicates a significant result by the standard deviation (error rate) of 10 percent.

Then for each of the independent variables that significantly influence the dependent variable there is only one variable that is the fourth lag changes in the BI Rate (BIR 4), with a standard deviation of 5 percent. While the other six independent variables showed significant results.

The regression coefficients of each of the significant variables are as follows:

- -0.497 BIR (4), that is, if there is a change in the BI Rate (which is increased by 1 unit) then the change will cause a decline in loans (LOAN) in the next four months by 0.497, *ceteris paribus*.

✓ The Model of Large-Cap Bank Group

In the large-cap bank group, the regression estimation result of fixed-effect of panel data shows R^2 value of 0.083. This means seven independent variables were able to explain the dependent variable of 8.3 percent, and the rest is explained by other variables not included in the model. Then for the value of the F-statistic probability that the magnitude of 0.004 indicates a significant result by the standard deviation (error rate) of 1 percent.

Then for each of the independent variables that significantly influence the dependent variable there are only three variables namely the fourth lag of the change in securities (SEC 4), the fourth lag of the change in total deposits (DEPO 4) and the changes in the BI Rate (BIR), with a standard deviation on each variable that is 1 percent, 1 percent and 5 percent. While the other four independent variables showed no significant results. While the other four independent variables showed no significant results.

The regression coefficients of each of the significant variables are as follows:

- -0.008 SEC (4), that is, if there is a change in marketable securities, which increased by 1 unit, then the change will cause a decrease in loans (LOAN) in the next four months by 0,008, *ceteris paribus*.
- 0.141 DEPO (4), that is, if there is a change in total deposits, which increased by 1 unit, then the change will cause a rise in loans (LOAN) in the next four months by 0.141, *ceteris paribus*.
- 0.294 BIR, that is, if there is a change in the BI Rate is increased by 1 unit, then the change will cause a rise in loans (LOAN) current period by 0.294, *ceteris paribus*.

5.3 Foreign Banks' Responses to the Transmission of Bank Lending Channel

The estimation results of panel data above have provided strong evidence that foreign banks groups based on the size of assets and capital may respond differently to the monetary policy transmission. The differences can be seen from how banks with small size of assets and capital are more responsive to changes in monetary policy (Δ BIR) compared to banks with large size of assets and capital.

The foreign banks' responses are evidenced by a negative correlation between the Δ 4th lag of interest rate of Bank Indonesia and Δ total loan in bank group with small size of assets and capital. This negative response indicates that contractive policy will be more responded by bank group with small size of assets and capital by lowering the loans. Therefore, in this condition, monetary policy may influence the supply of loan.

In addition, there are other variables that influence Δ loan. For instance, 4th lag from changes in total securities ownership and 4th lag from changes in total deposit show significant results with various correlations (positive and negative) for each bank group. The variable Δ 4th lag from

changes in securities ownership shows positive correlation in small-assets bank group but negative correlation in bank group with large size of assets and capital. On the other hand, the variable of Δ 4th lag of total deposit is significant and shows positive correlation only in bank group with small size of assets and capital. Furthermore, the variables of Δ 4th lag of total credit, Δ total securities ownership, and changes in total deposit has no significant influence at all effect on changes in total credit, either in small and large-assets bank groups or in small and large-cap bank groups.

It shows that bank groups with small size of assets and capital are less able to find other sources of financing, so when there is a contraction of monetary policy, the reduction in loans is inevitable. For bank groups with large size of assets and capital, however, the decrease in loan can be avoided through assets portfolio modification by reducing the amounts of securities owned.

Evidence gained in this study is also supported by previous study (Agung, 1998) which reveals that small banks facing difficulties in finding source of financing other than deposit tend to not reduce securities owned when there is a bad monetary policy shocks. Large banks, however, will be more confident in reducing securities owned to allocate them into loans when there is a contractionary monetary policy.

Ultimately, the hypotheses of study proposed in the previous chapter can be answered. The hypothesis stating that bank credit in transmission of monetary policy through BLC will be responded more by bank groups with small size of assets and capital is therefore right.

6. CONCLUSION

In this paper we use bank-level balance sheet of foreign banks in Indonesia to uncover how the transmission of monetary policy through the bank lending channel works during the period between 2002:1 to 2007:12. We apply a panel data regression analysis to answer these issue. Furthermore, we distinguish how the impact of the transmission of monetary policy through the bank lending channel into two characters banks (asset and capitalization).

We find consistent evidence that there are different responses between the group of small foreign banks (assets and capitalization) and the group of large foreign bank towards the monetary policy (changes in BI rate) in which the response of small banks is more powerful than the large banks. Moreover, the response of small bank is more powerful, one of which is caused by the inability of small banks in obtaining funding for credit in addition to funds from deposit. Thus, if monetary policy shocks (contractive) occur, it can reduce the lending allocation distributed by small banks. Next, by considering that bank lending is affected by the BI rate, then it indicates that foreign banks have no small role in the transmission mechanism of monetary policy.

From a policy perspective, our results present that for achieving efficiency of monetary policy particularly for bank lending channel, then monetary authority should examine every policy taken and control the BI rate as an important reference. In addition, due to the weakening

response of banks with large capitalization on the negative monetary policy, then specific policies that do not rely on the BI rate as the main factor determining policy are required for affecting the large banks.

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APPENDIX

Table 1
Bank Groups Based on the Size of Assets.

<i>Small Assets</i>	<i>Large Assets</i>
1. Bank of America, N.A.	1. The Bank of Tokyo Mitsubishi UFJ LTD
2. The Bangkok Bank Comp. LTD.	2. ABN Amro Bank
3. American Express Bank LTD.	3. Standard Chartered Bank
4. JP. Morgan Chase Bank, N.A.	4. Deutsche Bank AG.
	5. The Hongkong & Shanghai B.C.
	6. Citibank N.A.

Table 2
Bank Groups Based on the Size of Capitalization.

<i>Small Cap Rate</i>	<i>Big Cap Rate</i>
1. American Express Bank LTD.	1. Deutsche Bank AG.
2. JP. Morgan Chase Bank, N.A.	2. ABN Amro Bank
3. Standard Chartered Bank	3. Citibank N.A.
4. The Hongkong & Shanghai B.C.	4. The Bangkok Bank Comp. LTD.
5. Bank of America, N.A.	5. The Bank of Tokyo Mitsubishi UFJ LTD

Table 3
**Estimation result of transmission of bank lending channel
by small and large asset bank groups.**

Dependent variable:	Small Asset			Large Asset		
	Coef.	Std. Error	t-Stat	Coef.	Std. Error	t-Stat
Loan						
Loan (4)	0.07	0.10	0.67	-0.03	0.05	-0.61
Sec	0.00	0.00	0.23	-0.00	0.00	-0.41
Sec(4)	0.01*	0.00	1.86	-0.00***	0.00	-2.65
Depo	0.08	0.07	1.05	0.06	0.04	1.27
Depo(4)	0.07	0.06	1.16	0.10**	0.04	2.36
BIR	0.65*	0.36	1.82	0.15	0.10	1.47
BIR(4)	-0.81**	0.32	-2.48	-0.02	0.10	-0.24
R-squared	0.13			0.09		

Note:

*** significant at level 1%

** significant at level 5%

* significant at level 10%

Table 4
Estimation result of transmission of bank lending channel
by small and large capitalization bank groups.

Dependent variable: Loan	Small Capitalization			Large Capitalization		
	Coef.	Std. Error	t-Stat	Coef.	Std. Error	t-Stat
Loan (4)	0.02	0.08	0.29	-0.02	0.05	-0.46
Sec	0.00	0.00	0.90	-0.00	0.00	-0.54
Sec(4)	0.00	0.00	1.11	-0.01***	0.00	-2.65
Depo	0.10	0.07	1.50	0.03	0.04	0.81
Depo(4)	0.03	0.05	0.68	0.14***	0.04	3.02
BIR	0.22	0.23	0.95	0.29**	0.12	2.40
BIR(4)	-0.49**	0.22	-2.24	-0.04	0.11	-0.35
R-squared	0.08			0.08		

Note:

*** significant at level 1%

** significant at level 5%

* significant at level 10%