

THE IMPACT OF MONETARY POLICY ON BANK CREDIT DURING ECONOMIC CRISIS: INDONESIA'S EXPERIENCE

Abdul Mongid

Center for Monetary and Banking Studies
STIE PERBANAS Surabaya Indonesia
Jl. Nginden Semolo No 36 Surabaya

Abstract: *The monetary policy mechanism by which monetary policy was transmitted to the real economy had emerged as the pivotal discussion topic recently. This paper tried to discuss the impact of Bank Indonesia's monetary policy on loan bank. By using simple loan bank framework we concluded that monetary policies were able to influence loan bank. The monetary variables such as discount rate policy, base money and exchange rate policy were very important in determining the banking credit. As the credit was very important to influences the economic activity, the result provided evidence that monetary policy was important as a tool to control economic activity via credit channel. The validity of this study challenged the hypotheses that monetary policy was death. However, monetary policy maker should carefully consider the soundness of the banking industry because it was a strategic partner for monetary authority to control the economic activities.*

Keywords: *monetary policy, credit crunch, bank lending*

The monetary policy mechanism by which monetary policy is transmitted to the real economy has emerged as the pivotal discussion topic recently because the reality that monetary policy has become the only game can be played by the central bank. Many economists, even, believe that monetary policy is not important anymore. However, as the economic situation among countries are dispersed, the empirical investigation resulted from various studies are also, in some cases, contradictionary and confusing. That is why it is a debatable topic in macroeconomics in general and monetary study especially.

For Indonesia, the understanding and ability of Indonesia Monetary Authority how monetary policy works is necessary mandate of the new Central Bank Act of 1999 especially to help the economic recovery. The understanding how monetary policy works requires enhancements both the capacity and institutional buildings for better monetary policy making process and implementation. As enacted in 1999, the new Central Bank Act provides a clear mandate for Bank Indonesia in conducting its monetary policy to maintain the value of Rupiah both in domestic and international term.

The Act No. 23 of 1999 on Bank Indonesia that amend the previous Act No.13 of 1968 states that the single objective of Bank Indonesia (BI) as a

Korespondensi dengan penulis:

Abdul Mongid: Telp. +62 31 594 7151, Fax. +62 31 599 2985
E-mail: mongid@perbanas.edu

aggregate such as base money, lending capacity of banking system and off course, interest rate. However, the ultimate target of monetary policy is to achieve stable economic growth, price stability, employment and external balance. In Indonesia, monetary policy in terms of interest rate policy is also aimed to reduce budget deficit due to most of government bonds are priced using central bank discount rate as anchor rate.

In the country experiencing multi crisis, banking, exchange rate and political crises, Indonesian monetary authority worked hard to make the credit channel work. The monetary policy currently is in a questionable stage as Indonesia currently lacks of supported institution and condition for successful monetary policy, such as bank capital constraint (CAR), exchange rate instability and firm restructuring process. All these lessen the effectiveness of monetary policy. Under disintermediation in the banking industry, indicated by Loan to deposit ratio (LDR) currently at only 34%, the validity of the monetary policy is under attack. The attacks are based on the assumption that the work of credit channel depends on the extent to which banks rely on deposit financing and adjust their loan supply schedules following changes in bank reserves as responses to monetary policy action.

The economic crisis that began in the mid-1997 completely changed monetary and banking landscape in Indonesia. After nearly ten years of rapid expansion, Indonesia's banking system is crippled, with the vast majority of dominant local banks now technically bankrupt without government support. It then means that when banks strive to survive, no actions will be done to respond to the monetary policy action but only responding to prevent from the death. However, the study is not based on that presumption. We still believe that the roles of monetary variables are still important to influence the bank managers to change their loan or balance sheet position.

THEORETICAL BACKGROUND

The debate on the monetary policy via bank lending channel and balance sheet channel emerged from the existence of asymmetric information problem between lender and borrowers. Bank lending channel focuses on the assumption that bank loan is very important for successful monetary policy. In the monetary policy channel via the "bank lending" (Bernanke and Blinder, 1988), monetary transmission mechanism was delivered by banks upon changing their assets as well as their liabilities.

Arestis and Sawyer (2002) identify six possible channels of monetary policy can be. There are to begin with, the channels traditionally identified in the literature: the interest rate channel; the wealth effect channel; the exchange rate channel. These are what has been termed the monetarist channel. Two further channels have been identified more recently: these two are essentially a credit channel normally discussed as comprising two channels: the narrow credit channel (sometimes referred to as the balance sheet channel), and the broad credit channel.

Banking industry has special role. Himmelberg and Morgan (1995) suggest that lenders attempt to control agency problems by imposing restrictive covenants in lending contracts. These covenants require firms to maintain minimum levels of net worth and working capital to prevent become the "zombie company". That is the reason of monitoring. Diamond (1984) suggests that the bank as the delegated monitor of depositors. Himmelberg and Morgan (1995) argue that intermediaries are more efficient at monitoring financial contracts because reusability of information and ability to force debtors more efficient.

During a monetary contraction situation, banks will decrease their reserves and reduce their deposits and the loan. In a monetary expansion, banks increase the loan. If the decrease in deposits

individual firm data, Nilsen (1999) concludes the bank lending channel become less important to transfer the effect of monetary policy because small firms still can increase their demand on loan by shifting from investment loan to trade credit.

The importance of banking in the economy especially to the behavior of output that driven by aggregate bank credit will be necessary condition for prompt economic recovery. During the crisis, banks were forced to cut lending, and this resulting "credit crunch" . This is, then believed as the propagation and deepening the crisis. So then restoring the flow of credit should be a priority for policy-makers in the immediate aftermath of banking crises. Bernanke (1983) argued that the contraction in credit inhibited by the banking crisis was instrumental in the propagation of the Great Depression in the U.S. Recent attempt to test for a credit crunch effect in Indonesia was done by Hariadi (2002) and found the evidences of credit crunch during the crisis.

The study on the monetary policy strategy in Indonesia during the banking crisis has been investigated extensively especially by Fane (2000). The strategy was mainly controlling the growth of M0. In sum, achieving a modest target for domestic inflation would not have been very different in practice from setting tight limits on the growth of M0.

METHODOLOGY

The Framework of The Study.

The point of departure of the study is based on assumptiona adopted from Luísa Farinha and Carlos Robalo Marques , *The Bank Lending Channel Of Monetary Policy: Identification And Estimation Using Portuguese Micro Bank Data*, ECB Working Paper 102, December 2001 which states that the monetary policy works by affecting bank assets (loans) and banks' liabilities (deposits). The key point is that monetary policy besides shifting the supply

of deposits also shifting the supply of bank loans. In this context, the crucial response of banks to monetary policy is their lending response and not their role as deposit creators. The two key necessary conditions that must be satisfied for a lending channel to operate are: (a) banks cannot shield their loan portfolios from changes in monetary policy; and (b) borrowers cannot fully insulate their real spending from changes in the availability of bank credit.

The first condition assumes that banks are not able to completely offset the decrease in deposits brought about by monetary policy shocks, by resorting to alternative sources of funds (at least not without incurring in increasing costs). Because of the extra premium that banks have to pay to bring in alternative external funds, banks will make fewer loans after the fall in reserves brought about by monetary policy. Of course, it is expected that banks hedge against changes in monetary policy, by holding securities as a buffer against a reserve outflow. But such buffer is not expected to fully offset the effects of a monetary policy contraction, as buffer stocks are costly for banks (in terms of interest foregone).

The second condition assumes that some spending, which is financed with bank loans, will not occur if banks cut the loans, else the real consequences of the credit channel will be null. In summary, while the traditional theory emphasizes the households' preferences between money and other liquid assets (bonds) the credit view argues that the banking behavior is also very important to the transmission of monetary policy .

According to Warjio and Agung (2002) there are two necessary conditions for the validity of the bank lending channel; bank loans and securities must be imperfect substitutes for some borrowers, or some borrowers are bank dependent, second the central bank must be able to constrain the supply of bank loans using all available instruments. It seems these conditions are valid in Indonesia Case especially if we refer to Agung (1998).

Data

The data used in this study are aggregate data and collected mainly from Asia Recovery Information Center (ARIC) database, Asia Development Bank. The data is monthly and totally we got 131 observation from Januari 1991 to June 2002. We treated all data to fullfil stationarity using Augmented Dickey-Fuller test. When the data is stasionair at the level, no further treatments were conducted. If not the data is then differentiated. We assume the period of the banking and exchange rate crisis are started in July 1997.

Variables

Variables employed in this study are discount rate (SBI), Index of banking sector deposits (INADEPIDX), the growth of base money (INAGMO), the exchange rate movement index (DINAKURS) (July 1997 as 100), dummy variable for crisis (CRISIS) and for dependent variables the change in bank credit growth (INARBC).

Model of Analysis

To estimate the impact of monetary policy variables to the bank lending, the model of analysis used in this study is linear regression using the change in total banking system credit as dependent variable. The model is formulated below:

$$DINARBC = \alpha_1 SBI + \alpha_2 INADEPIDX + \alpha_3 INAGMO + \alpha_4 DINAKURS + \alpha_5 CRISIS + \alpha$$

Definition:

- DINARBC = The Changes in Total Banking System Credit
- SBI = Discount Rate of Central Bank
- INADEPIDX = Index of Deposits Change
- INAGMO = Growth of Base Money (M0)
- DINAKURS = Change in Exchange Rate Index (July 1997 as Baseline)

CRISIS = Dummy for Crisis (July 1997 and Aftermath as 1, previous is 0)

Estimation is carried out using Eview Statistical Packard Programme using ARCH model, order 1 both for ARCH and GARCH and no error term is selected.

The hypotheses we are to tested is on the work of monetary aggregate such as discount rate, base money and exchange rate, as monetary policy variable to influence bank lending. In the light of economic crisis, we also test the impact of this situation on the bank lending channel of monetary policy. We expect that the economic crisis lower the ability of monetary policy to influence the bank lending. As the crisis created volatility on all aggregates data, we expect that volatility will increase compared to the previous period. We modelled the news about volatility using the lag of the squared residual from the mean equation (the ARCH term). Consequence of such a condition is the last period's forecast variance (the GARCH term) which will increase and be significant.

RESULTS

Table 1 presents the descriptives statistic of the data used in the study. Two variables, DINARBC and DINAKURS, own negative mean. The coefficient of variation, measure by dividing standard deviation with its mean value, shows very interesting results. For the DINARBC, the coefficient variation is more than 45 so the variation is high or more than 45 time of its mean. The coefficient variation for DINAKURS is 4.6 meaning the variation is 4.6 time of its mean. For the SBI, INADEPIDX, and INAGMO the coefficient are less than one. It means the variations are quite low. However, similar to time series data, all variables are are not normally distributed.

Table 1. Descriptive Statistics of The Data Used.

	DINARBC	SBI	INADEPIDX	INAGMO	DINAKURS	CRISIS
Mean	-252.8767	18.12609	112.1156	19.91170	-0.729071	0.434783
Median	1235.065	14.14000	81.21174	18.76434	-0.367495	0.000000
Maximum	92401.36	70.81000	244.7974	60.31731	6.260430	1.000000
Minimum	-74961.37	7.450000	26.74673	-3.211550	-24.86328	0.000000
Std. Dev.	15318.06	12.07641	73.24712	11.74330	3.398923	0.497534
Skewness	-0.164680	2.894416	0.479992	1.398442	-4.398113	0.263117
Kurtosis	19.59510	11.29209	1.630116	5.614703	28.88497	1.069231
Jarque-Bera	1584.158	588.0491	16.08937	84.29056	4297.580	23.02756
Probability	0.000000	0.000000	0.000321	0.000000	0.000000	0.000010
Observations	140	140	140	140	140	140

Table 2 presents the estimation result of the role of banking credit as monetary policy transmitter. The R-squared is 40% and the adjusted R-Squared is only 37%. The null hypothesis stating the model can not be used as a tool to analyse the

impact of monetary policy is rejected. The F statistic is 11.17. If we look at the table, we will see the F-table is 3,12. Further more, if we look at Probability of F-statistics, it is significant at 1%. It means the model is plausible to be used as tool of analysis.

Table 2. The Estimation Results

Dependent Variable: DINARBC Method: ML – ARCH Date: 07/07/04 Time: 13:06 Sample (adjusted): 1991:01 2002:09 Included observations: 140 after adjusting endpoints Convergence achieved after 45 iterations					
Variable	Coefficient	Std. Error	z-Statistic	Prob.	
SBI	-406.7667	83.45679	-4.873980	0.0000	
INADEPIDX	104.5336	32.17334	3.249075	0.0012	
INAGMO	183.3257	82.50008	2.222128	0.0263	
DINAKURS	-2132.700	212.1771	-10.05151	0.0000	
CRISIS	-18213.36	3986.228	-4.569070	0.0000	
C	-2147.124	2743.143	-0.782724	0.4338	
Variance Equation					
C	87778343	17746997	4.946096	0.0000	
ARCH(1)	0.567345	0.219076	2.589716	0.0096	
GARCH(1)	-0.102664	0.045630	-2.249936	0.0245	
R-squared	0.409264	Mean dependent var			-252.8767
Adjusted R-squared	0.372629	S.D. dependent var			15318.06
S.E. of regression	12132.93	Akaike info criterion			21.04826
Sum squared resid	1.90E+10	Schwarz criterion			21.23916
Log likelihood	-1443.330	F-statistic			11.17146
Durbin-Watson stat	2.290139	Prob(F-statistic)			0.000000

Indonesia has experienced economic crisis since the mid of 1997. This crisis brought a substantial impact to the whole economy. The variable CRISIS is dummy variable to cope with this crisis. The coefficient is -18213 and the z-statistics is -4.57 so it is significant at 1%. The result provides evidence that the banking industry faces very difficult time during the crisis. Due to their huge foreign exchange open position as result big borrowing in USD, most of big banks economically bankrupt because they lent it in Rupiah denominated loans. The crisis also increase NPL reaching 70%. In general, the crisis has negative impact to the banking industry and reduce the capacity of credit demand. This finding support Hariadi (2002).

The actual, and fitted figure are very closed before the year 1998. It provides information how this model can capture the impact of the crisis. After the year 2000, the actual and fitted value were very closed almost reaching the situation before the crisis again. However when we looked at figure 3, we see how the residual of this model behaved, it can be easily identified that the residual is not normaly distributed because the Jarque-Bera staitistics is 385.

CONCLUSION

From the discusion above we could conclude that the role of the bank credit as monetary policy channel in Indonesia is unchallenged. The monetary variables such as discount rate policy, base money and exchange rate policy are very important in determining the banking credit. As the credit is very important to influences the economic activitiy, the result provide firmed evidence that monetary policy is important as a tool to control economic activity via credit channel. The ability of credit channel as monetary policy channel place the banking industry as a strategic partner for monetary authority to control the economic activities. It also provided support that monetary authority action increased

discount rate until 70% during the crisis was necessary although it was not sufficient.

During the time of crisis, monetary policy via bank credit is less effective. Very high coefficient of crisis dummy variables indicated that during that periode any action to control credit by increasing the discount rate produced contraproductive result. Other measure such as moral suation and temporary credit control can be supplemented policies.

As financial institutions play a crucial role in channeling funds from those who save to those who invest. Academic research has therefore given much attention to studying the terms under which such institutions both borrow and lend to fulfill this role as intermediary. However, for micro analysis, the difficulty in studying banks' lending come from the complicated nature of financial contracts such as collateral requirements, flexible payment schedules, commitments, and other non-price terms. Even monetary stability is not enough. This study is very broad so can not provide explanation why the lending getting decrease while the situation is more favorable. However this study provide strong evidences that monetary is still useful and necessary as a tool to influence bank lending.

The result from ARCH and GARCH model found that the volatility are decreasing and nearly toward stable situation. However, as this study contain some limitation especially on the level of data used. Future study to investigate how credit market working by using monthly bank level data during the crisis time. Therefore, it can provide basis for correct policy action in the future.

REFERENCES

- Aghion, Ph, Ph. Bacchetta and A. Banerjee. 2000. *Currency Crises And Monetary Policy In An Economy With Credit Constraints*, CEPR Working Paper.

- Kakes, J and Strum, JE. 2002. Monetary Policy and Bank Lending: Evidence from German Banking Group, *Journal of Banking and Finance*, Vol. 26, No. 11
- Kashap, Anil, K. and J.C Stein and David W. W. 1993. The mOnetary Policy and Credit Condition: Evidence from The Composition of External Finance, *American Economic Review*, Vol. 83, No.1, pp. 78-98
- Kasyap, AK, Stein J.C. 1997. The Role of Banks in Monetary Policy: Survey of Implication for The European Economic Union, *Economic Perspective*, Fed. Reserved Bank of Chicago. Vol. 21, pp. 2-19
- Lensink, R and Sterken, E,(2002), Monetary Transmission and Bank Competition in The EMU, *Journal Banking and Finance*. Vol. 26 pp. 2065-2075
- Himmelberg, C. and D. Morgan. 1995. Is Bank Lending Special? *In Is Bank Lending Important for the Transmission of Monetary Policy?* Edited by J. Peek and E. Rosengren, 15–36. Federal Reserve Bank of Boston Conference Series No. 39.
- Diamond, D. 1984. Financial Intermediation and Delegated Monitoring. *Review of Economic Studies* .Vol. 5, pp. 393–414.
- Nilsen, Jefry H,. 1999. Trade Credit and the Bank Lending Channel, *Swiss National Bank Working Paper* No. 99.08
- Peek, J and Rosengren, E. 1995. The Capital Crunch: Neither a Borrower Nor Lender Be, *Journal of Credit Money and Banking*, Vol. 27, pp.149-213