BANKS CLAIMS ON PRIVATE SECTOR AND MONETARY POLICY CHANNEL

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Abstract

Banking industry is the main channel of monetary policy. As emphasized by the information-theoretic approach, a central function of banks was to screen and monitor borrowers, thereby overcoming information and incentive problems. By developing expertise in gathering relevant information, as well as by maintaining ongoing relationships with customers, banks could control their business. Since 2000, Bank Indonesia started to implement a new framework of monetary policy and was initially applied in July 2005. The impact of new monetary policy framework was investigated within the banking capital adequacy regulation and economics framework. We found that stock exchange index (IHSG) was positive and significant at 1%. Other variables such as FINSHARE, GM2, NPL, CAR, BIRATE were negative and significant. In general, we concluded that banking sector claims on the private sector was one of important monetary policy channels.

Key words: *monetary policy, private claims, bank capital*

The increasing participation of banking sector in the Indonesia economy has been one of the most striking structural changes. The change was started after the introduction of Pakjun 1983 (Policy package that allow banking firms to determine their own interest rate and new product development) and Pakto 1988 (Policy package 1988) which reduced the regulatory barrier to establish new banking firm). At that time, the background to open the market was to mobilize the domestic saving. The policy also open domestic banking market to foreigner as an effort to increase export. This study is aimed to investigate the determinant of banking willingness to provide fund to private sector in nature of loan, refinancing, trade financing and etc. This approach is further innovation for

study of bank lending channel similar to Nielsen (1999) which uses trade credit rather than traditionally used loan.

The object of monetary policy is to influence the performance of the economy as measured by inflation, economic output, and employment. It works by affecting demand across the economy that is, people's and firms' willingness to spend on goods and services.

Monetary authority main jobs is to create a shortage a "shortage" or "excessive" fund in the market to influence the economy. Contractive or shortage monetary policy makes banks and other financial institutions do not actually have enough liquidity to meet their commitments because most liquidity are ab-

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sorbed by monetary authority. In ease monetary policy, central bank will reduce discount rate that makes liquidity abundant in the market. In Indonesia, Bank Indonesia (BI) monetary policy will impact into three steps:

The first stage is that a change in the official rate or expected money supply set by the board of governor. It can be BI-Rate or Central Bank Discount Rate. Banks have to react to any official rate change by changing their own savings and loan rates. The change will also affect the prices of many assets; shares, houses, gilt-edged security prices and so on. The exchange rate may change as demand and supply of rupiah in the market to adapt to the new level of interest rates. Finally there may also be an effect on the expectations of both firms and individuals. They may become more or perhaps less confident about the future path of the economy.

The second stage is that all these changes in markets will affect the spending patterns of consumers and firms. In other words there will be an effect on aggregate demand. Higher interest rates are likely to reduce the level of aggregate demand, as consumers are encouraged to save rather that spend. Loan demand will decrease as cost of borrowing also increase.

The third stage is the impact of the aggregate demand change on GDP and inflation. Both short-term and long-term interest rates will be affected. The banks have to change the base rates. Higher interest rates will tend to reduce the prices of various assets. Shares (equities) are likely to be affected. The markets will anticipate the effects of the higher interest rates on spending, and reduce the value the shares of companies. Any future returns from shares will also be discounted by a larger amount, and so be valued less. This will reduce the value of the shares.

In academic work, how monetary policy impacted the economy is chanelled using various approach. Taylor (1995) defined the monetary policy transmission as the process through which monetary policy decision are transmitted into change in the real

GDP and inflation. There are many many transmission mechanisme such as interest rate, exchange rrate, asset price, credit and expectation.

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 is not offset by other funds which are not subject to reserve requirements, or by securities sale, this will result in a decrease in bank loans. If bank loans fall and bank dependent borrowers are dominant in the economy, real investment expenditure will fall. Since bank loans in Indonesia remain the main source of external finance for business enterprises, a disrupting of bank loan supply can reduce the economic activity.

Individuals are also affected by interest rate changes. An increase in the interest rate will mean that their disposable income is likely to have fallen if they are net borrowers. The most obvious impact of this is through the mortgage rate, given that 80% of personal debt in this country is loans secured on houses. Higher mortgage payments mean that people have less money left to spend on other things and so spending is likely to fall.

There is general agreement among economists and policymakers that monetary policy works mainly through interest rates. When policy is tightened through a decrease in reserve provision, for example, interest rates rise. A rise in interest rates leads to a reduction in spending by interest sensitive sectors of the economy, such as housing and consumer purchases of durable goods. Banks play a part in this interest rate mechanism since a reduction in the money supply which consists mainly of deposit liabilities of banks is one of the principal factors pushing up interest rates. In this standard view of the monetary transmission mechanism, however, there is nothing unique about bank lending. Indeed, the interest rate mechanism does not depend on what assets banks hold; the same response would occur regardless of the proportions of a bank's assets that are held as loans or securities (Bernanke & Blinder, 1988).

The credit channel is alternative way to monetary transmission mechanism. However, in other words, the credit channel is an enhancement mechanism of interest rate channel. This new view of monetary transmission emphasizes how asymmetric information and costly enforcement of contracts creates agency problems in financial markets (Bernanke & Gertler, 1995).

As described by the credit channel, an external financial premium, which is a wedge between the cost of funds raised externally (by issuing equity or debt) and the opportunity cost of funds raised internally (by retaining earnings), has an important role in economic activities. The size of an external finance premium reflects imperfections in credit markets that drive a wedge between the expected return received by lenders and the costs faced by potential borrowers. Monetary policy, which alters interest rate, tends to affect the external finance premium in the same direction. Thus, the direct effects of the monetary policy on interest rate are amplified by changes in the external financial premium. This complementary movement in the external finance premium may help explain the strength, timing, and composition of the monetary policy effects better than a reference to interest rates alone. Two mechanisms have been suggested to explain the link between monetary policy actions and the external finance premium: the balance sheet channel and the bank lending channel.

Haimowitz (1996) uses annual data across 450 standard industrial classification (SIC) 4-digit manufacturing industries in the United States to examine how industry prices and output respond to monetary shocks, and to examine how those responses are affected by certain industry characteristics. The industries are classified according to whether they produce durable goods or not, are highly concentrated or not, produce goods for producers or goods for consumers, and whether they are able to hold relatively high levels of inventories or not.

Nilsen (1999) found that monetary contractions impacted bank to restrict some firms' loans, thus re-ducing their desired investment independently of interest rates. The study found that small firms increase trade credit, a substitute credit, indicating a strong loan demand. It supports the bank lending channel theory that banks do not voluntarily cut bank loans but bank to increase fund provision to a less-desirable alternative. Using trade credit is saver since unlike commercial paper, it is widely used by the small firms suffering the loan decline. Using individual firm data, Nilsen (1999) found the reasons large firms use trade credit are financial in nature to save cost of borrowing. Firms without a bond rating can increase trade credit less expensive than entering to the market credit such as bond issuing. The bond rating is a mark of quality which gives banks also primacy with loans from banks.

Kim (1999), using Korean cases, found that bank credit channel is significant after the crisis. The sharp drops in credit supply in line to the eastern Asia crisis reduced credit supply provided evidence that contractive monetary policy was responded. There is strong evidence that a substantial excess demand for bank loans because of a dramatic decrease in loan supply as impact of banking crisis. Ibrahim (2004) found that bank lending required stability of the stock market and interest rate policy after the crisis.

Previously, Kasyap & Stein (1997) found supportive evidences that credit channel is as monetary policy channel. The study was using USA bank panel data during 1976-1993. The study found evidences the impact of monetary policy that affected bank's propensity to lend, especially among illiquid banks. For Indonesian cases, Agung (1998), using sample data from 1985-1995, proved that a monetary policy was able to influence the bank supply of credit, in particular small banks, not large banks which were able to shield their bank loan supply by finding the cheaper source of funds from overseas. Further investigation using aggregate data during episode of crisis, Warjio & Agung (2002) conclude that monetary policy is still effective to affect bank lending. However different type of bank has different elasticity.

De Haan (2001) using bank level data divides all bank operating in the Netherlands into two classifications base on financial health and market orientation. The results for loan supply suggest that a lending channel is operative in the Netherlands but become less effective for secured bank debt. It means contractive monetary policy does not have any negative effect on secured bank lending.

Fukuda, Kasuya & Nakajima (2005) conducted a study on the impact of non performing loan (NPL) and capital adequacy (CAR) on bank lending. Their finding found that banks facing with deteriorate capital adequacy tend to reduce their loan provision especially for small and unrated company. In other hand, The deterioration of NPL ratios actually increased risky lending to troubled firm as their usually willing to pay higher interest. The results imply that the different measures of bank health have different implications for bank lending during the financial turbulence in Japan.

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.

Mongid (2003) found that 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. During the time of crisis, monetary policy via bank credit is less effective. Very high coefficient of crisis dummy variables indicated that during that period any action to control credit by increasing the discount rate produced contra productive result. Other measure such as moral situation and temporary credit control can be supplemented policies.

Bluedorn & Bowdler (2009) point out that there are multiple respond of banking industry to monetary policy. There is impact on lending responses to monetary contractions at the same time banking firms try to shield lending to saver borrower such holding company affiliation. They also found sign reversals in the effects conditional upon some characteristics. In some point, share price also very important specifically, the share of securities in total assets which serve as a tool to amplify policy transmission from exogenous interest rate changes. One explanation for this result is that many types of securities are subject to an adverse valuation effect following exogenous monetary policy contractions, which limits the scope for lending at banks that hold them in large numbers.

METHODOLOGY

The point of departure of the study is based on assumption adopted from Worms (2001), The Reaction of Bank Lending to Monetary Policy Measures In Germany, ECB Working Paper 96, which states that a crucial condition for the existence of a credit channel that works through bank loans is that monetary policy should be able to change the supply of bank loans. 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.

According to Warjio & 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).

The data will be used in this study are bank level data, monetray policy data and collected mainly from Bank Indonesia database Blomberg, Datastream and Asia Development Bank. The data is monthly and cover the period of 2003-2009. Variables employed in this study are: (1) Claims on the Private Sector based on year on year percentage change (KLAIM).

Total claims consist of loan and other claims. (2) Composite Stock Price Index based on monthly average, indexed as January 2007=100 using local currency. Data collected from Bloomberg Database (IHSG). (3) Growth of Broad Money based on annual growth percentage, using local currency. Data is collected from Bank Indonesia Financial Statistic (GM2). (4) Nonperforming Loans is percentage non current loan of total commercial bank loans. Data is from Bank Indonesia (NPL). (5) Policy Rate is set by Bank Indonesia, in percentage, data is collected from Bloomberg LP Data Stream (SBI). (6) Risk-Weighted Capital Adequacy Ratios is percentage of capital to risk-weighted assets. Data is from Bank Indonesia (CAR).
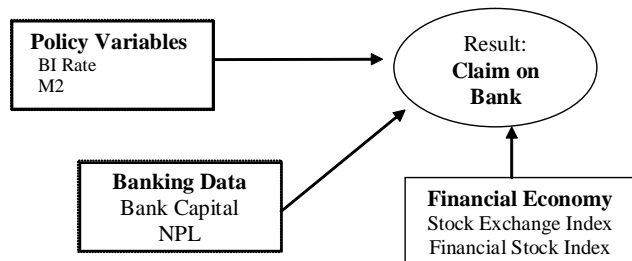

Figure 1. Framework of Analysis

The analysis of the study is based on a time series regression to cover the impact of monetary policy variables, economic variables and banking sector variable and economic error effect that always viable in the time series modeling. To begin, the function is represented as:

$$BPC = \alpha + \beta n\, Xi,t + + \varepsilon t$$

Where BPC is bank claim to private sectors; Xi,t is policy rate, capital adequacy, stock price index, non performing loan, broad money and financing sector stock index for each period. The å denotes to error term. To estimate the impact of monetary policy variables to the private claim, the model of analysis used in this study is linear regression using the bank claim to private sector as dependent variable. Estimation is carried out using Eview Statistical Packard Program.

Table 1 present the statistics of the data used in the study. BI rate as policy variable has mean value 9.21% with the median value is 8.75%. There are 57 observations since the introduction of this policy rate. The data is not normally distributed. Second policy variable is growth of broad money (GM2). The mean value is 12.58 meaning average annual growth of broad money is 13%. During the observation, the lowest annual growth is 4.26% in January 2003. The data is not normally distributed.

We use two banking sector variables: capital adequacy ratio (CAR) and non performing Loan (NPL). Mean value for variable CAR is 20.46% and it is far exceed the minimum regulatory of 8%. In general Indonesian banking is on excessive capital. The minimum of the CAR is still twice the regulatory set. CAR is normally distributed. NPL as a measure of bad loan in regulatory perspective is set at maximum 5%. The

Table 1. Descriptive Statistic (%)

	BIRATE	CAR	FINSHARE*	GM2	IHSG*	KLAIM	NPL
Mean	9.21	20.46	76.14	12.58	78.16	24.43	5.92
Median	8.75	20.71	70.71	14.24	72.21	23.59	6.13
Maximum	12.75	25.30	142.03	20.35	154.39	40.20	8.42
Minimum	6.50	16.70	22.79	4.26	22.05	8.67	3.20
Std. Dev.	1.82	2.00	32.18	4.67	37.98	8.22	1.66
Jarque-Bera	6.47	1.64	3.64	7.74	5.19	2.69	6.48
Probability	0.04	0.44	0.16	0.02	0.07	0.26	0.04
Normality	No	Yes	Yes	No	Yes	Yes	No
Observations	57.00	82.00	82.00	78.00	82.00	81.00	82.00

*Index January 2007 = 100

mean value is 5.92% so it is exceeding the regulatory standard. Maximum NPL is 8.42% and the minimum is 3.20%. The NPL is decreasing steadily.

Financial economic variables used in this study are financial share index (FINSHARE) and stock exchange index (IHSG). We do not used Certificate of Bank Indonesia (SBI) as this variable is correlated to BIRATE. Mean for FINSHARE is 76.14 with maximum value is 142.03 and minimum is 22.79. Data is normally distributed. IHSG is general stock price index. The mean is 78.16 and maximum is 154.39 and minimum value is 22.05. The data is not normally distributed.

Claim on private sector as mentioned before is a total claim of banking industry to private sector. We use this definition to investigate the real impact of economic condition on banking industry decision. By this definition, we eliminate the claim on government which is mostly determined by non economic condition. Mean value for KLAIM is 24.43 with minimum 8.67 and maximum is 40.20. The data is normally distributed.

Table 2 presents the result of the estimation model where private claim (KLAIM) as dependent variables. From the table we can see that growth of private claim positively related to IHSG and negatively to FINSHARE. Monetary policy variable, BIRATE, is negative and significant meaning that any increase in policy rate will decrease bank willingness to provide claim to private sector. However, GM2, as indicator of intermediate target of monetary policy, has negative sign but not significant.

In the banking industry perspective, the three month lag NPL has negative impact to willingness banking industry to provide claim on private sector. This result is reasonable as most of private claim is in loan. It means any increase in NPL, basically will decrease willingness of bank to produce more loans. The three month lag is the best as it provide banks ample time to adjust their position.

The variable CAR is producing astonishing result as it is negative. The result can be interpreted as any increase in CAR will decrease the willingness banking industry to provide more claim to provide sector. It is very strange as rational banker will always maintain lower regulatory capital to increase shareholder values. With this result, it provide further evident that Indonesian banker is more risk aversion. The rational of this kinds behavior can be traced from regulatory perspective. After the crisis 1998, bank is very prudential and capital is becoming the standard for sound banking rating. The pressure to provide minimum capital Rp. 100 billion made many banks to attract more capital from outside such as foreign investor and merger.

The temptation to maintain higher capital ratio is also supported by the availability of investment instrument to perform such business policy. Banking industry can buy central bank certificate (SBI) that provide quite high yield but less capital requirement. Under banking capital regulation standard, SBI has zero risk weighted rate. It means bank still enjoy printability and maintain higher capital. At the same time,

Table 2. Estimation Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	100.8454	10.17117	9.914825	0.0000
IHSG	0.250968	0.067638	3.710427	0.0006
FINSHARE	-0.481261	0.091592	-5.254386	0.0000
GM2	-0.134179	0.272634	-0.492158	0.6251
NPL(-3)	-1.632461	0.506008	-3.226155	0.0024
BIRATE(-3)	-2.819690	0.473662	-5.952958	0.0000
CAR(-2)	-0.945586	0.435889	-2.169325	0.0356

Adj-R-Square=83%, F-Test= 42 (1%)

banks are relying on short term funds that require banks to provide liquidity buffer.

Looking at the adjusted R-squared, the value is 83% meaning that the model can explain 83% of the variability of private claim. The F-test ratio is 42 and significant at 1%. We can conclude that the model is viable to be used for the analysis. However we suspect that the error is not constant. To test if the heteroschedasticity exist, we conduct the ARCH-Test by modeling error term. From the test we found that Observed R-Squared 22.46. It means that the result confirmed the existence of ARCH effect. It is the nature of macroeconomic and financial time series data. To solve this problem, we remodel the equation by considering ARCH Effect. See Table 3.

Table 3 presents the result that consider error term that change over time. We found that ARCH effect is viable and significant at 5%. This finding confirm that banking firm willingness to provide claim to private sector is becoming less capable to be explained by set of variable used in this modeling above. The other variable that related to time may improve the ability of the model to explain the behavior of banking to provide more claims to private sector. Furthermore, the ARCH coefficient is still low indicating time variance is still tolerable.

Comparing Table 2 and Table 3, we can conclude that result is similar. Constant is slightly lower from 100 to 95. IHSG is lower than without consider-

ing variance in the model but still significant at 1%. FINSHARE is getting higher and still significant at 1%. GM2 is still negative and not significant. NPL is almost unchanged and still significant at 1%. CAR is slightly higher and substantially increase the significant level form 5% to 1%. BIRATE is also getting higher and significant at 1%. In general only NPL is substantially different from the model without time variance.
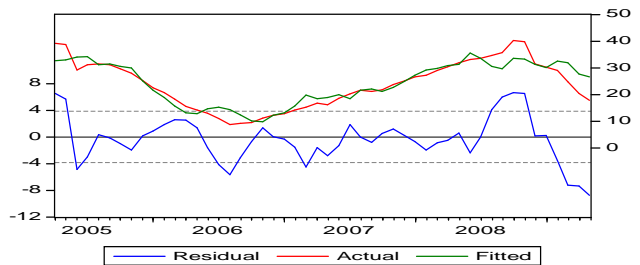

Figure 2. Plot of Fitted, Actual and Residuals

Related to the stock exchange variables, we can that the banking industry requires the stability of stock market. In the stock index, any increase will positively related to higher growth of private claims. This situation means that although the strict regulation to prohibit bank involving in the stock trading, the implicit relationship is exist. As the stock market indicates the future performance of the economy in general, it is clearly uncovered that banking industry shares the same spirit to stock market. At the same

Table 3. Estimation Result After Considering ARCH Effect

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	95.24115	6.432307	14.80669	0.0000
IHSG	0.222470	0.041367	5.377951	0.0000
FINSHARE	-0.432823	0.059660	-7.254841	0.0000
GM2	-0.023611	0.176165	-0.134026	0.8934
NPL(-3)	-1.613534	0.286471	-5.632458	0.0000
BIRATE(-3)	-2.693120	0.364012	-7.398447	0.0000
CAR(-2)	-0.879606	0.230676	-3.813166	0.0001
Variance Equation				
C	3.020005	1.431697	2.109388	0.0349
ARCH(1)	0.916764	0.455900	2.010886	0.0443
GARCH(1)	-0.077223	0.110715	-0.697491	0.4855

time, effort to shield also occurred. Bank tend to reduce the provision of private claim when financial share index (FINSHARE) increase. This is very interesting because there is no clear explanation why this situation exists. Is it because private claim is regarded as a risky investment?.

The ARCH effect can be noticed from the Figure 2. It is clear that after 2008, the ability of the model to predict the result decrease. Wider residual indicate unstable condition. It supports the claim that global crisis in 2008 affected Indonesian economy especially on stock price and bank lending. As bank lending is the most part of claim on private sector, the evidence provides support that stock market also influence the bank behavior on lending. On the reliability of the model, after we consider the ARCH effect, we strongly believe that the model is reliable. From the error term, we conducted test whether the error is normally distributed or not. Using Jarque-Berra test, we conclude that the error is normally distributed and heteroschesdaticity solved.

CONCLUSION

Since 2000, Bank Indonesia started to implement a new framework of monetary policy academically known as inflation targeting. By this framework, Bank Indonesia set an explicit target for monetary policy, generally stated in terms of the inflation rate. The new framework was initially set in July 2005. In this paper we conducted a study on the impact of monetary policy, banking capital adequacy and stock exchange index on banking industry's willingness to produce a claim on private sector. Claim on private sector is total claims that banking industry own to private sector.

Stock exchange index provide two competing result. For IHSG, the coefficient is positive and significant. On the other hand, share of financial sector index (FINSHARE) produce a negative sign and significant. These results indicate that the competing result may evidence the nature of prudential behavior among banking firms in general.

Monetary policy variables are measured using two items. For growth of broad money (GM2), the result is negative but not significant. The result underline that banking firms do not recognize broad money as policy variable. BI Rate as indicator of the policy stance of Bank Indonesia produce negative sign indicating that banking industry has been using this policy rate as policy indicator. In general, the result indicating that banking firm is still viewing BI rate as a stimulus and as a breaker.

Banking industry variables measured by NPL and CAR. Both of variables indicate negative sign implying that higher NPL is lowering capacity to provide more claim to private sector. Strangely, CAR also has negative sign implying bank capacity to retain higher CAR by shifting from private claim to claim on central bank. In the future, further investigation on the impact of capital adequacy on bank behavior should be elaborated under the framework of monetary policy channel.

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