Comparing the Bank Credit Market of two types of Banks in Indonesia: Is there a Banking Disintermediation Phenomenon in State Owned Banks and Non-Foreign Exchange Commercial Banks

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Abstract

This study aims to analyze variables affecting the demand and supply of credit State Owned Banks and Non-Foreign Exchange Commercial Banks in Indonesia after the monetary crisis. It analyzes the gap between current demand and supply to the desired level of demand and supply, and analyzes the gap between the demand of credit and the supply of credit. Finally, it examines the respond of demand and supply of credit on the changes in the internal and external conditions.This research uses data on quarterly banks individually (2002.01-2007.04) to estimate the demand and supply model. The data estimated is using the dynamic panel data regression model and the seemingly unrelated regression (SURE) method to find out about the individual effect of the credit market. In general, this study finds that the banks' behavior in the demand and supply of credit in the Indonesian credit market are different. In addition we find that there was a gap between demand and supply of credit after the monetary crisis in 1997. The slow adjustment on the demand and supply of credit into the equilibrium position is the underlying reason of the emergence of the disintermediation phenomenon in the Indonesian banking industry. Therefore the time required influencing the demand and supply of credit was longer.

Keywords: banking disintermediation – bank credit market–credit gap – response

JEL Classification Numbers: E51, E52, E58

A. INTRODUCTION

After the 1997 economic crisis, we can suspect that banks had a disintermediation problem. It increased the monetary transmission mechanism of the concern. There is a dispute in the monetary economy regarding the most effective transmission mechanism to achieve the monetary policy objectives. The policies aim to influence the economy.

The emergence of a banking disintermediation phenomenon in the countries, hampered by the economic crisis in 1997, stimulated the discussion on the credit channel. Banking disintermediation will disrupt the recovery of countries that experienced crisis. Disintermediation creates a difficulty of real sector to access credit from banks for investment.

In the case of Indonesia, the banking disintermediation problem has become a controversial discussion, especially after the monetary crisis in the mid of 1997. The crisis had expanded into a multidimentional crisis. Some studies on banking intermediation in Indonesia found diverse conclusions and even contradictory findings.

B. LITERATURE REVIEW

Zulverdi et al. (2004) investigate the increasing undisbursed loans and the banking intermediation function. They utilized survey data on the top 30 banks on the credit market, which represented some bank types and 10 companies, which ever received or still receive loans from banks in the last two years. Their findings show that regarding the supply side, the increase of undisbursed loans is related to the market concentration degree of each bank group. Further on the demand side, the increase of undisbursed loans has a significant relation to the degree of the sector sensitivity on the economy cycle, business scale, and market orientation. The study addresses some factors that underly the increase of undisbursed loans. The increasing credit commitment, compared to actual credit needs, and the aggressive behaviour of banks in offering credit to high qualified debitors are the underlying factors of high undisbursed loans. Even though the bank's intention to allocate credit is high, the credit realization is less because banks seem to be too cautious in disbursing the loans. The credit expansion is also less as banks charge high risk interest rates and tighter requirement to be fulfilled by new debitors.

Alamsyah's (2004) study on Indonesian banking disintermediation concluded that banking disintermediation reduced the monetary policy effectiveness during the crisis and after the crisis. A structural change in the bank and the debtor departement is changing the monetary policy effectiveness. As banking is still becoming the main source of fund, the recover process is slower for Indonesia compared to other countries that experienced the crisis. Furthermore, the study found a problem of asymmetry with the handling of information in the banking industry. The risk perception, even though it was getting lower, was still high. It persuaded banks to be too cautious to disburse loans.

Empirical studies found the important role of banks as a source of funds, both in developing and developed countries. Stiglitz and Greenwald (2003) stressed the fact that a bank is more superior than other financial institutions because as a financial intermediary it has the capacity to minimize asymmetry information and operational cost. In developing countries, for example Indonesia, banks are very essential for the economy. A banks acts as the source of funds. Moreover they determine the business cycle. From 2001 to 2004, the credit allocation from the banking industry contributed up to 77 % in average of the total funding from financial institutions (Alamsyah, 2004). Thus the Indonesian economy has a high correlation with the banking system.

The empirical research in some countries found the relation between the development of the financial sector and the real sector or economy growth in general (Bencivenga and Smith (1991); Levine and Zevros (1998); Levine (1997); Rousseau and Wachtel (1998))[1]. However, we suspect inconsistency in the case of Indonesia. On one side, Indonesias banking industry did not seem to experience the intermediation problem. Compared to other ASEAN countries, which experienced the crisis, Indonesian banking was performing much better between 1998 and 2004. It had a high *Capital Adequacy Ratio* (CAR) and a low *Non Peforming Loan* (NPL) even though the economy growth was slower than in other countries in the same region.

On the other side, the outstanding performance of the banking industry was not followed by its capacity to function as an intermediary institution. The reduction on the interest rates of Bank of Indonesia Certificates (SBI) could not persuade commercial banks to reduce the interest rate for credit. In the beginning of 2007, the credit interest rates stood at 14.9 %, while the deposit interest rates for one month stood at 8.6 % in average.

The credit interest rates rigidity created wide spread between credit and deposit interest rates. The rigidity was also shown by the wide difference between credit interest rates and SBI interest rates. The total amount of third parties fund in December 2006 reached Rp 1.287 trillion while the loan to deposit ratio (LDR) only reached 64.7 % of the total third parties funds[2]. It implies that the banking sector had an excess of funds of about Rp 454.1 trillion. By the end of 2006, the total disbursed loans were only Rp 832.9 trillion or increased only 14.1 % from the last position in the end of 2005.

Less conducive business climate and a high credit risk may explain the low motivation of the banking sector in disbursing the loans. Banks avoid risk and they change the assets portfolio from credit to risk free and profitable investment. The Indonesian bank data on banking assets composition showed that banks invest in SBI.

Insukindro (1990) studied the Indonesia credit market by using Indonesian monetary variables between 1969 and 1987. He found that the main determinant of the credit demand is transaction motive. It is in line with the assumption that the income of economic agents limits the demand of the bank's credit. Moreover the study found an indication that the motive of profit underlied the welfare maximization in the banking sector. Banks respond on the changes of bank's reserves and local private income.

In relation to bank's main role as a financial intermediary institution, it is interesting to examine the banks behaviour in selecting their assets portfolio. This information is important to understand the monetary transmission mechanism (Silber, 1969). According to Stiglitz (2003), the banks behaviour is a key in understanding the supply of credit.

[1] Further research conducted by Beck and Levine (2002) regarding to the industry growth and capital allocation concluded that industry which utilized external funding was growing faster in the country which has higher financial development and efficient justice system.

[2] Referring to data of 20 biggest banks in the South East Asia, the loans to deposit ratio (LDR) of Indonesia banks were the lowest (Data Bureau van Dijk (Singapore) with the collaboration of InfoBank Research Beaureu (2006).

Study on the commercial banks portfolio is important because:

1. The commercial banks portfolio explains the size and variation on money and banks credit;
2. In lower level, the banks behaviour on selecting their portfolio is a main factor determining the cost and credit allocation into particular sector in the economy.

The impediment of credit allocation into the real sector may be caused by the changing of banks behaviour in allocating their assets. The business outlook of the real sector has not recovered yet. In addition, banks tend to maximize their profit with regard to the expectation on the return to be gained from their assets portfolio.

Stiglitz and Greenwald (2003: 69-89) described some propositions regarding the impact of banks' regulation such as reserve requirement and capital adequancy requirements for the banks' portfolio. They argued that regulations will shift the banks behaviour to be more risk aversion, especially in the recession. Studies in some countries, Korea as an example, found that the changing on banks behaviour in selecting their portfolio decelerated credit into real sector. Referring to Choi (2000) the changing on behaviour was caused by the provision of regulation on Capital Adequacy Ratio.

In fact, the real sector argues that the high interest rate and tight requirement on credit applications are the determinant factors hampering the access into the banks' credit. In addition, banks are still concerned with the borrower's ability to pay the loans. The high interest rates have increased the funding cost from external sources. Finally, it will affect the firms' decision to make a loan.

In relation to the source of funding in financing the investment, the study by Myers and Majluf (1984) showed that in general internal funding, which does not create cost and information problems, is preferred to external funding.The study from Hoshi, Kashyap, and Scharfstein (1991) proved that financial factors, for example the availability of internal funding, affect the investment. It implies that firms face significant barriers to access the external funding.

Agung (2000) studied the problem of investment funding of Indonesian firms between 1993 and 1997. He concluded that the cash flow has positive and significant impact on the Tobin's q and the Euler model. Furthermore he proved that the leverage has negative and significant impact on the Tobin's q model but not significant impact on the Euler model. This conclusions shows the existence of financial constraint and agency cost on loans.

Referring to the previous section, there is a dispute on the source of the problem, contributed to the impediment of the credit allocation into the real sector. Azis (2004) argued that the problem is coming from the demand side rather than the supply side. In contrary, Halim (2004) concluded that banks in Indonesia have a risk averting behaviour, which is reflected in their reluctance to allocate credit into the real sector. The risk averting behaviour tends to avoid risk in optimizing the profit. In addition to that the role, the SBI has been shifted from a monetary instrument to an alternative investment. Since SBI has risk for free, it encourages banks to alter their asset portfolio from loans into an investment on SBI. The changing on the banks portfolios influces their role as an intermediary institution. This research aims to elaborate the banks and firms behaviour in order to examine the problems causing the impediment of a credit allocation from banks to the real sector.

Banks and the real sector have a similar behavior. They avoid risk and tend to wait and see the progress on the economic development. The risk averting behavior decelerates the progress of solving the disintermediary problem. Implementation of some policies by the authorities may be useless in encouraging the intermediary process without understanding the factors underlying the risk averting behavior.

This research uses data of individual banks to estimate the demand and supply model. The data is estimated using the panel data regression model to find out the individual effect of the credit market. In addition, this study will use a dynamic model in relation to the time series data behaviour.

C. METHODOLOGY

We will describe the specification of the credit market model for this study. We consider internal and external factors of firms and banks, and the difference in the banks and the firms scale in determining the appropriate specification.

In general the panel data regression model of demand and supply of credit is based on Auto Regression Distributed Lag (ARDL) model as follow:

Credit demand (of banks):

$$\begin{aligned} L_{it}^{D} &= \alpha_0 + \alpha_1 r_{Lit} + \alpha_2 INF_{it} + \alpha_3 KURS_{it} + \alpha_4 Y_{it} + \alpha_5 YGAP_{it} + \alpha_6 r_{Lit-1} \\ &+ \alpha_7 INF_{it} + \alpha_8 KURS_{it-1} + \alpha_9 Y_{it-1} + \alpha_{10} YGAP_{it-1} + \alpha_{11} r_{Lit-2} + \alpha_{12} INF_{it} \\ &+ \alpha_{13} KURS_{it-2} + \alpha_{14} Y_{it-2} + \alpha_{15} YGAP_{it-2} + \alpha_{16} L_{it-1}^{D} + u_{it} \end{aligned} \quad (1)$$

Credit supply (from banks):

$$\begin{aligned} L_{it}^{S} &= \beta_0 + \beta_1 r_{Lit} + \beta_2 r_{DSBIit} + \beta_3 CAPL_{it} + \beta_4 CAR_{it} + \beta_5 BOPO_{it} + \beta_6 IP_{it} \\ &+ \beta_7 r_{Lit-1} + \beta_8 r_{DSBIit-1} + \beta_9 CAPL_{it-1} + \beta_{10} CAR_{it-1} + \beta_{11} BOPO_{it-1} + \beta_{12} IP_{it-1} + \\ &\beta_{13} r_{Lit-2} + \beta_{14} r_{DSBIit-2} + \beta_{15} CAPL_{it-2} + \beta_{16} CAR_{it-2} + \beta_{17} BOPO_{it-2} + \beta_{18} IP_{it-2} + \beta_{19} L_{it-1}^{S} + v_{it} \end{aligned} \quad (2)$$

$$L_{it} = \min(L_{it}^{S}, L_{it}^{D}) \quad (3)$$

Where:

L_{it}^{D} is the volume of the demand of credit,

L_{it}^{S} is the volume of the supply of credit,

RL_{it} is the credit interest rate,

RS_{it} is the interest rate of the SBI,

$CAPL_{it}$ is the lending capacity, which is the capacity of loans,

$BOPO_{it}$ is the ratio of the operational cost to the operational revenue,

CAR_{it} is the capital adequacy ratio,

INF_{it} is the expected inflation,

FX_{it} is the foreign exchange (Rupiah to US Dollar),

Y_{it} is the national income,

YG_{it} is the output gap,

IP_{it} is the production index,

u_{it} is the disturbance error.

D. EMPIRICAL RESULT

1. The Demand and Supply of Credit on Two Types of Banks

The following is the estimation result of demand and supply of the banks credit on two types of banks in Indonesia after the monetary crisis in 1997. The estimations on demand and supply of credit in each type of banks shows different conclusions. We are using the last square dummy variable to simplify the model. In general, the speed of an adjustment to close the demand and supply of credit takes a long time.

State Owned Banks were having the longest speed of adjustment, which were 25 quarterly for demand and 32 quarterly for supply of credit. The Non-Foreign Exchange Commercial Banks had fast speed of adjustment, 6 quarterly for credit, but they took longer for demand side for about 14 quarterly (please see Table 1).

TABLE 1. The Speed of Adjustment of Demand and Supply of Banks Credit

	State Owned Banks	*The Non-Foreign Exchange Commercial Banks*
Demand	25,66	19,29
Supply	32,45	5,37

Source: Appendix.

In general, the estimation results show that the relationship between demand and credit interest rates is in line with the theory. The relationship is negative, both in the short and long run. Those relationships exist for State Owned Banks and The Non-Foreign Exchange Commercial Banks. The relationship between the credit demand and the foreign exchange variable is also not in line with the theory for all types of banks. Further, the relationship between the demand of credit and the national income is in line with the theory only on The Non-Foreign Exchange Commercial Banks. The output gap influences the demand of credit with the direction as proposed by the theory for both types of banks (please refer to Table 2). The estimated results of demand for credit and supply of loans are as follows:

a. Demand for Bank Credit

The analysis shows that the demand for bank loans interest rate elasticity of credit is inelastic in the short term for all bank groups. In the long run, the level of the lending rates inelasticity

progressively reduces, and even becomes very elastically to Non-Foreign Exchange Commercial Banks.

The inelastic nature of the lending rates in the short term, indicates that within a short span of time, changes in the amount of bank credit demanded is not sensitive to changes in bank lending rates. This suggests that, regardless of the interest rates on loans offered by banks, borrowers will take the credit. This condition occurs because the debtors / companies still rely on banks as the main source of external funding, so the price for the credit is not a major consideration.

Positive income elasticity in the Non-Foreign Exchange Commercial Bank shows that bank credit is a normal and even luxury good to the debtor (indicated by the sign and magnitude of the coefficient parameter, which is positive and greater than 1).

b. Supply of Bank Loan

The results of the regression estimate of the bank credit supply find that the increase in lending rates further increase the amount of credit offered by banks, both in the short and the long term (Non-Foreign Exchange Commercial Banks). The estimated result for State Owned Banks is that the increase of lending rates actually reduces the amount of credit offered.
The supply elasticity to the interest rate on Non-Foreign Exchange Commercial Banks has an elasticity greater than one (elastic). This means that the supply of bank credit to the two banks is very responsive to changes in bank lending rates. The price elasticity of demand for bank credit of Non-Foreign Exchange Commercial Banks is greater than the price elasticity of supply. This indicates that the bank credit market for Non-Foreign Exchange Commercial Banks is still dominated by the strength of demand (buyer's market). In contrast to the regional development bank credit markets, the price elasticity of supply is greater than the price elasticity of demand for bank credit.

The SBI reduces interest rates and increases the amount of credit that is offered in the long run from the Non-Foreign Exchange Commercial Banks. The development of the banking portfolio assets during the period observed indicates a change in portfolio investment bank preference funds. Banks tend to hold assets that are illiquid and relatively less risky, such as SBI, government bonds, and the interbank money market. The increased production index will raise the demand for bank loans of Non-Foreign Exchange Commercial Banks.

The ratio between operational cost and operational income (BOPO) have had an impact on the amount of credit offered by banks in the credit supply of Non-Foreign Exchange Commercial Banks. In the long run, the CAR decreases the supply of bank credit in the Non-Foreign Exchange Commercial Banks. The loan capacity has a greater impact on improving the credit that is offered by Non-Foreign Exchange Commercial Banks.

TABLE 2. The Summary of Estimation of Demand and Supply Panel Regression on Two Types of Banks, 2002.I – 2007.IV

Model	*Variable*	*Hypotheses*	*State Owned Banks*	*The Non-Foreign Exchange Commercial Banks*
Demand	Short Run			
	RL	**.5.1**	-0,00078	-0,04282
	INF		0,289953	-0,02515
	KURS		-0,06068	0,217637
	Y		0,000131	-0,12451
	YG		0,00726691	0,01051
	Long Run	**.1.1**	**2.1.2**	**2.1.3**
	RL	-	-0,27256	-2,61773
	INF	+	-1,69898	-0,90879
	KURS	-	3,774148	1,311596
	Y	+	-0,00077	3,602669
	YG	-	-0,0000260	-0,00223
Supply	Short Run			
	RL	**.1.6**	-0,15835	0,261733
	RS		0,011148	-0,01165
	IP		-0,01401	0,040396
	BOPO		0,000971	-0,00072
	CAR		-0,15772	-0,00012
	CAP		-0,01192	0,289156
	Long Run			
	RL	+	-11,2143	1,860248
	RS	-	1,539536	-0,22988
	IP	+	-4,61534	0,27215
	BOPO	-	0,050191	-0,00352
	CAR	-	0,73476	-0,00079
	CAP	+	-1,41791	0,887017

Source: Appendix, Table 1 and Table2.

The estimation results on supply of credit shows that the credit interest rates influences the supply of credit positively. The estimation held for the short and long run for The Non-Foreign Exchange Commercial Banks. On the other side, the relationship between the supply of credit and the credit interest rates for State Owned Banks is not in line with the theory. In the long run, the relationship between SBI interest rates and the credit supply is in line with the theory for Non-Foreign Exchange Commercial Banks. The relationship between the production index and the supply of credit is inline with the theory in Non-Foreign Exchange Commercial Banks.

The direction of the relationship between the BOPO and the supply of credit is in line with the theory for Non-Foreign Exchange Commercial Banks. In the long run, the relationship between CAR and the supply of credit is in line with the theory for Non-Foreign Exchange Commercial Banks. The relationship between the loan capacity and the supply of credit is in line with the theory for Non-Foreign Exchange Commercial Banks.

2. The Gap between Demand and Supply of Credit and Simulation

We need to further explore the estimation on demand and supply of credit in various types of banks in order to answer the research objectives on banking distermediation. Firstly, we examine whether there is a difference or a gap of demand and supply of credit between the actual value and the desired value, or not. Secondly, we draw the gap between the desired demand and the desired supply of credit. The difference between them is the size of the gap. The calculation is conducted for each type of bank, thus we will have the gap for each type of bank during the observation periods. The following is the result of the gap calculation between demand and supply of credit for all types of banks.

a. The gap between demand and supply of credit using the simulation of credit interest rates

This part elaborates the result of gap calculation by comparing the demand and credit for all types of banks, using the simulation on credit interest rates. We also compare the gap between each demand and supply.

1) The increase in credit interest rates

The increase of credit interest rates by 1% for two types of banks, the State Owned Banks and Non-Foreign Exchange Commercial Banks have the same respond. The gap between demand and credit supply is in fact greater than expected.

Further, the increase of credit interest rates by 1% increases the gap between demand and supply of credit in two types of banks. In the State Owned Banks, the desired demand of credit are larger than the desired supply for credit banks. While in the Non-Foreign Exchange Commercial Banks the desired demand of credit is smaller than the desired supply of credit.

Subsequently, the gap of demand and supply of credit is larger when the credit interest rates increases by 2% for Non-Foreign Exchange Commercial Banks. On the other side, the State Owned Banks respond by reducing the gap.

The increase of credit interest rates by 2% reduces the gap between the desired demand of credit and desired supply of credit for the State Owned Banks. Both the desired demand and supply of credit are smaller when the reduction on the supply is larger than the demand. Thus the desired demand of credit is larger than the supply.

The simulation on the increase of credit interest rates by 2% increases the gap between the desired demand and supply in Non-Foreign Exchange Commercial Banks. The increase of supply is larger than the demand (in the same position with the initial condition). As the reduction on demand of credit is larger than the reduction on its supply, the gap increases.

TABLE 3. Gap respond in Demand and Supply of Credit by Simulation of the Credit Interest Rates

	State Owned Bank				Non-Foreign Exchange Commercial Banks			
	Gap A-E	*Respond Gap A-E*	*Gap D-S*	*Respond Gap D-S*	*Gap A-E*	*Respond Gap A-E*	*Gap D-S*	*Respond Gap D-S*
Initial Gap								
Demand (D)	A<E		D>S		A>E		D<S	
Supply (S)	A<E				A>E			
Increase 1%								
Demand (D)	A<E	↑	D>S	↑	A>E	↑	D<S	↑
Supply (S)	A<E	↑			A>E	↑		
Increase 2%								
Demand (D)	A>E	↓	D>S	↓	A>E	↑	D<S	↑
Supply (S)	A>E	↓			A>E	↑		
Decrease 1%								
Demand (D)	A>E	↓	D>S	↓	A>E	↓	D<S	↓
Supply (S)	A>E	↓			A>E	↓		
Decrease 2%								
Demand (D)	A>E	↓	D>S	↓	A>E	↓	D<S	↓
Supply (S)	A>E	↓			A>E	↓		

Note: ↑ = increase; ↓=decrease; ↑↑= increase sharply; ↓↓=decrease sharply
A= Actual; E = Estimation; D = Demand; S = Supply

2) The decrease of credit interest rates

The simulation on the decrease of the credit interest rates shows that it reduces the gap between demand and supply of credit from two types of banks.

The reduction of the gap between demand and supply of credit of the State Owned Banks is caused by the reduction both of the demand and supply of credit by 28.574%. The reduction does not change the initial gap where the desired demand of credit is higher than the supply.

b. The gap between demand and supply of credit using the simulation of SBI rate

This part provides the calculation of the gap between demand and supply for various banks. The gap is calculated by using the simulation of SBI rate We compare the estimation of the actual value of demand and supply and the estimation of the value of demand and supply. Please refer to Table 2 for details.

1) The Increase in the SBI rate

In general, the respond on the gap between demand and supply is various. The increase of the SBI rate by 1% and 2%, reduced the gap in the State Owned Banks. The Non-Foreign Exchange Commercial Banks group responded differently. Firstly the gap reduced but then it increased as the SBI rate increased by 1% and 2%. The increase in the interest rates by 1% did not influence the gap. However, as the interest rates increased by 2% the gap increased also.

2) The Reduction in the SBI rate

The two groups have the same respond when the SBI rate is reduced. The gaps increase significantly when the interest rates are reduced by 1% and 2%.

Here is the transformation of the gap in the group of the State owned Bank when the interest rates reduce. In the initial stage, the demand of credit was higher than the supply of credit. After the interest rates reduction, the demand of credit is lower than the supply of credit. The interest rates reduction increases the required demand of credit by 49.50% thus its value equals to the actual credit. In the other side the demand of credit increases by 0.02% only.

The reduction of the interest rates is responded differently in the other groups. There is a gap reduction in the group of private banks non foreign exchange. The demand of credit is becoming smaller, compared to the supply of credit.

TABLE 4. Respond of the Gap of Demand and Supply of Banks' Credit to the Simulation of the Interest Rates of the SBI

	State owned Bank				Non-Foreign Exchange Commercial Banks			
	Gap A-E	*Respond Gap A-E*	*Gap D-S*	*Gap A-E*	*Gap D-S*	*Gap A-E*	*Respond Gap A-E*	*Gap D-S*
Initial Gap								
Demand (D)	A<E		D>S		A>E		D<S	
Supply (S)	A<E		D>S		A>E			
Increase 1%								
Demand (D)	A>E	↓	D>S	↓	A>E	↓	D<S	↓
Supply (S)	A>E	↓	D>S		A>E	↓		
Increase 2%								
Demand (D)	A>E	↓	D>S	↓	A>E	↓	D<S	↑
Supply (S)	A>E	↓	D>S		A>E	↓		
Decrease 1%								
Demand (D)	A>E	↓	D>S	↑↑	A>E	↓	D>S	↑↑
Supply (S)	A>E	↑↑	D>S		A>E	↑↑		
Decrease 2%								

Demand (D)	A>E	↓	D< S	↑↑	A>E	↓	D>S	↑↑
Supply (S)	A= E	↓↓ (gap=0)			A>E	↑↑		

Note: ↑ = increase; ↓=decrease; ↑↑= increase sharply; ↓↓=decrease sharply
A= Actual; E = Estimation; D = Demand; S = Supply

E. CONCLUSION AND SUGGESTION

1. Conclusion

In general, this research found that the banks' behavior towards the demand and supply of credit in the Indonesian credit market are different. In addition, we found that there was a gap between demand and supply of credit after the monetary crisis in 1997. The slow adjustment on the demand and supply of credit into the equilibrium position is the underlying reason of the emergence of the disintermediation phenomenon in the Indonesian banking industry. Therefore, the time required for influencing the demand and supply of credit was longer.

This study also found that there are two major variables, which highly affected the demand and supply of banks' credit. The credit interest rates and the interest rates of the SBI are the main influence factors on the demand and supply of credit. On the other hand the influence of macro economy and other internal conditions of banks did not create significant influence on the change of the gap in the Indonesian credit market. The disintermediation still occurs due to the behavior of agents in the banks and businesses sectors, which are still avoiding the risk (risk averse).

The gap between the actual credit demand and the desired credit demand is still existing. This means that the demand for bank credits to company is still able to be increase further. The business sectors have not been filed with credit demand optimally. One reason for the not optimal credit demand is that the business is still risk averse. This behavior leads to business investment decisions, which are still considering the risks that would arise in obtaining bank loans. The demand for credit is not optimal and can be attributed to the constrained bank credit application, such as high interest rates or tightening bank credit, e.g. bank regulation or bank loan application procedures.

In the Non-Foreign Exchange Commercial Bank found that optimal supply of bank credit is more larger than the actual loan offers. This suggests that the banks are still able to increase the credit supply to the optimum level. Bank credit offerings, which are not optimal, can be caused by several factors. One dominant factor is the high perception of risk of a bank lending to a businesses in the real sector. This is not to indicate that banks are showing still risk-averse behavior after the financial crisis. Risk averse behavior of banks also indicated that the bank be cautious associated with the banking regulations.

Desired credit offering is smaller than the actual loan offers on State Owned Banks. These results indicate that banks are offering loans at optimal levels. This finding is supported by the actual

number of credits on both banks, which show increased growth and dominate the share of bank credit in the bank credit market.

The calculation of the gap between desirable demand and supply of credit showed the following results: The gap with the desired demand for bank loans is larger than the gap found in banks offering credit in State Owned Banks. The gap shows that there are financial disintermediation of the banking sector to the real sector. In the Non-Foreign Exchange Commercial Banks group was found that the supply of bank credit is more desirable than the actual credit demand.

The simulation of the actual credit gap and the estimated supply and demand in both banks showed the following results: In general, the interest rate shocks that can reduce the gap between the actual credit and the optimal credit is a decrease in bank lending rates. The increase in bank lending rates would only widen the gap and the actual credit scores would be desirable in both banks.

A surprising finding was obtained in the simulation on the SBI rate. If the SBI rate is decreased by 2%, then the gap between estimated and actual value of the bank credit supply will decrease. This is because there is an increase in the credit supply after a decline in the credit supply to the SBI rate cut of 1%.

The simulation results of the desired gap between loan demand and the supply of bank credit is as follows. In general, the increase in the bank lending rates widens the demand-supply gap of bank credit, while the decrease in bank lending rates tend to reduce the gap between demand and supply of bank credit.

The results of SBI rate shocks on the demand-supply gap of bank credit in general show that the decrease of SBI rate causes a decrease in the gap. But, the demand-supply gap widens when bank credit increase in both groups of banks.

2. Suggestion and Policy Recommendation

Based on the conclusions of this study, there are some things that can be used as advice in policy making. Referring to the first conclusion of the bank credit demand, some suggestions can be composed as follows: The inelastic nature of the interest rate on bank credit demand, which indicates that the change in the amount of credit requested, is not sensitive to changes in mortgage interest rates in the short term. The policy makers, in this case the central bank and commercial bank, should make an alternative policy that can affect the interest rate elasticity of credit so that it is more elastic in short term. For example, the central bank may provide regulations to stimulate business, applying for a loan to the bank. The policy is to improve the information about the changes that occur in bank lending rates to customers. When the information about changes in bank lending rates is transferred quicker to the customer, it is expected that the business / customer can quickly make a decision on the request of the bank credit, which is still the main source of business financing. Barriers that have been found in the field are slower changes in the provided information about the bank lending rates to customers / business. The submission of information can pass through various means and media that are easily accessible for the customer. The banks are expected to further intensify the implementation of regulations about the transparency of information by the Bank of Indonesia on the Basic Interest Rate

Loans (prime lending rate), hereinafter referred to as SBDK. Information about the base rate loans is expected to greatly assist customers in making a bank loan application. Adjustments of demand for bank credit happen very slowly, which indicates that the credit supply and demand takes a very long time to reach equilibrium positions, and also the length of time needed to respond to changes in the independent variables is too high. This indicates that there may be it is referred to performance in their efficiency. Performance and efficiency can be used as consideration for the monetary authority in the Bank of Indonesia to pay more attention to the performance of national banks, especially accelerating in response to demand and supply of bank credit. In fact also shows that the credit market in Indonesia is still running slow under the desired conditions.

Based on the conclusions regarding the supply of bank credit, some suggestion of this study are as follows: The interest rate elasticity of credit to credit supply is more inelastic in the short term, but is elastic in the long term. This suggests that in the short term, the supply of bank credit is not sensitive to the bank loan interest rate but it is sensitive in the long term. This is presumably due to the rigidity of bank lending rates that require adjustments in a relatively long period of time. Rigidity in lending rates led to continued high bank loans interest rates. To lower the intermediation costs, a necessary policy measures to immediately reduce the interest rate of the bank, to encourage banks to increase their efficiency. In addition, it is necessary to appeal to the bank management to pay attention to the implementation of the bank intermediary function in addition to achieving a profit margin over the short term. Possible relaxation of banking regulations must be done carefully and remain within the framework of macro and micro policies that are conducive to achieve financial stability.

Increasing SBI rates will reduce the amount of credit offered in the long run on both banks. It is found that today there is a change in the portfolio preferences of investment bank funds. Banks tend to hold liquid assets which are relatively low risk, such as the SBI, government bonds, and the interbank money market. It can be taken into consideration for the Bank of Indonesia to streamline the role of the SBI that is turning back the function of the monetary instrument an alternative risk-free investment portfolio for the bank.

The BOPO variable influence on the bank loan supply indicates importance of efficiency for the bank to be able to re-lend the bank with a faster adjustment process. Banks have an interest to be able to improve control or management of risk management primarily to improve bank efficiency and improved management of risks associated with bank lending. The CAR has a negative influence on the credit supply. It is indicate that the Bank of Indonesia needs to review the determination of tight regulation associated with the effects of banks lending.

The gap of demand for bank credit is still exist. This is known from the actual credit demand is greater than optimal credit demand. The gap on actual credit demand is greater than the desired credit on Non-Foreign Exchange Commercial Banks, which indicates that the number of credits offered in this bank is greater than that required by the business. But one has to keep in mind, that of a number of loans provided by a larger than desired, there are a number of credits that are not disbursed (undisbursed loan). Factors that are not disbursed loans should be more of a consideration for banks.

The finding of the gap there is credit bidding on Non-Foreign Exchange Commercial Banks. It showed that the banks are still able to increase credit supply to the optimum level. Presumably the high perception of risk averse behaviour causes the bank to choose a safer portfolio in the form of investment in the SBI thereby reducing the interest of investment banks in bank lending. The Bank Indonesia needs to re-emphasize the need for oversight in the implementation of good governance that will affect the bank's risk management improvement, especially considering bank credit risk.

The gap between desired demand and supply of credit shows the persistence of financial disintermediation of the banking sector to the real sector. The gap with the desired demand for bank loans is larger than the credit offerings found on the State Owned Banks. In Non-Foreign Exchange Commercial Banks was found that the supply of bank credit is more desirable than the actual credit demand. In consideration of the persistence of financial disintermediation in Indonesia after the bank credit market crisis, it is expected that the bank to the credit supply conditions is smaller than the demand for loans to increase the credit supply in order to achieve a balance in the bank credit market. An increase in credit supply can be done in various ways, among which are a way to improve risk management in the management of bank credit. The credit risk management can be done by credit diversification. Improvements in credit risk management are expected to increase the motivation of the bank in bank credit supply. The high motivation in bank lendingwill ultimately improve the selection of its assets to the loan portfolio compared to other investment banks such as the SBI and the FASBI.

The monetary authority is expected to make further regulations to encourage the banking industry to be more competitive towards the bank credit market. This is caused by some previous studies that found that the structure of Indonesia's banking industry is an oligopoly. This condition causes that the banks in Indonesia can not operate in a healthy environement and can not compete in the bank credit market. The bank competition in the credit market is not competitive, which is evident from the rigidity of bank lending rate thatis still on high bank lending rates.

The findings of the credit gap in the simulation study reveals that the behavior of the bank credit demand and the supply is very responsive, especially to the two main variables in the model, the lending rates of the banks and the SBI. The response to other variables in the model shows a change, which not too large though. Suggestions that may be filed related to the simulation and the response of banks and their impact on the reduction in the gap is as follows: To decline bank lending rates to a level that can stimulate entrepreneurs to apply for bank loans. Or furthermore to decrease the SBI rate, in addition to supporting a policy to restore the function of SBI as a monetary instrument.

REFERENCES

Agenor, Pierre-Richard and Peter J. Montiel. 1991. *Development Macroeconomics*. Princeton University Press.

Agung, Juda. 1998. Financial Deregulation and the Bank Lending Channel in Developing Countries: the Case of Indonesia. *Asian Economics Journal*. **12**(3): 273-294.

_____. 2000. Financial Constraints, Firm's Investment and Channels of Monetary Policy in Indonesia. *Applied Economics*, **32**: 1637-1646.

Agung, Juda, Bambang Kusmiarso, Andry Prasmuko, Bambang Pramod, Erwin G Hutapea, Joko Nugroho Prastowo. 2000. Post-Crisis Credit Crunch phenomenon: Facts, Impacts, and Policy Implications. *Working Paper*. Structure and Development Study Section Financial Markets Directorate of Economic Research and Monetary Policy Bank Indonesia, 2000.

Akerlof, George A. 1970. The Market for Lemons: Qualitative Uncertainty and the Market Mechanism. *Quarterly Journal of Economics* **84**, August: 488- 500.

Alamsyah, Halim. 2004. Banking Disintermediation and Its Implication for Monetary Policy: The Case of Indonesia. *Proceedings of an International Seminar Held* in Denpasar – Bali, December 2004.

Ashgar, Zahid and Irum Abid. 2002. Performance of Lag Length Selection Criteria in Three Different Situation. *Interstat. Statjournals.net/YEAR/2001/Articles/0704001.pdf.*

Astiyah, Siti and Jardine A. Hausman. , 2005. Intermediation function in Indonesian Banking Efficiency: Derivation Function profit. *Working Paper*. Bureau of Economic Research, Directorate of Economic Research and Monetary Policy, Bank Indonesia.

Azis, Iwan Jaya. 2004. Modeling the Disconnect Between Financial Policy and Real sector Using the Financial Social Accounting Matrix aggregate supply a Data System: The Case of Indonesia. *Proceedings* of an International Seminar Held in Denpasar – Bali, December 2004.

_____. 2000. The Nonlinear General Equilibrium Impact of the Financial Crisis and the Downfall of Manufacturing. *The Developing Economies*, **XXXVIII** (4) (December 2000): 518-546.

Azis, Iwan Jaya and Yuri Mansury. 2004. Measuring Economy-wide Impact of Financial Shock. *ASEAN Economic Bulletin*, **20 (**2): 112-127.

Bai, J. and S. Ng. 2004. A Panic attack on unit roots and cointegration. *Econometrica* **72**: 1127–1177.

Baltagi, Badi H. 2001. *Econometric Analysis of Panel Data*. 2nd Edition. John Willey & Sons, Ltd.

Baltagi, Badi H. 2005. *Econometric Analysis of Panel Data*. 3rd Edition. John Willey & Sons, Ltd.

Banerjee, Anindya and Josep Lluís Carrion-i-Silvestre. 2006. Cointegration in Panel Data With Breaks and Cross-Section Dependence. *Working Paper* No. 591.

Bank Indonesia. 2004. Bank Indonesia Annual Report, 2004. Jakarta.

_____. Bank Indonesia Annual Report. 1998/1999-2005.

_____. 2006. Indonesian Banking Statistics: 2006.

_____. 2006. Indonesian Financial Statistics: Desember 2006.

_____. 2006. Monetary Policy: Desember 2006.

_____. 2006. Perkembangan Indikator Sektor Riil Terpilih.

_____. 2006. Indonesian Economic Report 2006.

Baskin, J., 1989, An Empirical Investigation of the Pecking Order Hypothesis, *Financial Management*, Spring: 26-35.

Beck, Thorsten and Ross Levine. 2002. Industry growth and capital allocation: does having a market – or bank – based system matter?. *Journal of Financial Economics*, **64**: 147-180.

Bencivenga, Valerie R, and Bruce D. Smith. 1991. Financial Intermediation and Endogenous Growth. *Review of Economics Studies*, **58**: 195-209.

Bernanke, Ben S., and Alan S. Blinder. 1988. Is It Money or Credit, or Both, or Neither?: Credit, Money, and Aggregate Demand. *AEA Papers and Proceedings* **78** (2), May: 435-439.

Bernanke, Ben S., and Alan S. Blinder. 1992. The Federal Funds Rate and the Channels of Monetary Transmission. *The American Economic Review*, **82**, September: 901-921.

Bernanke, Ben S., and Mark Gertler. 1995. Inside the Black Box: The Credit Channel of Monetary Policy Transmission. *Journal of Economic Perspectives*, **9** (4) - fall: 27-48.

Breitung, J. 2000. The Local Power of Some Unit Root Tests for Panel Data. *Advances in Econometrics* **15**: 161-177.

Brunner, Karl and Allan H. Meltzer. 1988. Money and Credit in the Monetary Transmission Process. *AEA Papers and Proceedings*, **78** (2), May: 446-454.

Brunner, Karl and Allan H. Meltzer. 1968. Liquidity Traps for Money, Bank Credit, and Interest Rates. *Journal of Political Economy*, January / February, **76**: 784-805.

Camarasa, Felix Alberto. 2004. Banking Disintermediation and Its Implication for Monetary Policy: Argentina's recent Experience. *Proceedings* of an International Seminar Held in Denpasar – Bali, December 2004.

Carpenter, Robert E. 1994. Finance Constraint or Free Cash Flow? The impact of Asymmetric Information on Investment. *Working Paper*, Department of Economics, Emory University, Atlanta, January 13.

Champ, Bruce and Scott Freeman, 1994, *Modeling Monetary Economies*, John Wiley & Sons.

Chang, R.P., and S.G. Rhee, 1990, The Impact of Personal Taxes on Corporate Dividend Policy and Capital Structure Decisions, *Financial Management*, Summer: 21-31.

Chang, Yoosoon and Joon Y. Park. 2004. Taking a New Contour: A Novel Approach to Panel Unit Root Tests. *Paper* presented at Panel Workshop held at Cass Business School, London, UK.

Choi, G. 2001. Unit Root Tests for Panel Data. *Journal of Money and Finance*. **20**: 249 - 272.

Choi, G. 2000. The Macroeconomic Implicaions of Regulatory Capital Adequacy Requirements for Korean Banks. *Economic Notes* by Banca Monte dei Paschi di Siena SpA, **29** (1): 111-143.

Cooper, Donald R and Pamela S. Schlinder. 2001. *Business Research Methods*. 7th eds, McGraw-Hill, Singapore.

Cottarelli, Carlo and Angeliki Kourelis. 1994. Financial Structure, Bank Lending Rates, and the Transmission Mechanism of Monetary Policy. *IMF Staff Paper* **41** (4), December: 587-623.

De, Bikram. 2003. Ownership Effects On Bank Ownership Effects On Bank Performance: A Panel Study Of Performance: A Panel Study Of Indian Banks. *Paper* presented at the Fifth Annual Conference on Money and Finance in the Paper presented at the Fifth Annual Conference on Money and Finance in the Indian Economy.

Diamond, D. W. 1984. Financial Intermediation and Delegated Monitoring. *Review of Economic Studies*, **LI**: 393-414.

Diamond, D. W. dan P. Dybvig. 1983. Bank Run, Deposit Insurance, and Liquidity. *Journal Of Political Economy*, **91**: 401-419.

Domac, Ilker. 1999. The Distributional Consequences of Monetary Policy: Evidence from Malaysia. *Policy Research Working Paper* 2170, World Bank, August.

Engle R.F. and WJ Granger. 1991. *Long-Run Economics Relationship: Reading in Cointegration*. New York. Oxford University Press.

Fair, Ray C. and Harry H. Kelejian. 1974. Methods of Estimation for Market in Disequilibrium: A Further Study. *Econometrica*, **42** (1), January: 177-190.

Fazzari, S., R.G. Hubbard, and B.C. Petersen. 1988. Financing Constraint and Corporate Investment. *Brookings Papers on Economic Activity* **1***:* 141-195.

Ford, J.L., J. Agung S., S. S. Ahmed, and Bagus Santoso. 2003. Bank Behaviour and the Channel of Monetary Policy in Japan, 1965-1999. *The Japanese Economic Review*, **54** (3), September: 275-299.

Freedman, Paul L. and Reid W. Click. 2006. Banks That Don't Lend? Unlocking Credit to Spur Growth in Developing Countries. *Development Policy Review*, **24** (3): 279-302.

Fry, Maxwell J. 1995. *Money, Interest, and Banking in Economic Development*. 2nd Ed. John Hopkins. London.

Gertler, Mark, and Simon Gilchrist. 1993. The Role of Credit Market Imperfections in the Monetary Transmission Mechanism: Arguments and Evidence. *Scandinavia Journal of Economics*, **95** (1): 43-64.

Goeltom, Miranda S. and Juda Agung. 2000. Financial liberalization, financial structure, and investment in Indonesia. *Working Paper*, Bank Indonesia.

Green, David Jay and Ramesh Subramaniam (2004). Financial Intermediation in Asia in Retrospect: The Case of Indonesia. *Proceedings* of an International Seminar Held in Denpasar – Bali, December 2004.

Greene, William H. (2000). *Econometric Analysis.* 4th eds. Prentice Hall.

Gujarati, Damodar, N. and Dawn C. Porter. 2009. *Basic Econometrics*. 5th eds. McGraw-Hill.

Gujarati, Damodar, N. 2003. *Basic Econometrics*. 4th eds. McGraw-Hill.

Hadad, D. Hadad, Wimboh Santoso, Dwityapoetra S Large, Ita Rulina, Wini Purwanti, and Ricky Satria. 2004. Foreign Bank Intermediation Function In Recovery Encourages Real Sector in Indonesia.

Research Paper, Financial System Stability Bureau, Directorate of Banking Research and Regulation, Bank Indonesia.

Hakim, Lukman., 2004. Comparison In The Role of Credit Line Before and When Economic Crisis: 1990.1 - 200.4. in *Some Indonesian Economy Agenda: Criticism and Solutions*. DRFE Usakti: 235-270.

Hakim, Lukman. In 2000. Role Comparison Line of Credit and Interest Rate Path In The Monetary Policy Transmission Mechanism. *Thesis* S-2, unpublished, the Masters Program in Economic Development UGM.

Harris, R.D.F. and E. Tzavalis. 1999. Inference for unit roots in dynamic panels where the time dimension is fixed. *Journal of Econometrics* **91**: 201-226.

Haryadi, Sugeng., 1999. Role of the Credit Channel in Indonesian Financial Crisis. *Thesis* S-2, unpublished, the Masters Program in Economic Development UGM.

Harris, Laurence, 1985, *Monetary Theory*, Economic Handbook Series, McGraw-Hill,Inc. New York.

Harris, Richard. 1995. *Using Cointegration Analysis in Econometric Modelling*. Prentice Hall / Harverster Wheatsheaf.

Hendry, David F. 1995. *Dynamic Econometrics*. New York. Oxford University Press.

Hermeindito. 2004. Information Asymmetry and Management Control: Sensitivity Analysis of Investment and Leverage Against Election Funding Sources. *Dissertation*, unpublished, in the Doctoral Program of Economic Sciences, Gadjah Mada University, Yogyakarta.

Hester, Donald. 1968. Financial Disintermediation and Policy. *Money, Credit and Banking*: 600-617.

Hoshi, T., Kashyap, A.K., and Scharfstein, D. 1991. Corporate structure, liquidity and investment: evidence from Japanese panel data, *Quarterly Journal of Economics*, **106** (11): 33-60.

Hsiao, Cheng. 1986. *Analysis of Panel Data*. Cambridge University Press.

Hsiao, Cheng and M. Hashem Pesaran. 2004. Random Coefficient Panel Data Models. *IEPR Working Paper* 04.2. Institute of Economic Policy Research University of Southern California.

Hubbard, R. Glenn. 2005. *Money, the Financial System, and the Economy*, 2nd eds, Addison Wesley, USA.

Hubbard, R. Glenn. 1995. Is There a 'Credit Channel' for Monetary Policy?. *Review*, May / June, Federal Reserve Bank of St Louis: 63-77.

Im, K.S., M.H. Pesaran and Y. Shin. 2003. Testing for unit roots in heterogeneous panels. *Journal of Econometrics* **115**: 53–74.

Im, K.S., M.H. Pesaran and Y. Shin. 1997. Testing for unit roots in heterogeneous panels. *Working Paper*. University of Cambridge.

Insukindro, Aliman, Sri Yani Kusumastuti, and Ika Rahutami. 2004. Econometrics Laboratory Module. Not published. Doctoral Program Faculty of Economics and Business Universitas Gadjah Mada.

Insukindro. 1990. The Short-and Long-Term Determinants of Money and Bank Credit Markets in Indonesia. *Unpublished PhD Thesis*, University of Essex.

Jaffee, Dwight, and Joseph Stiglitz. 1990. Credit Rationing. Edited by Benjamin M. Friedman and Frank H. Hahn in*Handbook of Monetary Economics*. Elsevier. Volume II: 837-888.

Jensen, Michael and William Meckling. 1976. Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure. *Journal of Financial Economics*, **3**: 350-360.

Karlan, Dean and Jonathan Zinman. 2005. Elasticities of Demand for Consumer Credit. *Center Discussion Paper* No. 926. Economic Growth Center. Yale University.

Kashyap, Anil K, Jeremi C Stein, and David W. Wilcox. 1993. Monetary Policy and Credit Conditions: Evidence from the Composition of External Finance. *American Economic Review* **83** (1), March:78-79.

Kashyap, Anil K, Owen A. Lamont, and Jeremi C Stein. 1994. Credit Conditions and The Cyclical Behavior of Inventories. *Quarterly Journal of Economics.* August: 565-591.

Kim, Hyun E. (The Bank of Korea). 2004. Banking Disintermediation and Its Implications for Monetary Policy: The Korean Experience. *Proceedings of an International Seminar* Held in Denpasar – Bali, December 2004.

_____. 1999. Was the Credit Channel a Key Monetary Transmission Mechanism following the Recent Financial Crisis in the Republic of Korea?. *Policy Research Working Paper* 2103, The World Bank East and Asia Pacific Sector Units Financial Sector Development Unit, April.

King, Stephen R. 1986. Monetary Transmission: Through Bank Loans or Bank Liabilities. *Journal of Money, Credit, and Banking*, **18** (3), (August): 290-303.

Korteweg, Pieter and Peter D. Van Loo. 1977. *The Market for Money and the Market for Credit: Theory, Evidence and Implications for Dutch Monetary Policy*. Martinus Nijhoff Social Sciences Division, Leiden.

Koutsoyiannis, A. 1982. *Non-Price Decisions: The Firm in A Modern Context*. The Macmillan Press Ltd, Hongkong.

Laffont, Jean Jacques and Rene Garcia. 1977. Disequilibrium Econometrics for Business Loans. *Econometrica*, **45** (5) July: 1187-1204.

Leland, H. and D. Pyle. 1977. Informational Asymmetries, Financial Structure, and Financial Intermediation. Journal of Finance **32**: 371-387.

Levine, R. 1997. Financial Development and Economic Growth: Views and Agenda. *Journal of Economic Literature*, **35**: 688-726.

Levin, A. and C.F. Lin. 1992. Unit Root Test in Panel Data: Asymtotic and Finite Sample Properties. *Discussion Paper* No. 93-56, University of California San Diego.

Levin, A. and C.F. Lin. 1993. Unit Root Test in Panel Data: New Results. *Discussion Paper* No. 92-93, University of California San Diego.

Levine, R. and S. Zervos. 1998. Stock Markets, Banks, and Economic Growth. *American Economic Review* **88**: 688-726.

Liew, Venus Khim-Sen. 2004. Which Lag Length Selection Criteria Should We Employ?. *Economics Bulletin* **33**: 1-9.

Liew, Venus Khim−Sen and Terence Tai−leung Chong. 2005. Autoregressive Lag Length Selection Criteria in the Presence of ARCH Errors. *Economics Bulletin*, **3** (19): 1−5.

Maddala, G.S. 2001. *Introduction to Econometrics*. 3rd Eds. John Wiley& Sons. Ltd.

Maddala, G.S. and Forrest D. Nelson. 1974. Maximum Likelihood Methods for Models of Markets in Disequilibrium. *Econometrica*, **42**: 1013-30.

McCallum, John. 1991. Credit Rationing and the Monetary Transmission Mechanism. *The American Economic Review*, Vol. **81** (4): 946-951, September.

Meltzer, Allan H. 1995. Monetary, Credit and (Other) Transmission Procces: A Monetarist Perspective. *Journal of Economic Perspective*, **9** (4): 48-72.

Micco, Alejandro, Ugo Panizza, and Monica Yanez. 2004. Bank Ownership and Performance. Inter-American Development Bank. Research Department. *Working Paper* 518.

Mishkin, Frederic S. 2004. *The economics of money, banking, and financial markets*.7th eds. The Addison-Wesley.

Mishkin, Frederic S. 1995. Symposium on the Monetary Transmission Mechanism. *Journal of Economic Perspectives* – **9** (4) – Fall: 3-10.

Moon, H.R. and B. Perron. 2004. Testing for unit root in panels with dynamic factors. *Journal of Econometrics*. **122:** 81–126.

Moon, H.R. and Peter C.B. Phillip. 1999. Estimation of Autoregressive Roots near Unity using Panel Data. *Working Paper* WP 1, 99. Department Working Papers, Department of Economics, UCSB, University of California, Santa Barbara.

Myers, Stewart C. 1977. Determinants Of Corporate Borrowing. *Journal of Financial Economics*, **5**: 147-175.

Myers, Stewart C., 1984, Capital Structure Puzzle, Journal of Finance **39** (3), July: 575-592.

Myers, Stewart C. dan Nicholas S Majluf. 1984. Corporate Financing And Investment Decisions When Firms Have Information That Investors Do Not Have. *Journal of Financial Economics* **13**: 187-221.

Neuman, W. Lawrence. 2000. *Social Research Methods: Qualitative and Quantitative Approaches*. 4th ed, Allyn & Bacon.

Ng, Serena dan Pierre Perron. 2000. Lag Length Selection and the Construction of Unit Root Tests with Good Size and Power. *Working Papers* in Economics. Boston College.

Patterson, Kerry. 2000 .*An Introduction to Applied Econometrics: A Time Series Approach*. Palgrave. New York.

Pazarbasioglu, C. (1997). A credit crunch? Finland in the aftermath of the banking crisis. *IMF Staff Paper*, **44**: 315-27.

Pesaran, M. Hashem. 2004. Estimation and Inference in Large Heterogeneous Panels with A Multifactor Error Sructure. CESIFO *Working Paper* No. 1331.

Pesaran, M. Hashem. 2003. A Simple Panel Unit Root Test in the Presence of Cross Section Dependence. *Working Paper* CWPE 0346.

Pesaran, M. Hashem, L. Vanessa Smith, and Takashi Yamagata. 2007. Panel Unit Root Tests in the Presence of a Multifactor Error Structure. *Discussion Papers in Economics*. No. 2008 / 03. Department of Economics and Related Studies, University of York, Heslington

Pesaran, M. Hashem and Takashi Yamagata. 2005. Testing Slope Homogeneity in Large Panels. *IEPR Working Paper* 05.14. Institute of Economic Policy Research University of Southern California.

Phillips, Peter C., and Phillip Perron. 1988. Testing for unit root in time series regression. *Cowles Foundation Paper* 706. **75**: 335-46.

Pramono, Bambang. 2004. Estimating The Mechanism Of Credit Crunch And Its Implication To Monetary Policy In Indonesia. *Thesis*, unpublish, in Master Of Arts In International Development At The International University Of Japan.

Pindyck, Robert S. and Daniel L. Rubinfeld. 1991. *Econometric Models and Economic Forecasts*. 3rd eds. McGraw-Hill.

Rahayu, Siti Aisyah Tri. 2010. Bank and Borrower Behavior in Credit Markets Post Krisi Monetary Bank in Indonesia. Doctoral Research Grant reports. LPPM, UGM.

Ramakrishnan, Ram T.S. and Anjan V. Thakor. 1984. Information Realiability and a Theory of Financial Intermediation. *Review of Economic Studies*, **LI**: 415-432.

Rhoades, Seza Danisoglu and Z. Nuray Guner. 2003. Economic Uncertainty and Credit Crunch: Evidence from an Emerging Market. *Emerging Markets Finance and Trade*, **39** (4), July-August: 5-23.

Rousseau, Peter L., and Paul Wachtel. 1998. Financial Intermediation and Economic Performance: Historical Evidence from Five Industrialized Countries, *Journal of Money, Credit, and Banking*, **30**(4) (November): 657-678.

Rully, Ferdian 2006. 200 Bank in Southeast Asia: Singapore and Malaysia Today Shooting Indonesian Market. No InfoBank. 331, October 2006 Issue: 13-23.

Saduolet, Elizabeth and Alain de Janvry. 1995. *Quantitative Development Policy Analysis*. The John Hopkins University Press. London.

Sangmanee, Amporn. 2004. Banking Disintermediation and Its Implication to Monetary Policy: Thailand's Experience. *Proceedings of an International Seminar* Held in Denpasar – Bali, December 2004.

Santoso, Bagus, 2001, Three Essays in Macroeconomics Key Performance, *Unpublished PhD Thesis*, University of Birmingham, United Kingdom.

Silber, William L. 1969. Monetary Channel and the Relative Importance of Money Supply and Bank Portfolios. *The Journal of Finance*, **24**(1): 81-87.

Saunders, Anthony. 1994. *Financial Institution Management: A Modern Perspective*. Richard D. Irwin, Inc. USA.

Sealey, CW JR. 1979. Credit Rationing in the Commercial Loan Market: Estimates of a Strutural Model Under Conditions of Disequilibrium. The *Journal of Finance*, **XXXIV** (3) June: 689-702.

Stiglitz, J.E. and Andrew Weiss. 1981. Credit Rationing in Markets with Imperfect Information. *American Economic Review*, **71:** 393-410.

Stiglitz, J.E. 1988. Money, Credit, and Business Fluctuations. *Economic Record.* **64** (187)**:** 62-72.

Stiglitz, J.E. and Dwight Jaffee. 2000. Credit Rationing. In *Handbook of Monetary Economics*, 4th impression, edited by Benjamin M. Friedman and Frank H Hahn, Vol. II, Elsevier, Netherland: 837-888.

Stiglitz, J.E. 2004. Banking Disintermediation and Its Implications to Monetary Policy. *Keynote Address* in Proceedings of an International Seminar Held in Denpasar – Bali, December 2004.

Stiglitz, J.E., and B. Greenwald. 2003. *Towards a New paradigm in Monetary Economics*. Cambridge University Press.

Subramanian, Ramesh and Green, D.J. 2004. Financial Intermediation in Asia in Retrospect dan Prospect: The Case of Indonesia. *Proceedings of an International Seminar* Held in Denpasar – Bali, December 2004.

Takamasa Himada. 2004. Banking Disintermediation and Its Implication for Monetary Policy: Japan's Experience. *Proceedings of an International Seminar* Held in Denpasar – Bali, December 2004.

Tandelilin, Eduardus, Hermeindito Kaaro, Putu Anom Mahadwartha, and Supriyatna. 2007. Corporate Governance, Risk Management, and Bank Performance: Does Type of Ownership Matter?. *EADN Working Paper* No. 34.

Thomas, R.L. 1997. *Modern Econometrics*. Addison Wesley.

Thomas, R.L. 1993. *Introductory Econometrics*. 2nd Eds. Longman, London and New York.

Tobin, James with Stephen S. Golub. 1998. *Money, Credit, and Capital*. McGraw-Hill International Edition.

Tobin, James. 1969. A General Equilibrium Approach To Monetary Theory. *Journal of Money, Credit and Banking* **1** (1): 15-29.

Uy, Marilou J.D. 2004. Financial Intermediation and Growth. *Proceedings of an International Seminar* Held in Denpasar – Bali, December 2004.

Verbeek, Marno. 2000. *A Guide to Modern Econometrics*. John Wiley & Sons. Ltd.

Wald, John K., 1999, How Firm Characteristics Affect Capital Structure: An International Comparison, *Journal of Financial Research* **22** (2), Summer: 161-187.

Walsh, Carl E., 2001, *Monetary Theory and Policy*, MIT.

Wooldridge, Jeffrey M. 2002. *Econometric analysis of Cross Section and Panel Data*. The MIT Press, Cambridge.

Woosik, Moon. Foreign Ownership and Perrformance of Banks: The Case of Korea. *Preliminary Draft*.

Zulverdy, Doddy, M. Firdaus Muttaqin, and N.J. Prastowo., 2004. Banking Intermediation function and Undisbursed Loan Phenomenon: Causes and Policy Impliasi. Occasional Paper, Directorate of Economic Research and Monetary Policy Bank Indonesia.

Zellner, Arnold (1962). "An efficient method of estimating seemingly unrelated regression equations and tests for aggregation bias". *Journal of the American Statistical Association* **57**: 348–368.

Zulverdy, Doddy, Iman Gunadi, Bambang Pramono. 2005. Development Bank of the Portfolio Management Model Incorporating Exchange Factor and Factor Conditions Capital Bank, Working Paper, JEL Classification: G21, C61, E44.

Appendix

Table 5. Estimation Result of Panel Data Regression on Demand for Credit in State Owned Banks in Indonesia (2002-2007)

Explanatory variables	Short run coefficient	Long run coefficient
BRI—C	-0,03621	-0,96541
BNI—C	-0,00444	-0,11843
BTN—C	-0,01969	-0,52493
EKSPOR—C	-0,00535	-0,14268
MANDIRI—C	-0,07252	-1,93357
LOG(RL?)	-0,00078	-0,27256
LOG(INFLASI?)	0,289953	-1,69898
LOG(KURS?)	-0,06068	3,774148
LOG(Y?)	0,000131	-0,00077
YG?	0,00726691	-0,0000260
λ	0,962495	
Speed of adjustment	0,037505	
mean lag	25,66327	

Table 6. Estimation Result of Panel Data Regression on Supply of Credit in State Owned Banks in Indonesia (2002-2007)

Explanatory variables	Short run coefficient	Long run coefficient
BRI—C	1,526342	26,91297
BNI—C	1,520108	26,80305
BTN—C	1,43853	25,36464
EKSPOR—C	1,381045	24,35104
MANDIRI—C	1,534785	27,06184
LOG(RL?)	-0,15835	-11,2143
LOGRS?	0,011148	1,539536
LOG(IP?)	-0,01401	-4,61534
BOPO?	0,000971	0,050191
CAR?	-0,15772	0,73476
LOG(CAP?)	-0,01192	-1,41791
λ	0,970109	
Speed of adjustment	0,029891	
mean lag	32,45454	

Table 7. Estimation Result of Panel Data Regression on Demand for Credit in Non-Foreign Exchange Commercial Banks in Indonesia (2002-2007)

.

Explanatory variables	Short run coefficient	Long run coefficient	Explanatory variables	Short run coefficient	Long run coefficient
C	-1,30159	-26,4156			
LOG(RL?)	-0,04282	-2,61773			
LOGINF?	-0,02515	-0,90879			
LOG(KURS?)	0,217637	1,311596			
LOG(Y?)	-0,12451	3,602669			
YG?	0,01051	-0,00223			
Fixed Effects (Cross)					
_JASAARTA—C	-1,33516	-27,0969	_ANGLOMAS—C	-1,31104	-26,6074
_SWAGUNA—C	-1,39466	-28,3045	_UIB—C	-1,28082	-25,9942
_HARDA—C	-1,2435	-25,2367	_LIMAN—C	-1,33295	-27,0522
_VICTORIA—C	-1,16708	-23,6858	_PRIMAMASTER—C	-1,25837	-25,5386
_SINARHRPBALI—C	-1,33202	-27,0333	_DIPO—C	-1,28073	-25,9924
_INDEXSEL—C	-1,2476	-25,3199	_AKITA—C	-1,25581	-25,4865
_EKSEKUTIF—C	-1,25748	-25,5204	_PERSYARIKATAN—C	-1,3671	-27,7451
_MAYORA—C	-1,30509	-26,4867	_BISNISINTL—C	-1,36107	-27,6228
_FAMA—C	-1,30476	-26,48	_MITRANIAGA—C	-1,32329	-26,8562
_CENTRATAMA—C	-1,27423	-25,8604	_YUDHABHAKTI—C	-1,24911	-25,3506
_HARMONI—C	-1,36258	-27,6535	_PURBADANARTA—C	-1,47664	-29,9682
_BTPN—C	-1,13288	-22,9917	_ARTOS—C	-1,32649	-26,9211
_HIMPSAUDARA—C	-1,20722	-24,5005	_MULYAARTA—C	-1,25133	-25,3957
_BINTANGMGL—C	-1,3347	-27,0876	_INAPERDANA—C	-1,24368	-25,2404
_INDOMONEX—C	-1,3251	-26,8927	_HARFA—C	-1,38438	-28,0958
_ROYAL—C	-1,29224	-26,2259	_SRIPARTHA—C	-1,36942	-27,7923
_ALFINDO—C	-1,51544	-30,7557	_JASAJAKARTA—C	-1,19441	-24,2405
_KESEJAHTERAAN—C	-1,25717	-25,5141			
λ	0,950727				
Speed of adjustment	0,049273				
Mean lag	19,29492				

Table 8. Estimation Result of Panel Data Regression on Demand for Credit in Non-Foreign Exchange Commercial Banks in Indonesia (2002-2007)

Explanatory variables	Short run coefficient	Long run coefficient	Explanatory variables	Short run coefficient	Long run coefficient
LOG(RL?)	0,261733	1,860248			
LOGRS?	-0,01165	-0,22988			
LOG(IP?)	0,040396	0,27215			
BOPO?	-0,00072	-0,00352			
CAR?	-0,00012	-0,00079			
LOGCAP?	0,289156	0,887017			
Fixed Effects (Cross)					
_JASAARTA—C	-0,01018	-7,82587	_ANGLOMAS—C	0,039834	-7,48891
_SWAGUNA—C	-0,12207	-8,57968	_UIB—C	0,051295	-7,4117
_HARDA—C	0,067621	-7,30171	_LIMAN—C	-0,03356	-7,98339
_VICTORIA—C	-0,04097	-8,03327	_PRIMAMASTER—C	0,074448	-7,25571
_SINARHRPBALI—C	0,028184	-7,5674	_DIPO—C	0,043222	-7,46609
_INDEXSEL—C	-0,01321	-7,8463	_AKITA—C	0,055398	-7,38405
_EKSEKUTIF—C	0,062004	-7,33955	_PERSYARIKATAN—C	-0,02775	-7,94426
_MAYORA—C	0,013615	-7,66555	_BISNISINTL—C	0,015446	-7,65322
_FAMA—C	0,046775	-7,44215	_MITRANIAGA—C	-0,05075	-8,09917
_CENTRATAMA—C	0,057022	-7,37311	_YUDHABHAKTI—C	-0,04383	-8,05255
_HARMONI—C	0,001744	-7,74553	_PURBADANARTA—C	-0,2131	-9,19296
_BTPN—C	0,094252	-7,12229	_ARTOS—C	0,047238	-7,43903
_HIMPSAUDARA—C	0,04998	-7,42056	_MULYAARTA—C	0,066761	-7,3075
_BINTANGMGL—C	-0,02646	-7,93555	_INAPERDANA—C	-0,01286	-7,84394
_INDOMONEX—C	0,028755	-7,56355	_HARFA—C	-0,0192	-7,88662
_ROYAL—C	-0,2165	-9,21586	_SRIPARTHA—C	-0,02916	-7,95371
_ALFINDO—C	-0,13756	-8,68404	_JASAJAKARTA—C	0,097353	-7,1014
_KESEJAHTERAAN—C	0,056223	-7,3785			
λ	0,851568				
Speed of adjustment	0,148432				
Mean *lag*	5,737086				