

MACRO ECONOMICS FACTORS AND BANK LENDING BEHAVIOUR IN INDONESIA

Rofikoh Rokhim

Management Research Center, Department of Management,
Faculty of Economics, Universitas Indonesia
e-mail: rofikoh.rokhim@ui.ac.id

Yinylia Rusli

Under Graduate School, Department of Management,
Faculty of Economics, Universitas Indonesia

Abstract

This study examines the influencing macro economics factor in lending distribution and observes the comparison of each factor based on lending type which are investment, working capital and domestic consumption lending. Using data of Indonesian commercial banks between 2003-2011 and a balanced panel method, it finds that bank liquidity and inflation rate have significant negative effect, while number of banks has strong positive influence to stimulate lending distribution. Moreover, saving rate and GDP growth were found not meaningfully contributed to change investment lending distribution, but they significantly influenced the other lending distribution. Lastly, reserve requirement and exchange rate did not significantly influence allending type.

Keywords: Loan, interest rate, *growth*, GDP.

JEL Classification Numbers: G21, E43, E51

Abstrak

Studi ini meneliti faktor ekonomi makro yang mempengaruhi distribusi pinjaman dan mengamati perbandingan masing-masing faktor berdasarkan jenis pinjaman yaitu pinjaman investasi, modal kerja dan konsumsi. Dengan menggunakan data dari bank-bank komersial di Indonesia antara 2003-2011, dengan menggunakan analisis data panel, ditemukan bahwa likuiditas perbankan dan tingkat inflasi berpengaruh negatif signifikan, sedangkan jumlah bank berpengaruh positif dan kuat untuk mendorong distribusi pinjaman pada semua jenis pinjaman. Selain itu, tingkat tabungan dan pertumbuhan PDB ditemukan tidak bermakna dalam kontribusinya untuk mempengaruhi distribusi kredit investasi, tetapi secara signifikan mempengaruhi distribusi pinjaman lainnya. Terakhir, GWM dan nilai tukar tidak signifikan mempengaruhi semua tiga kategori jenis pinjaman.

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INTRODUCTION

Bank is a financial institution which is designed as an instrument to improve living condition for people through collecting fund from public in form of saving and distributing it as a credit loan. Certainly this financial intermediation role facilitates economy to grow more efficient and dynamic. This statement fits with earlier stud-

ies carried by economy expert, Goldsmith (1969) and Shaw (1973) that argues the existence of financial institution to boost up economic growth and heighten performance of a nation growth.

Indonesia is a bank-based financial system. As stated by Besar (2012), 79.5% of the assets is the share of the bank's asset. There are 121 banks with 13.453 offices in all around Indonesia.

Furthermore, Unjuwa, Augustine, and Salami (2012) reported that *bank-based view* stresses the important and positive role of bank to identify a good project, mobilise human resources, financial resources, monitor business, manage business risk during the development and growth, and to suppress the ineffectiveness of market-based economy. They added that *bank-base* is aiding a growing economy condition.

Through the discovery that banks have played a big role as the major drive for Indonesian economy, the writer found the need of further research for factors that affect credit distribution in Indonesia which comprises bank liquidity, saving interest rate, numbers of bank, capital reserve requirement, GDP growth rate, exchange rate, and inflation rate.

Furthermore, this paper will be divided into five parts, firstly introduction, secondly descriptive picture of credit operation in Indonesia, then literature review, followed by data and methodology, and empirical result and lastly, conclusion.

METHODS

Here is the rationale based on theory and previous research results that have been used to develop hypothesis for this research.

Bank Liquidity Ratio

Liquidity ratio measures how much short term assets have to be preserved to meet its short term obligation. Short term is defined for liquidity capability to cope its responsibility for less than a month (Circular BI No 6/23/DPNP date 31 Mei 2004).

The higher the liquidity capability of a bank, the more bonafide the bank is to distribute credit for public use (Asiegbu, 2010). On the other hand, this position of liquidity could also mean that the bank has short term funds being held. Therefore, the higher the liquidity ratio, the higher the bank has not not exercised its true potential for credit distribution (Fadare, 2011). Thus, the hypothesis can be drawn are as follows:

H₁: There is a significant and negative effect of the liquidity ratio to the amount

of investment, working capital, and domestic consumption credit being distributed by commercial banks in Indonesia for period 2003-2011.

Saving Interest Rate

An increase in saving interest rate will push and stimulate public to invest their money at bank or other financial institutions. This is called the substitution effect, which implies that the higher interest rate will increase the current price of consumption relative to the future price (Touny, 2008).

As stated by Özcan et al. (2003), the real interest saving rate is likely to have a net positive impact on domestic savings in developing country. Eventually, it will lead to the amount of funds being gathered by financial institutions.

In contrary, Nguyen and Islam (2009), Kaymaz and Kaymaz (2011) also have discovered the trend of credit rate will follow the alternation of saving interest rate from previous period. This rising borrowing cost would steer borrower to avoid requesting a loan (Widjojo, 2010). By the explanation above, the hypothesis can be pulled as:

H₁₂: There is a significant and negative impact of saving interest rate to total investment, working capital, and domestic consumption loans supplied by commercial banks in Indonesia during 2003-2011.

Numbers of Operating Banks

The expansion of bank branches has brought a great achievement in banking system. As stated by Ahmed (2009), the rural branches have successfully mobilize the rural's deposit and distribute the lending to rural area. Asiegbu (2010) also mentioned that the expansion of bank's branches make credit distribution can be easily accessed by public who needs it. So, the hypothesis can be summed up as:

H₁₃: There is a significant and positive influence of the number of banks operating into amount of available funds for investment, working capital and domestic consumption loan supplied by

commercial banks in Indonesia during 2003-2011.

Minimum Reserve Capital

An action to tighten *reserve requirement* was applied by Bulgaria government during the credit boom to hold down the national credit growth (Duenwald, Guirguiev dan Shaechter, 2005).

The change in bank's loan supply is caused by the change in their reserve (Apergis and Alevizopoulou, 2011). A higher reserve requirement will force a reduction in lending, while a lower requirement would permit an increase in lending (Gray, 2011). Hence, the drawn hypothesis is:

H₁₄: There is a significant and negative effect of the minimum reserve capital to the amount of investment, working capital, and domestic consumption credit being distributed by commercial banks in Indonesia during 2003-2011.

GDP Growth Rate

Lis, Pages and Saurina (2002) discovered that a credit growth of a nation will exceed its GDP during expansion or the otherwise during recession. Amiruddin, Shaari, and Ismail (2007) did a research for Malaysia and learned that economic growth had a factual role for boosting up financial sector and escalating economy transaction, it brought a confident for domestic saving and customer spending. Through funds supplied by public, the greater is banks' ability to distribute credit (Asiegbu, 2010; Masami and Seitaro, 2011). Therefore, following those statements, the hypothesis is:

H₁₅: There is a significant and positive encouragement from the GDP growth into amount of distributed funds for investment, working capital and domestic consumption loan supplied by commercial banks in Indonesia during 2003-2011.

Exchange Rate

The weakening of the exchange rate indicates a non conducive economy of a country. Agung et al. (2001) researched that the

slumping exchange rate of Rupiah brought Indonesian businesses to hold off their business expansion plan due to the escalating risk. This situation ultimately slumps the demand for credit from financial institutions.

According Asiegbu (2010), it would discourage *foreign private investment* as well as lower domestic investment by local business. Meanwhile, at the same time as a country's currency depreciates, it would promote export operation (Baak, 2008). The value of exports has a positive correlation to lending distribution of a country (Ditria, Vivian, and Widjaja, 2008). Hence, the chosen hypothesis is as follow:

H₁₆: There is a significant and positive attitude towards the amount of distributed funds for investment, working capital and domestic consumption loan by commercial banks in Indonesia during 2003-2011 from exchange rate strength.

While Somoye and Ilo (2009) discovered that for long term study, *exchange rate* has played a big role in advancing Nigeria's credit distribution. For every 1 percent increase in local currency strength, credit value will grow by 0.34%.

Inflation Rate

At the time when real interest rate is showing negative number because inflation rate is higher than nominal interest rate, public would withdraw their money and cause a sudden drop of available fund for lending purpose (Asiegbu, 2010). Jongwanich (2010) found that in Thailand, inflation affected saving behavior among Thailand public and caused a strong and negative impact on the lack of funds to be distributed as credit by commercial banks.

From a report published by Somoye and Ilo (2009), they uncovered that for every 1 percent increase on inflation rate, Nigeria's credit distribution fell down by 0.04 percent. Another finding is for long term period, inflation can cause a significant and negative influence to lending distribution. Then, the hypothesis is:

H₁₇: There is a significant and negative effect of inflation rate towards the amount of available funds being distributed for investment, working capi-

tal, and domestic consumption credit by commercial banks in Indonesia during 2003-2011.

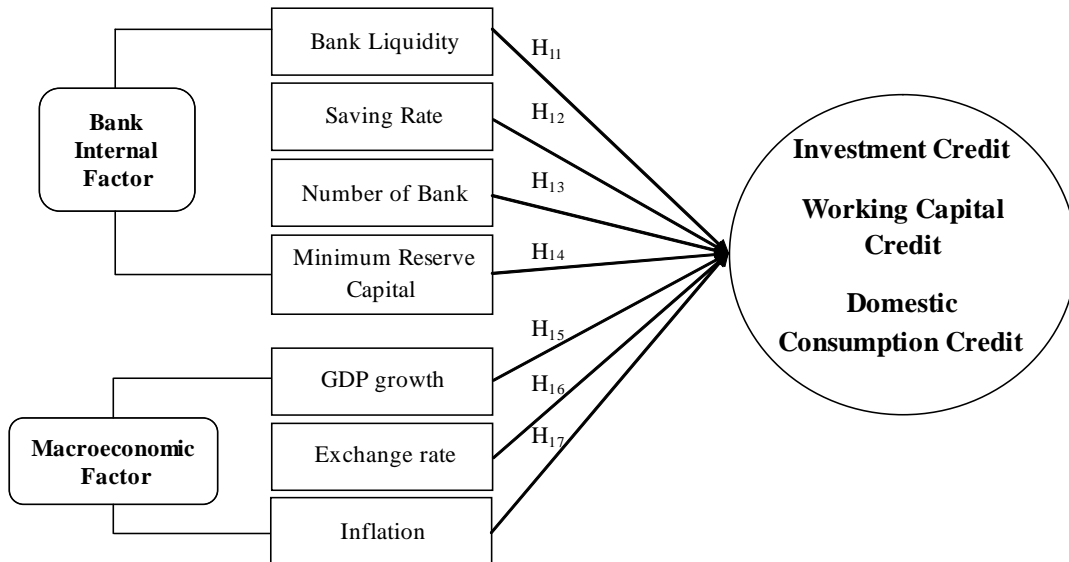


Figure 1: Hypothesis relationships

Data

Table 1: Operational Variable

Variable	Description	Equation
Total Investment Credit Issued by Bank	Total amount of distributed investment credit specified for every bank category.	-
Total Working Capital Credit Issued by Bank	Total amount of distributed working capital credit specified for every bank category.	-
Total Domestic Consumption Credit Issued by Bank	Total amount of distributed domestic consumption credit specified for every bank category.	-
Liquidity Ratio	Describe bank liquidity capability	$\text{Ratio Assets} - \text{Liabilities} = \frac{\text{Liquid assets} < 1 \text{ month}}{\text{Liquid Liabilities} < 1 \text{ month}}$
Saving Rate	Describe saving rate	-
Numbers of Operated Banks	Describe numbers of operated bank.	-
Reserve Ratio	Describe reserve capital required by Bank of Indonesia	$\text{GWM} = \frac{\text{Demand deposit in Reserve Bank}}{\text{Total Saving}} \times 100\%$
	Illustrate growth of goods and services produced by Indonesian business for a given period.	$\text{GDP}_t = \frac{(\text{GDP}_t - \text{GDP}_{t-1})}{\text{GDP}_{t-1}}$
Exchange Rate (RP/USD)	Illustrate exchange rate between Rupiah and USD	Middle rate IDR/USD
Inflation rate	Illustrate Indonesia inflation level.	$\text{CPI}_t = \frac{(\text{CPI}_t - \text{CPI}_{t-1})}{\text{CPI}_{t-1}}$

Data panel is the used type of data for this research which is a combination of *cross section* and *time series* data. Moreover, this study's object covers four categories of commercial bank known in Indonesia, limited company bank, national private bank, local government bank as well as mixed and foreign bank. Data is obtained quarterly from 2003 to 2011. There are 144 observations to gather all data. Operational variable used for this research can be seen at table 1.

During data tabulation, balanced data panel tabulation is chosen. This is set due to the numbers of observation is same year by year. While, the processing approaches fixed effect model in which this model assumes that every observation has dissimilar characteristic. The common equation for this model approach is:

$$Y_{it} = \alpha + \beta X_{it} + \gamma_2 W_{2t} + \gamma_3 W_{3t} + \dots + \gamma_N W_{Nt} + \delta_2 Z_{i2} + \delta_3 Z_{i3} + \delta_T Z_{iT} + \varepsilon_{it} \quad (1)$$

Description:

Y_{it} = a dependent variable for i at time t

X_{it} = an independent variable for i at time t

W_{it} and Z_{it} are *dummy* variables which are explained bellow:

$W_{it} = 1$; for i ; $i = 1, 2, \dots, N$
 $= 0$; others

$Z_{it} = 1$; for t ; $t = 1, 2, \dots, T$
 $= 0$; others

Furthermore, three equation models are applied for this research:

1. Investment Credit Model

$$\ln LOAN_{I_{it}} = \beta_{0t} + \beta_{1t} LIQ_{it} + \beta_{2t} SAVR_{it} + \beta_{3t} NUMB_{it} + \beta_{4t} RR_{it} + \beta_{5t} GGDP_t + \beta_{6t} \ln FX_t + \beta_{7t} INF_t + \varepsilon_{it} \quad (2)$$

2. Working Capital Credit Model

$$\ln LOAN_{MK_{it}} = \beta_{0t} + \beta_{1t} LIQ_{it} + \beta_{2t} SAVR_{it} + \beta_{3t} NUMB_{it} + \beta_{4t} RR_{it} + \beta_{5t} GGDP_t + \beta_{6t} \ln FX_t + \beta_{7t} INF_t + \varepsilon_{it} \quad (3)$$

3. Domestic Consumption Credit Model

$$\ln LOAN_{C_{it}} = \beta_{0t} + \beta_{1t} LIQ_{it} + \beta_{2t} SAVR_{it} + \beta_{3t} NUMB_{it} + \beta_{4t} RR_{it} + \beta_{5t} GGDP_t + \beta_{6t} \ln FX_t + \beta_{7t} INF_t + \varepsilon_{it} \quad (4)$$

Description:

$\ln LOAN_{I_{it}}$: investment credit

$\ln LOAN_{MK_{it}}$: working capital credit

$\ln LOAN_{C_{it}}$: domestic consumption credit

LIQ_{it} : liquidity ratio

$SAVR_{it}$: saving interest rate

$NUMB_{it}$: numbers of operated bank (including branch)

RR_{it} : *minimum reserve capital*

$GGDP_t$: Indonesia GDP

FX_t : exchange rate towards USD

INF_t : *inflation rate yoy* Indonesia

ε_{it} : *error*

RESULTS

Descriptive Data

A summary from statistical descriptive as well as dependent and independent variables utilized for this research, which covers mean, median, standard deviation, minimum and maximum can be seen at table 2.

Research Outcome

Through exercising fixed effect approach with GLS method, the outcomes is shown at table 3.

$$\ln LOAN_{I_{it}} = \beta_{0t} + \beta_{1t} LIQ_{it} + \beta_{2t} SAVR_{it} + \beta_{3t} NUMB_{it} + \beta_{4t} RR_{it} + \beta_{5t} GGDP_t + \beta_{6t} \ln FX_t + \beta_{7t} INF_t + \varepsilon_{it} \quad (2)$$

$$\ln LOAN_{MK_{it}} = \beta_{0t} + \beta_{1t} LIQ_{it} + \beta_{2t} SAVR_{it} + \beta_{3t} NUMB_{it} + \beta_{4t} RR_{it} + \beta_{5t} GGDP_t + \beta_{6t} \ln FX_t + \beta_{7t} INF_t + \varepsilon_{it} \quad (3)$$

$$\ln LOAN_{C_{it}} = \beta_{0t} + \beta_{1t} LIQ_{it} + \beta_{2t} SAVR_{it} + \beta_{3t} NUMB_{it} + \beta_{4t} RR_{it} + \beta_{5t} GGDP_t + \beta_{6t} \ln FX_t + \beta_{7t} INF_t + \varepsilon_{it} \quad (4)$$

Tabel 2: Statistical Descriptive of Researched Variables

	Mean	Median	Std. Dev.	Min	Max
<i>LOAN_I</i>	374,286	210,998	425,848	0,8370	2,040,236
<i>LOAN_MK</i>	1,408,518	1,117,100	1,011,141	132,010	3,938,230
<i>LOAN_C</i>	755,832	573,400	621,079	64,100	2,796,500
<i>LIQ</i>	0,0756	0,0357	0,0916	0,0038	0,4326
<i>SAVR</i>	0,0401	0,0388	0,0141	0,0144	0,0929
<i>NUMB</i>	25,440,140	16,990,000	22,060,840	1,250,000	77,390,000
<i>RR</i>	0,0717	0,0652	0,0231	0,0346	0,1562
<i>GGDP</i>	0,0562	0,0585	0,0264	-0,0027	0,1200
<i>FX</i>	92,670,330	91,439,100	6,615,461	84,337,360	116,231,700
<i>INF</i>	0,0750	0,0662	0,0367	0,0131	0,1711

Notes: *LOAN_I*, *LOAN_MK*, and *LOAN_C* are investment, working capital and domestic consumption which are shown in trillion Rupiah. *LIQ* is liquidity ratio (%). *SAVR* is the average saving interest rate issued by commercial banks; *NUMB* numbers of operated bank, *GGDP* is year to year GDP growth. *FX* is exchange rate for Rupiah towards USD. *INF* is inflation level measured year to year.

Tabel 3: Influencing Factors for Credit Distribution

	Model 2	Model 3	Model 4
<i>CONS</i>	36.65631**	30.47257**	31.11777**
	5.70734	3.20401	3.56848
<i>LIQ</i>	-3.31029**	-1.43565**	1.87469**
	0.36599	0.20546	0.22883
<i>SAVR</i>	3.43234	-8.24437**	9.81577**
	3.56445	2.00103	2.22865
<i>NUMB</i>	0.00038**	0.00036**	0.00033**
	0.00006	0.00034	0.00004
<i>RR</i>	-2.65546	-1.81099	-2.09174
	2.08193	1.16877	1.30171
<i>GGDP</i>	138.406	2.81927**	3.08476**
	1.81590	1.01942	1.13538
<i>Ln FX</i>	-0.61491	0.17340**	0.07681**
	0.61492	0.34520	0.38448
<i>INF</i>	-5.05951**	-1.69610**	2.13193**
	1.12429	0.63116	0.70295
<i>R-square</i>	0.71230	0.83400	0.83590
<i>Prob > F</i>	0.00000	0.00000	0.00000

Notes: $N=144$, Figures in parentheses are p values. ***, **, * denote significance at the 1%, 5%, 10% levels, respectively. *LOAN_I*, *LOAN_MK*, and *LOAN_C* are investment, working capital and domestic consumption which are shown in trillion Rupiah. *LIQ* is liquidity ratio (%). *SAVR* is the average saving interest rate issued by commercial banks; *NUMB* numbers of operated bank, *GGDP* is year to year GDP growth. *FX* is exchange rate for Rupiah towards USD. *INF* is inflation level measured year to year.

As seen at table 3, there are independent variables which can describe the dependent variables in the model of domestic consumption credit. 83.59% of the variance of independent variables that exist, namely the ratio of liquidity, interest rate deposits, the banks, reserves, GDP growth, foreign exchange, and inflation can describe the variance of the distribution of domestic consumption credit. While the rest 16.41% is

only explained by other independent variables that are not entered in this research.

Meanwhile, considering the available Prob value $> F$, it can be concluded that the independent variables used in these three models, altogether have a significant effect on the independent variables.

In the first model (investment credit), there are only three significant independent variables, namely the ratio of

bank liquidity, the bank and the inflation rate. Meanwhile, other independent variables had little effect to this model. Meanwhile, on the second and third models, the working capital model and consumer credit, there are five out of seven variables show significant influence. For the time being, the two remaining foreign exchange and reserves do not have any effect on this type of credit. This is triggered by the value of this variable is quite stagnant and only has minor change during the observation period.

CONCLUSION

The credit distribution which based on its type of use issued by the commercial bank is influenced by some internal or external and also macroeconomics factors. Liquidity ratio and inflation rate have been proven contributing to a significantly negative influence to banks' lending distribution type. Moreover, numbers of banks have a significantly positive influence to all of them.

On the other hand, saving rate have a significantly positive influence to consumption and working capital credit but not to investment credit. It is because the amount of investment credit has a little movement compared to other two types during this study period. Therefore, a much longer research span will provide a much clearer view.

Capital reserve ratio has a negative correlation but insignificantly effect to all type of credit. On the other hand, exchange rate has a negative impact to investment credit but positive to both working capital and consumption credit. But both of reserve ratio and exchange rate not has significantly effect to all the type of credit. The reason is reserve ratio and exchange rate have a stable value in the research period. Furthermore, GDP growth significantly affected working capital and domestic consumption credit but as significant as it influences investment credit. This is caused

by little proportion in Indonesian GDP is generated through investment activities.

Managerial Implication

Bank of Indonesia should control the inflation and maintain stable inflation rate in Indonesia. The high level of liquidity is also one of the inhibitors of credit distribution. Therefore, Bank Indonesia is expected to appropriately regulate bank's liquidity problems through issuing regulations in order to hold bank's optimal operation level. One of them is via reviewing the regulatory reserve requirement, as an instrument to control bank liquidity problems which was enacted in Indonesia. Lastly, branch launching which is recognized as another major driving factor on supporting lending distribution needs to be well regulated through reviewing the current regulation.

In addition, banks are expected to expand by increasing the number of branches to all corners of Indonesia. It also sought to encourage the main functions of the bank, i.e., as financial intermediation.

Suggestions and Limitations

This research is limitedly only using sample based in four groups of commercial bank. There is a time span limitation which is nine years from 2003 to 2011. In addition, there are some variables that excluded, which is total amount of saving and also loan rate.

For the next research, it is recommended to use another dependent variable, such as saving amount, loan rate, NPL, export amount and also total of money circulation in public (M2). Moreover, longer observation duration will affirmatively generate a much more solid result. Then, in order to achieve a much complete view of the whole banking system in Indonesia, rural bank and sharia bank can be included for the model

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