



# International Research Conference on Business and Economics 2013

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As a flagship international event, **IRCBE** is a high quality international forum for researchers, academicians and professionals to share and broaden the cutting-edge ideas and/or research findings on business and economics. With this spirit, **IRCBE** indeed witnesses some prominent steps that will be taken to facilitate this flourishing sharing.

# PROCEEDINGS



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## **PREFACE**

First of all, we would like to extend our warmest welcome to the speakers and delegates of the International Research Conference on Business and Economics (IRCBE), many of whom have come from afar to share with us their expertise and knowledge at this conference.

As what we have aimed for this conference, this proceedings is a reflection of IRCBE and its objectives to provide opportunities and establish networks among scholars, research community and post-graduate students through exchanges of ideas as well as bridging the gaps between economics and business fields. IRCBE covered many topics including, but not limited to: organizational behavior, economics, finance, audit, marketing, financial management, performance management, operational management, business process management and so on. The proceedings is the collection of many scientific papers that were presented and published in the IRCBE. The editors hope that this publication is useful for those participated in the IRCBE and also for the outsiders alike.

On behalf of the committee of IRCBE, We would like to express our sincere thanks to all the authors, scientific committee, organizing committee, and all the parties that make the IRCBE a successful international international academic event.

Indonesia, 28 June 2013

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**CREDIT GROWTH OF BANK AND  
ITS CONTROL RECOMMENDATIONS  
(CASE STUDY OF INDONESIA WITH TIME  
SERIES DATA 2008M1-2012M2)**

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**Abstract**

This research tries to examine and discuss the factors that influence credit growth in Indonesia. In general, for all models which is used in this study, almost all the variables such as Deposit Growth, Liability to Non-resident Growth, Inflation and Lagged BI rate consistently significant influence on Credit Growth (2008M1 -2012M2), except Lagged GDP growth is not significant but the sign of regression coefficient is consistent. Model is quite good and can be trusted to recommend a policy of controlling credit growth because it is consistent with previous research, logic, supported by a strong banking theory,  $R^2$  moderate, not no serious autocorrelation problem (best linear unbiased estimator), almost all variabel when tested individually or jointly (simultant) significant. Based on the consideration above, mentioned models can be used as a model for controlling credit growth in Indonesia which lately worrying or too fast.

JEL Classification Numbers: E58,G21

Keyword : Deposit Growth, Liability to Non-resident Growth, Inflasi, Lagged BI rate, Credit Growth



**Credit Growth of Bank and Its Control Recommendations(Case  
Study of Indonesia with Time Series Data 2008M1-2012M2)**

**Introduction.**

The importance of the role of banks to stimulate the economy has been widely discussed and studied in several literature. At that literature, banks substantially contribute to collect funds from the public and distribute the funds back to the community in the form of loans or other products. In collecting and distributing funds, the bank must consider the balance of many factors. So that the presence of banks and the role of banks in order to improve the life of people's lives, businesses and encourage economic growth can be achieved.

A balance must be considered and observed from time to time because there are many changes in a highly dynamic environment. Anyone can not guarantee that the policy prevailing at the given time will be valid also at another time. It might apply to a certain place or territory will not also apply to other region. So, no models or policies that apply universally to resolve bank problems regarding both funding and lending.

Related to the function of banks as lenders, very often commercial banks or central bank of a country worried about why the domestic bank credit growth too fast. If this condition is not well controlled will lead to the country's economy will overheat. As a result will destabilize the economy. Controlling credit growth will also be difficult, if too slow then the world of business and the economy did not grow as it should be. Because of this dilemma so it is needed to balance the potential conflicts that may arise. Consequently banks and its community are always required to observe the growth of bank, especially its credit or loans.

It seems which is also need to receive attention when the credit policy is decided is how the decision can be beneficial for corporate / business and economy. So not only seen from the point of banking interests only. The problems above are only some of the issues that should be considered before the credit policy was decided. It looks that real problems above is easy for the bank to resolve it but some are harder to solve because of the emergence of a dilemma as described above.

The issue of credit policy and its growth is an ongoing problem which is received much attention from researchers, owners, managers, investors, borrowers, central banks and other





stakeholders . They try to solve the problems with formulating new theories and models in order to explain the behavior of bank loans and its growth .Even many banking experts and researchers previously claimed this credit issue as a problem of confusing (puzzle). In certain areas, a variable is considered to affect lending and growth, while in other regions had no influence.In certain areas and certain year when researched has an effect while in other region had not .What did happened and change in the community? All problems or question needs to find the answer through good research. One of the main goals of this study was to determine the factors that influence or to be considered when a bank or central bank wants to control the growth of bank credit.

Until now, the debate on credit growth and theoretical models still unsolved. Most of the debate was based on a study of the banking system in the developed country .Very few study about this problem in developing countries. Especially in Indonesia. What if the research was conducted in emerging markets such as Indonesia. It should be noted that there are differences in the behavior of banking in emerging markets compared to developed countries where the banking system has been advanced,and more liberal .While in developing countries is not possible full liberalization.Consequences as happened in Indonesia after banking deregulation .In developing countries debtors are more small companies and medium enterprises, which generally is a company engaged in the informal sector. Unlike in developed countries, debtors are is a mid-sized companies and large business entity in which legality is more clear. As a result, banks will be different behavior in developed countries compared to developing countries such as Indonesia in credit disbursement.If channeling too much emphasis on security and legality of it will resulted lack of credit channeled and only a few companies that get credit .Too loose lending will cause the number of troubled loans.

Unlike in the developing countries, there are easier in the selection of debtors in developed countries because debtor whose legal status is clearer and the information needed easier to find.Besides large number of depositors and amount saved and then market information widely available and easy to obtain.As a result the cost of funds is lower compared to developing country.So that credit growth can be increased to the level of security which is better than in the developing countries .Because of these differences is one of consideration and encouraging to do this research about credit growth and its problems in Indonesia.

Moreover, Bank Indonesia is currently worried about credit growth in Indonesia lately too high. Bank Indonesia Deputy Governor HalimAlamsyah assess bank credit growth is

likely to be too fast now an average of 25-26% and Loan to Deposit Ratio is a relatively high that is 81% (Halim,2012) .Credit growth is considered too high and exceeds the growth of credit in the same period of the last year . Bank credit growth is also troubling because it exceeded the long-term trend which move on average increase.In that situation, banking is expected to revise again its business plans. Accordingly, credit may be pushed back to an appropriate level Because if do not do adjustments and handled properly it will potentially disrupt the economic stability.

The question is what are the factors that need to be considered to control this rapid credit growth .What had been done in other countries, especially in developed countries are not necessarily appropriate in Indonesia. Fully Imitating what banks in other developing countries may not be suitable. As for what Bank Indonesia had done in the past is not necessarily appropriate in the present .So that this study will conduct a review of literature as a reference to select the variables to be used as a model. The model proposed to solve the the problems above and make recommendation to Bank Indonesia with Tatum BlaisePua Tan ( Tan, IMF WP/12/123) and Kai Guo and VahramStepanyan model (IMF WP/11/51) which is modified in accordance with the conditions of Indonesia and other literature that supports the model proposed for this study. In summary this study wanted to find out what exactly the factors that influence credit growth in Indonesia in recent years .So that can provide recommendations for effort to control banking loan.

Another reason that encourages this study is that many of data as well as detailed information about banking in Indonesia and history as well as its problems but unfortunately, very little use those data and information to conduct research about banking and its activities. Particularly on credit growth and the factors that influence that growth . The research on this is important so that banks can contribute to the welfare of society in general.

A lot of the literature on financial institutions that explain the role of bank.According to Mishkin (2007) bank has a role as collecting funds from the surplus sector and distributing it back to the public (sector deficit). In carrying out the functions of this institution are governed by the regulations made by the authority which supervise . In distributing funds, financial institutions such as banks must adjust to sources of funds.In banking, it is called by Asset-Liability Management . If it does not match then it will cause problems not only for the bank alone but also for the businesses and the economy will come to feel the bad effects. Therefore, the government and the central bank of a country participate in conducting the supervision and guidance to the banking sector.If all running well, obedient to compliance

standards and act cautiously (prudential banking) then all those who get involved will also enjoy .In that situation will arise efficient financial system .Efficient financial system will be able to stimulate the economy and business better and faster than the country's financial system are bad and primitive ( Kasekende,2008).

The relationship between economic growth and credit growth, can be seen from Levine and Zervos study ( 1988). The study was conducted in 47 countries in 1976-1993 resulted in the conclusion that there is a positive correlation between economic growth and credit growth.They also argues that the dynamics of financial institutions is something that is necessary if a country wants to increase economic growth. Economic growth led to increased demand for credit (credit growth) to finance the business in capturing investment opportunities. Is the growth of financial institutions affect economic growth or economic growth effect on the growth of banking?. So to address this problem can be read Colderonresearch and Liu (2002). Colderon and Liu examine the effect of the development of financial institutions and economic growth in 1960-1994 in 109 countries.The result of this research shows especially the case in developing countries that the economic expansion encouraged the development of financial institutions such as banks and capital markets more liquid.

Another study concerning credit growth, can be looked from research done by Iossifov and Khamis (2009). This study found that Lagged GDP per capita, the nominal interest rate, money multiplier and credit expansion by foreign banks to local banks are some of the factors affect to the growth of credit bank of a country. So according to them, if analyze the factors that affect credit growth above variables can be considered. Another researched by Igan and Tamirisa(2009) added a net interest margin is an important variable. Because the study found that the net interest margin affect significantly to the growth of loan growth in Baltics and Central and Eastern Europe in the years 1995-2000 and 2001-2005.

There are also another research which is used as the main reference for this study in building a model to solve the problem of credit growth in Indonesia. That is a researched by Tatum BlaisePua Tan ( IMF WP/12/123) and Kai Guo and VahramStepanyan (IMF WP/11/51) in Emerging Market Economies. However this study slightly modified to suit the conditions of Indonesian banks. So there is a new novelty that augment or replace other variables from existing models such as the Lagged Bank Indonesia Rate (BI rate), Net Interest Margin (NIM), the Non-Performing Loan (NPL). BI Rate is the interest rate that reflects the attitude or monetary policy set by Bank Indonesia and announced to the public. BI rate is expected to affect the rate in interest rate of Overnight Interbank Money Market .

Movements in interbank rates is expected to be followed by developments in deposit rates and in turn bank lending rates . So from the model which is used as reference. Lagged Deposit Rate variables replaced or proxied by Lagged BI Rate. While the addition of Net Interest Margin variable into the model of Kai Guo and Vahram because this variable very rigid to change and the difference is often persist on the high difference .Even the interest rate falls but NIM still persist in the existing level.The research of Tatum BlaisePua Tan on Philipin concluded that there is a significant negative effect of NIM to the growth of credit there. So that raises the curiosity, whether this variable significantly influence credit growth in Indonesia. The reasons put NPL because this variable is known to the world of banking and the business in Indonesia when talking about corporate loans increased .Whether increase in NPL has an effect on credit growth decline?. Tatum in his research did not use the NPL but Distressed Asset Ratio (both have the same ratio reflects the quality of assets.) The result show that this ratio affects the credit growth. This study incorporates elements of Lagged credit growth to see whether the previous period loan growth will affect the current period of growth of bank credit .Because banks usually very cautious in lending. The results in Philipinabout this that there is a significant positive effect on the level of 5%.

### **Research Objectives.**

Based on the background and the problem of credit growth in Indonesia lately, this study aims as follows: to examine the influence of Deposit Growth, Liability to Non-resident Growth, Inflation, Lagged GDP Growth and Lagged BI ( Central Bank of Indonesia ) rate to Credit Growth (2008M1-2012M2 ) using Kai Guo and VahramStepanyan and Tatum Blaise Tan Pua (as model 1: The benchmark specification). Then model 1 was expanded to include NIM ( Net Interest Margin ) Lagged variables (model 2), NPL ( Non-Performing Loan ) Lagged variables (model 3), Credit Growth Lagged variables (model 4) as independent variables to see how they affect the credit growth.

## Method

### Research Model

This research used a model that used by Kai Guo and VahramStepanyan (IMF WP/11/51) as standard or benchmark model:

$$\begin{aligned} \text{Credit Growth } i,t = & \beta_0 + \beta_1(\text{Share of deposits in total credit to the private sector } i,t-12 \times \text{Deposit} \\ & \text{Growth } i,t) + \beta_2(\text{Share of deposits in total credit to the private sector } i,t-12 \times \\ & \text{Non-resident Liability Growth } i,t) + \beta_3 \text{Inflation } i,t + \beta_4 \text{Lagged GDP} \\ & \text{Growth } i,t-1 + \beta_5 \text{Lagged deposit} \\ & \text{Rate } i,t-1 + \beta_6 \text{Change in Fed Fund Ratet} + \varepsilon_{i,t} \dots \dots \dots (1) \end{aligned}$$

Where  $i$  observation and  $t$ = time period.

Study of Kai Guo and VahramStepanyan found that deposit, liability to non-resident, inflation and GDP has positive influence on credit growth. Whereas deposit rate and the Fed Funds rate negatively affect the credit growth.

This research will use the monthly data time series (Jan. 2008 - Feb.2012) all  $n = 50$ , in contrast to research Kai and Vahram (using Quarterly). The consideration because almost all the available and complete data for all variables studied were monthly data . Except for GDP data from BPS (Central Bureau of Statistics) and almost all institutions including the central bank uses the data published quarterly. In order all data has the same period then the GDP data will be interpolated by using the Quadratic Match Sum Eviews 6. So the GDP data will be transformed from Quarterly to Monthly data. In this study, Guo and Stepanyan above model then is extended to include other variables such as Net Interest Margin (NIM) for model 2, Non-Performing Loan (NPL) to model 3 and Lagged Credit Growth to model 4.

### Independent Variable in this study were:

**Deposit Growth** (source of data: [www.bi.go.id](http://www.bi.go.id)):

This variable is calculated as the share of deposits in total credit to the private sector  $i, t-12 \times$  Deposits Growth  $i,t$ . Deposits Growth is weighted by Share of total deposits in the total credit for the last 12 months consider the role of domestic deposits as a source of funds.

Theoretically, this study expects a positive relationship between deposit growth with credit growth. Increase in deposit growth is expected to expand credit expansion.

**Liability to Non-resident Growth**( source of data: [www.bi.go.id](http://www.bi.go.id)):

This variable is calculated as the share of deposits in total credit to the private sector  $i, t-12 \times$  Non-resident Liability Growth  $i, t$ . Liability growth here is multiplied by the weight of liability to non-residents on the total credit. So the role of Liability to non-resident the past 12 months (1 year) as a source of funds available for lending in the credit has been taken into account. The relationship between Liability to non-resident against credit growth is positif. The greater Liability growth is the greater sources of funds to lend in the form of loans. So the credit growth is expected to increase.

**Inflation** (data source: [www.bi.go.id](http://www.bi.go.id)):

The relationship between inflation with loan growth is expected positive. The higher the rate of inflation or nominal prices then demand for credit more increase. So that loan growth is expected increase.

**Real GDP Growth using constant prices 2000 :**

(Data source: [www.bi.go.id](http://www.bi.go.id) and [www.bps.go.id](http://www.bps.go.id))

Relationship between GDP growth to credit growth is expected to be positive. The higher the GDP growth (the better economic performance) increasing business opportunities / investment means a credit application will increase or growth.

**Deposit rate** replaced or proxied by Bank Indonesia rate - Lagged BI rate (data source: [www.bi.go.id](http://www.bi.go.id)):

Replace BI rate (as a proxy) deposit rate will ultimately affect bank lending rates. Entering the BI-rate variable in the model is a reflection of how monetary policy in a country. The relationship between BI-rate (lagged BI-rate) against loan growth is expected to be negative.

Increasing BI-rate (or lagged BI-rate) it will lower credit growth.

**Net Interest Margin - lagged NIM** (data source: [www.bi.go.id](http://www.bi.go.id)):

Net Interest Margin in developing countries generally remain rigid and the difference (lending with interest savings) is often retained by banks high despite interest rates has gone down. The relationship

between NIM with loan growth is expected to be negative. The higher the NIM the business willingness to make loans decrease. As a result, loan growth is expected will decline.



**Non-Performing Loans - lagged NPL** (data source: [www.bi.go.id](http://www.bi.go.id)):

NPL reflects the credit quality / asset bank or financial performance of financial system. Increasingly unhealthy (higher NPL), the bank will be more careful in distributing its credit. So that loan growth is expected decline. So the relationship between the two variables is expected to be negative.

**Lagged Credit Growth** (source data: [www.bi.go.id](http://www.bi.go.id)):

This variable is considered to be influential because appropriate with lagged credit growth cycle.

The relationship between lagged credit growth to the credit growth is a direct (positive). If the previous period increases, the estimated credit this year will also increase. And vice versa.

## Results

Following on the tables 1 below is the result of regression of all variables that affect the credit growth. In column 1 are the regression results of the main model (model 1: The benchmark specification). In column 1 are seen all regression coefficients of the variables that affect the credit growth has the same sign as expected. All variables significant effect was at the level of 5% and there is a new effect on the rate of 10%. Except for one variable does not affect the credit growth in that period was the variable Lagged real GDP growth. Coefficient of GDP growth as expected that this variable is positive but not significant.

Model 2 (Model 1: The benchmark specification plus variable NIM) in column 2 of Table 1 shows that there was a significant effect of NIM on credit growth. Although the sign of regression coefficient of this variable is not consistent with the expected, these results show something different in Indonesia (credit puzzle).

From Table 1 below, column 3 or model 3 looks although NPL entered into regression equation, still all regression coefficients (except NPL) the sign remained consistent and significant appropriate with the results benchmark specification models (basic models-model 1).

In the last column (the column 4) is a test of the persistence of growth. Generally, the relationship between credit growth with credit growth of next period is positive. In other words a period of credit activity will affect the activity next period. But this research found different things (negative coefficient), although not significant.

**Table 1: Regression Results For Some Alternative Models**

<b>Private Credit Growth ( 2008M1-2012M2)</b>				
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
	<b>(benchmark</b>			
<b>Constant</b>	0.051** (0.026)	-0.164** (0.073)	0.141 (0.128)	0.0518* (0.027)
Deposit Growth	0.344** (0.109)	0.372 ** (0.106)	0.352** (0.110)	0.346** (0.112)
Liability to Non-resident Growth	0.040* (0.023)	0.039 ** (0.023)	0.039* (0.023)	0.040* (0.024)
Inflasi	0.364** (0.140)	0.152 ** (0.073)	0.386** (0.144)	0.370** (0.150)
Lagged GDP Growth	0.283 (0.211)	0.387* (0.202)	0.240 (0.221)	0.280 (0.215)
Lagged BI rate	-0.877** (0.430)		-1.130** (0.559)	-0.888** (0.446)
Lagged NIM		2.837** (1.257)		
Lagged NPL			-1.614 (2.258)	
Lagged Credit Growth				-0.016 (0.132)
Anova ( F-test)	5.352**	5.625**	4.496**	4.362**
Adjusted R-Squared	0.308	0.321	0.300	0.292
Durbin-Watson (Autocorrelation-test)	2.099 No	1.887 No	2.139 No	2.070 No
Number of Observation	50	50	50	50

\*significant at 10% level

\*\* significant at 5% level

(...) standard errors are in paranthesis

Sumberdata : [www.bi.go.id](http://www.bi.go.id), [www.bps.go.id](http://www.bps.go.id).

## DISCUSSION

In model 1 (column 1) all variables has significant effect at the 5% level and there is has an effect on rate of 10%. Except for one variable does not affect the credit growth in that period was the variable Lagged real GDP growth. Coefficient of GDP growth as expected that is positive but this variable does not affect Credit Growth significantly. Not significant because the possibility for selection should not lagged -1 month but may-12 months. Since it is generally in developing countries, business information and business investment opportunities is limited and adjustment of business information and business investment opportunities due to increasing GDP does not run fast. Coefficient of deposit growth is positive and significant. Consistent with research of Kai Guo and VahramStepanyan and research Tatum BlaisePua Tan in Philipin. It means that this study (conducted in Indonesia) reaffirmed the results of previous studies that there is positive effect of deposit growth on credit growth. Coefficient of deposit growth in this research is 0,344 means any increase in savings then about 34% of the additional banks credit distribution. While the same study by Tatum BlaisePua Tan (2002: Q4 to 2010: Q4) which is distributed to credit only about 20%. This is why officials at Bank Indonesia is little bit worry. This research found that loan growth of approximately 2% per month or 24% per year while there is still more important task of banking in Indonesia to push down NPLs currently about 5%. So this study, indirectly approved the suspicion of Bank Indonesia Deputy Governor MrHalimAlamsyah that necessity of controlling credit growth at this time. Statistically this study has shown.

Model 2 (Model 1: The benchmark specification plus variable NIM) in column 2 of Table 1 shows that there was a significant effect of NIM on credit growth. Despite the signs of coefficient regression is not consistent with the expected, these results show something different in Indonesia (credit puzzle). However if further explored, this positive coefficient means although the greater NIM ,credit growth still continues to increase. This suggests that banking in Indonesia is still a financial institution which is reliable financing companies. Although NIM rose ,the company still apply for credit. It looks like the other alternatives are less desirable or not used. In column 2 of Table 1, although there are additional variables NIM, regression results for all variables unchanged significance compared to the model used benchmark specification (model 1). In model-2, BI-rate excluded from the regression equation to avoid multicollinearity between BI-rate with the NIM.

The purpose of this study was to investigate further the role of banks in Indonesia as an intermediary institution and then discuss the factors that influence the growth of credit. In general, almost all variables of the models such as Deposit Growth, Liability to Nonresident Growth, Inflation and Lagged BI rate consistently significant influence on Credit Growth (2008M1-2012M2), except Lagged GDP growth is not significant but the sign of its coefficient regression is consistent. This model is sufficient good and can be trusted to recommend a policy of controlling credit growth because of consistent with previous research, logic, supported by a strong banking theory,  $R^2$  moderate, no serious autocorrelation problem (best linear unbiased estimator). Almost all variables when tested individually or jointly (simultant) significant. Based on the consideration above mentioned, this model can be used as a model for credit growth in Indonesia lately worrying or too fast. Although these variables beyond the control of policy makers (Bank Indonesia) but can be influenced partly by regulation, determination of the BI rate or discount rate which is conducive to banking.

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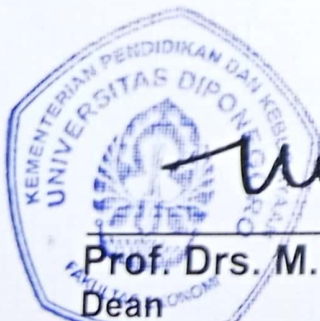
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This is to certify that

*Zainul Kisman*

Serve as Presenter in the

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