

# The Influence of Capital Adequacy Ratio (CAR), Non performing Loans (NPL), Operating Costs to Operating Income (BOPO) on Liquidity as Measured by Loan to Deposit Ratio at Bank Tabungan Negara Indonesia Tbk

Safrul Daulay<sup>1</sup>, Winda Wardhani<sup>2</sup>, Kasmidar<sup>3</sup>

<sup>1,2,3</sup>Program Studi Ekonomi Fakultas Ekonomi, Universitas Al Washliyah

## ARTICLE INFO

## ABSTRACT

### Article history:

Received Mar 20, 2021

Revised Apr 02, 2021

Accepted Apr 25, 2021

### Keywords:

Loan to Deposit Ratio (LDR),  
Non-Performing Loans  
(NPL),  
Capital Adequacy Ratio  
(CAR),  
Operational Cost to  
Operating Income (BOPO).

The purpose of this research is to analyze and test the effect of CAR, NPL, BOPO on the LDR of PT. State Savings Bank of Indonesia Tbk. This type of research is explanatory research. The sample used in this research is PT. Bank Tabungan Negara Indonesia Tbk which published its financial statements for the period 2006-2013. Data collection techniques are library research and field research. This study uses descriptive analysis, classical assumption test and multiple linear regression for data analysis with the help of the Eviews 8 program. From the analysis test results it is known that the CAR, BOPO and NPL ratios have no effect on the LDR ratio during the 2006-2013 period

*This is an open access article under the [CC BY-NC](https://creativecommons.org/licenses/by-nc/4.0/) license.*



## Corresponding Author:

### Safrul Daulay

Program Studi Ekonomi Fakultas Ekonomi

Universitas Al Washliyah

Jl Sisisingamangaraja No. 10 Km. 5,5 Medan 20147

Email:

## 1. INTRODUCTION

Seeing that the economic crisis had occurred in 1998, the improvement of the Indonesian economy was of course hoped that the economy would improve and this would not happen again. One way that can be done is through improving the quality of life of the Indonesian people, this can be realized by increasing income or income through various economic activities so that people get prosperity. The influence of the banking sector in a country's economy is very large because banks are an industry whose business activities rely on trust. from the community, for this reason the bank must maintain its performance so that it remains in a healthy condition because a decrease in its performance can reduce the level of public trust. Public trust is needed, because banks do not have sufficient funds to pay all their obligations to all customers at once. Banking is an agency that has the main task of collecting funds from third parties and channeling these funds back to the community. In other words, the bank has the duty to channel funds from those who have excess funds (surplus) to those who lack funds (deficit). Therefore the bank is referred to as an intermediary agency between the two parties (Kartini and Nurisa, 2014).

One of the income received by almost all banks in Indonesia is income from credit activities, because lending is the main activity of the bank. According to Artesa and Handiman (2006), this

credit distribution has a fairly high risk, therefore bank management must always use the principle of prudence (Prudential Principal). Caution is a principle that must always be applied in any lending, the aim is to prevent risks that may occur. With credit, credit can help the community and banks to gain benefits such as people who need additional funds to develop their business, expand employment, increase existing productivity, increase motivation and enthusiasm for business, obtain additional working capital so that company operations can be guaranteed and so on. -other. As for the bank itself, the bank will earn interest from credit, utilize and be productive of existing funds, increase the productivity of bank operational activities, obtain additional company working capital, expedite payment traffic, increase income and community welfare and others (Kartini and conscience, 2014).

If the bank provides credit in a large enough amount, then of course the risks that may occur are also large. According to Sudirman (2013), most of the bank funds disbursed are in the form of loans that have a certain period of time, for example 1 year, 2 years, 3 years, and even more than 5 years, which will affect bank liquidity. So the relationship between credit and funds becomes very important to support bank liquidity. Funds stored in banks owned by the public have a term, as well as credit extended by banks to the public. The timing and amount of funds or credit affects the level of liquidity. A bank will be able to pay all of its financial obligations if the bank's ability to pay is greater than the amount of financial obligations that must be paid immediately, and such a bank's condition can be said to be liquid.

Banks must maintain their liquidity because managing liquidity is very important for the continuity of a bank's business. In addition, liquidity will also affect the level of public trust or customers depositing funds at the bank. According to Sudirman (2013), one way to determine bank liquidity can be measured by the Loan to deposit Ratio (LDR). LDR is a ratio between the amount of funds channeled to the public (credit) and the amount of public funds and own capital used.

As for several previous studies that conducted research on liquidity as measured by the Loan to deposit Ratio (LDR), including research conducted by Setiawan and Hady (2006) who conducted research to examine the effect of placement and bank performance as well as external variables on the role of commercial banks national private sector as an intermediary to encourage the real sector in Indonesia in 1997-2004, the analytical tool used is multiple linear regression analysis. The results showed that CAR had a significant positive effect on LDR, while SBI, placement of funds with other banks, NPL and BOPO had a significant negative effect on LDR.

Akbar and Mentayani (2010) also conducted a study to examine the factors influencing study intermediation at private commercial banks in South Kalimantan, these factors include NPLs, SBI, deposit rates, loan rates, inflation, and growth in the investment climate. In this study the banking intermediary function is measured using the Loan to deposit Ratio (LDR) liquidity ratio. Akbar and Mentayani used samples from 2007 to 2009, the analytical tool used was multiple linear regression analysis. The results showed that NPL had a positive effect on LDR, SBI had a negative effect on LDR, interest rates on deposits, and interest rates on loans (LDR). Meanwhile, inflation and growth in the investment climate have no effect on (LDR).

Furthermore, Prayudi (2011) also conducted research to determine the effect of CAR, NPL, BOPO, ROA, NIM, on the Loan to deposit Ratio (LDR). The sample used in this study uses 10 banks with the largest assets in Indonesia with using purposive sampling. The data were obtained based on the annual data presented in the Bank's Annual Report from 2006 to 2010. The analytical tools used in this study were multiple regression analysis tools and assumption tests. The results showed that CAR, NPL, BOPO had no effect on LDR, while ROA and NIM had an effect on LDR.

Santoso and Sukihanjani (2012) also conducted research which aimed to find out how the influence of bank size, Net Working Capital, ROA, ROE, CAR, NPL, Deposit Interest Rates and Credit Interest Rates affect banking liquidity in Indonesia as measured by the Loan to deposit Ratio (LDR). Santoso and Sukihanjani used the sample in this study, namely national banking industry companies registered with Bank Indonesia from 2007 to 2011, the analytical tool used was multiple linear regression analysis. The results of the study show that Net Working Capital, ROA, and CAR have a positive and significant effect on LDR. Meanwhile, ROE and deposit rates have a negative and significant effect on LDR. NPL has a positive but not significant effect on LDR, and bank size and credit interest rates have a negative but not significant effect on LDR.

Likewise Hersugondo and Tamtomo (2012) conducted a study to find out how CAR, NPL, TPF growth and ROA influence the Loan to deposit Ratio (LDR) of Indonesian banking. This study uses a sample of all banks registered in the Directory of Bank Indonesia in 2006 to 2009, the analytical tool used is multiple linear regression analysis. The results showed that CAR and ROA had a positive and significant effect on LDR, NPL had a negative and significant effect on LDR, while TPF growth had a positive but not significant effect on LDR.

In the same way, Ritha and Raditiya (2013) also conducted research which aimed to find out how internal factors and external factors such as SBI, ABA, CAR, NPL, BOPO and inflation affect the Loan to deposit Ratio (LDR). Ritha and Raditiya used the sample in this study, namely all Foreign Exchange National Private Commercial Banks (BUSN) registered at Bank Indonesia from 2006 to 2010, and the analytical tool used was multiple linear regression analysis. The results showed that CAR and NPL had a negative and significant effect on LDR, while SBI and ABA had a positive but not significant effect on LDR, BOPO and inflation had a negative but not significant effect on LDR.

Furthermore, Buchory (2014) also conducted research to analyze the factors that influence the implementation of bank intermediation such as capital adequacy, credit risk and profitability. Buchory examined all Regional Development Banks in Indonesia in 2012, the analytical tool used was multiple linear regression analysis. The results showed that CAR and ROA had a positive and significant effect on LDR, while NPL had a negative but not significant effect on LDR. In addition to this research, Buchory (2014) also re-examined the factors that influenced the implementation of intermediation including Net Interest Margin, capital adequacy, credit risk and profitability at all Regional Development Banks in Indonesia in 2012. The results of this study showed that NIM and ROA has a positive and significant effect on LDR, NPL has a positive but not significant effect on LDR, and CAR has a negative but not significant effect on LDR.

Manurung (2014) also conducted research to determine the factors that influence the intermediation function of banks through the Loan to deposit Ratio (LDR) approach, these factors include CAR, NPL, BI rate, NIM and Statutory Reserves. This research uses studies at PT Bank Tabungan Negara (Persero) Tbk, from 2006 to 2013 in the form of quarterly data, and the analytical tool used is multiple linear regression analysis. The results showed that NPL and NIM had a positive and significant effect on LDR, while CAR, BI rate and Statutory Reserves had a negative and significant effect on LDR.

With the differences in the results of research conducted by previous researchers, this study will try to re-examine several variables that have previously been studied, these variables such as Non-Performing Loans (NPL), Capital Adequacy Ratio (CAR), growth of Third Party Funds (DPK), and Operating Expenses Operating Income (BOPO). This study tries to find out how much influence the variables Non Performing Loans (NPL), Capital Adequacy Ratio (CAR), and Operational Income Operating Costs (BOPO) have on bank liquidity as measured by the Loan to Deposit Ratio (LDR). This research was conducted because there are still differences from the results of previous research on these variables. Thus, the bank can find out the policies that must be taken for the continuity of its business so that it can maintain its liquidity.

## **2. RESEARCH METHOD**

### **2.1 Population and Sample**

The sample used in this study is HSBC Bank which published its financial reports in the 2006-2013 period. Data collection techniques are library research and field research. This study uses multiple linear regression for data analysis.

### **2.2 Operational Definition of Research Variables**

In accordance with the research hypothesis, the variables used in this study are measured by:

#### **2.3 Bank Liquidity**

Bank liquidity in this study was measured using the Loan to Deposit Ratio (LDR). According to Sudirman (2013) Loan to Deposit Ratio (LDR) is a comparison ratio between the amount of funds channeled to the public (credit) with the amount of public funds and own capital used. The higher the ratio gives an indication of the lower the liquidity capacity of the bank concerned, and conversely the lower the ratio the higher the liquidity capacity of the bank concerned. The Loan to Deposit Ratio (LDR) is calculated using the formula:

$$\text{LDR} = \frac{\text{Seluruh Penempatan Kredit} \times 100\%}{\text{Seluruh dana dihimpun} + \text{Modal Sendiri}}$$

#### 2.4 Capital Adequacy Ratio (CAR)

The Capital Adequacy Ratio (CAR) or often referred to as the capital ratio is the basic capital that must be met by a bank to fulfill all of its obligations. The Capital Adequacy Ratio (CAR) ratio is used to measure the ability of existing capital to cover possible losses in credit activities, securities trading and others. The greater the value of this ratio, the better the capital position of the bank concerned. The Capital Adequacy Ratio is calculated using the formula:

$$\text{CAR} = \frac{\text{Modal Sendiri}}{\text{Aktiva Tertimbang}} \times 100\%$$

#### 2.5 Non Performing Loans (NPL)

Non Performing Loan (NPL) is a ratio to measure credit risk. Credit risk that occurs is the risk of non-payment of credit borrowed by customers or often called bad credit. Non Performing Loan (NPL) is calculated using the formula:

$$\text{NPL} = \frac{\text{Kredit Bermasalah}}{\text{Total Kredit}} \times 100\%$$

#### 2.6 Operating Costs to Operating Income (BOPO)

BOPO is a comparison ratio between operational costs and operating income, which is used to measure the level of efficiency and ability of a bank to carry out its operational activities. BOPO is calculated using the formula:

$$\text{BOPO} = \frac{\text{Biaya Operasional}}{\text{Pendapatan Operasional}} \times 100\%$$

#### 2.7 Multiple Linear Regression Analysis

This regression method is used to find out how the effect of Non Performing Loans (NPL), Capital Adequacy Ratio (CAR), growth of Third Party Funds (DPK), and Operational Costs to Operating Income (BOPO) on Loan to Deposit Ratio (LDR). Then the multiple linear regression equation in this study corresponds to the variables used, namely:

$$\text{LDR} = \alpha + \beta_1 \text{NPL} + \beta_2 \text{CAR} + \beta_3 \text{BOPO} + e$$

Information:

A = Constant (intercept)

$\beta$  = Regression coefficient on each independent variable LDR = Loan to deposit Ratio

NPL = Non Performing Loans

CAR = Capital Adequacy Ratio

BOPO = Operating Costs to Operating Income

E = Error

### 3. RESULTS AND DISCUSSIONS

#### 3.1 Data analysis

##### a. Multiple Linear Regression Analysis

Multiple linear regression models to determine the effect of Capital Adequacy Ratio (CAR), Non Performing Loans (NPL), Operating Costs to Operating Income (BOPO) on Loan to Deposit Ratio (LDR) at HSBC Bank in 2006-2013.

Dependent Variable: LDR

Method: Least Squares

Date: 12/27/22 Time: 12:49

Sample: 2006 2013

Included observations: 8

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	272.2961	89.64440	3.037514	0.0385
CAR	0.648917	1.344500	0.482646	0.6546
NPL	-7.881739	5.723017	-1.377200	0.2405
BOPO	-1.851018	1.142740	-1.619806	0.1806

R-squared	0.544379	Mean dependent var	99.44500
Adjusted R-squared	0.202663	S.D. dependent var	7.769201
S.E. of regression	6.937409	Akaike info criterion	7.018587
Sum squared resid	192.5106	Schwarz criterion	7.058307
Log likelihood	-24.07435	Hannan-Quinn criter.	6.750686
F-statistic	1.593075	Durbin-Watson stat	1.291760
Prob(F-statistic)	0.323843		

From the table, the regression equation can be arranged as follows:

$$\text{LDR} = 272,3 + 0,65 \text{ CAR} - 7,88 \text{ NPL} - 1,85 \text{ BOPO} + e$$

Based on the results of the multiple regression analysis above, it can be seen that:

1. The value of the coefficient of determination (R<sup>2</sup>) is 0.54. This means that the CAR, BOPO and NPL variables together are able to explain the LDR variable by 54%. The remaining 56% can be explained by other variables.
2. A constant value of 272.3 with a positive value means that Loan to Deposit Raio (LDR) will be worth 272.3 if Non Performing Loans (NPL), Capital Adequacy Ratio (CAR) and Operational Costs to Operating Income (BOPO) are worth 0. The Non-Performing Loan (NPL) variable has a negative regression coefficient of 7.88, which means that for every 1% increase in the NPL variable, the LDR will decrease by 7.88 assuming CAR and BOPO are constant. The Capital Adequacy Ratio (CAR) variable has a positive regression coefficient of 0.65, which means that for every 1% increase in the CAR variable, the LDR will increase by 65% assuming NPL and BOPO are constant. The Variable Operating Costs to Operating Income (BOPO) has a negative regression coefficient of 1.851, this means that for every 1% increase in the BOPO variable, the LDR will decrease by 1.851 assuming NPL and CAR are constant.
3. The t-statistical values of the NPL and BOPO variables are -1.377 and -1.619 respectively with a probability of 0.2405 and 0.1806 respectively. shows that the NPL and BOPO variables have a negative but not significant effect. Meanwhile, the t-statistic value of the CAR variable is 0.48 with a probability of 0.654. This means that the NPL variable has a positive but not significant effect.

### 3.2 Discussion

#### a. Effect of Capital Adequacy Ratio (CAR) on Loan to Deposit Raio (LDR)

The results of this study indicate that the Capital Adequacy Ratio (CAR) has a positive but not significant effect on Loan to Deposit Raio (LDR). From the existing data, the CAR held by banks shows a decreasing trend, while the LDR owned by banks shows an increasing trend. The increase in LDR is possible because banks lend a lot of funds so that the RWA increases which causes the bank's CAR to decrease. Vice versa if there is an increase in CAR, the bank's LDR will decrease, an increase in CAR indicates that there are bank funds that are idle and the credit risk being borne is getting smaller. If there are too many idle funds, of course it will make the bank unproductive in managing the funds it has, so that it will reduce the bank's performance, of course its liquidity will be disrupted. The results of this study are supported by Buchory (2014), Santoso and Sukihanjani (2012), Hersugondo and Tamto (2012), Setiawan and Hady (2006), and Prayudi (2011) with the result that the Capital Adequacy Ratio (CAR) has a positive and not significant effect on Loan to Deposit Raio (LDR). however, this is different from the results by Manurung (2014) and Ritha and Raditya (2013) which state that CAR has a significant negative effect on LDR.

#### b. Effect of Non Performing Loans (NPL) on Loan to Deposit Raio (LDR)

The results of this study indicate that Non Performing Loans (NPL) have a negative but not significant effect on Loan to Deposit Raio (LDR), meaning that the higher the NPL value, the higher the LDR value. This contradicts the theory which says that NPL has a negative effect on LDR. This difference in results is possible because the average NPL level owned by banks is still at a safe level, namely below 5% in accordance with the provisions in force in Indonesian banking, although from the available data the NPL values owned by banks show an increasing trend, but the increase still below normal limits. So that in this condition, an increase in the NPL value does not have a significant effect on increasing the LDR. This proves that banks are able to manage their credit properly and selectively in channeling their credit, so that bank liquidity is maintained. By



maintaining bank liquidity and being able to overcome existing bad loans, customers have confidence and confidence to carry out various activities with the bank. The results of this study are supported by the results of research conducted by Hersugondo and Tamto (2012), Ritha and Raditya (2013), Setiawan and Hady (2006), and Susanty (2014) that Non-Performing Loans (NPL) have a negative and significant effect on loans to Deposit Raio (LDR). However, these results are different from the study of Buchory (2014) which states that NPL has a positive but not significant effect on LDR.

c. Effect of Operational Costs on Operating Income (BOPO) on Loan to Deposit Raio (LDR)

The results of this study indicate that Operational Costs on Operating Income (BOPO) have a negative but not significant effect on Loan to Deposit Raio (LDR). The test results indicated that the increase or decrease in BOPO during the study period did not affect LDR. This was possible because from the available data, the BOPO value of banks showed an increasing trend, but the bank's LDR also had an increasing trend. A high BOPO value indicates that the bank's management has not been efficient in carrying out its operations, thus increasing operational costs while decreasing operating income. In addition, banks that have a high BOPO are because banks are increasing their reserves to anticipate the risk of non-performing loans that will be faced. The results of this study are supported by the results of research by Ritha and Raditya (2013) and Prayudi (2011) which state that Operational Costs on Operating Income (BOPO) has a negative but not significant effect on Raio's Loan to Deposit (LDR). However, these results are different from the results of research conducted by Setiawan and Hady (2006) which stated that Operational Costs to Operating Income (BOPO) had a negative and significant effect on Loan to Deposit Raio (LDR).

#### 4. CONCLUSION

Based on data analysis and discussion of research results, it can be concluded that the Capital Adequacy Ratio (CAR), Operating Income (BOPO) and Non-Performing Loans (NPL) have no influence on Loan to Deposit Raio (LDR).

#### REFERENCES

- Akbar, M dan Mentayani, I. (2010), "Faktor-Faktor yang Mempengaruhi Intermediasi: Studi Pada Bank Umum Swasta Kalimantan Selatan Tahun 2007-2009", *Jurnal Manajemen dan Akuntansi*, 11 (2) (April).
- Arthesa, A dan Handiman, E. (2006), *Bank & Lembaga Keuangan Bukan Bank*, Jakarta: PT Indeks.
- Buchory, H.A. (2014a). "Analysis Of The Effect Of Capital, Credit Risk And Profitability To Implementation Banking Intermediation Function (Study On Regional Development Bank All Over Indonesia Year 2012)", *International Journal of Business Economics and Law*, 4(1)(Juni).
- (2014b). "Analysis Of The Effect Of Capital, Net Interest Margin, Credit Risk And Profitability In The Implementation Of Banking Intermediation (Study On Regional Development Bank All Over Indonesia In 2012)", *European Journal of Business and Management*, 6 (24).
- Hersugondo dan Tamtomo, H.S (2012). "Pengaruh CAR, NPL, DPK dan ROA Terhadap LDR Perbankan Indonesia", *Jurnal Dharma Ekonomi*, (36) (Oktober).
- Khaizan, E, (2011). "Non Performing Loan (NPL)". <http://enjangkhaizan.blogspot.com/2011/06/pengertian-non-performing-loan-npl.html>. diakses pada tanggal 20 September 2014
- Kuncoro, M dan Suhardjono. (2002). *Manajemen Perbankan Teori dan Aplikasi*, Yogyakarta: BPFE Yogyakarta.
- Manurung, S. (2014). "Analisis Faktor yang Mempengaruhi Fungsi Intermediasi Bank Melalui Pendekatan Loan To Deposit Ratio (LDR) Pada PT. Bank Tabungan Negara (Persero) Tbk Tahun 2006-2013". Universitas Gunadarma.

- Prayudi, A. (2011). "Pengaruh Capital Adequacy Ratio (CAR), Non Performing Loan (NPL), BOPO, Return On Asset (ROA) dan Net Interest Margin (NIM) terhadap Loan to Deposit Ratio (LDR)". Sragen.
- Ritha, H dan Raditiya, E. (2013). "Pengaruh Faktor Internal dan Eksternal Terhadap Fungsi Intermediasi Pada Bank Umum Swasta Nasional (BUSN) Devisa Periode 2006-2010, Jurnal Bijak, 11 (2)" (September).
- Riyadi, S. (2006). *Banking Assets and Liability Management*. Jakarta: Lembaga Penerbit Fakultas Ekonomi Universitas Indonesia.
- Santoso, A, L dan Sukihanjani, T. (2012). "Analisis Faktor-Faktor yang Mempengaruhi Likuiditas Perbankan di Indonesia". Universitas Sebelas Maret.
- Setiawan, B dan Hady, H. (2006). "Pengaruh Placement dan Kinerja Bank, serta Variabel Eksternal terhadap Peranan Bank Umum Swasta Nasional (BUSN) sebagai Intermediasi untuk Mendorong Sektor Riil di Indonesia". *Journal of Postgraduate Program Universitas Persada Indonesia*, 14, hal: 43-60.
- Sudirman, I.W. (2013). *Manajemen Perbankan Menuju Bankir Konvensional yang Profesional*. Jakarta: Kencana Prenada Media Group.
- Susanty, W.D. (2014). "Pengaruh Faktor Internal dan Eksternal Sebagai Penentu Fungsi Intermediasi Perbankan (Studi pada Bank Syariah dan Bank Umum Konvensional)", *Jurnal Ilmiah, Universitas Brawijaya*.
- Kartini dan Anis Nuranisa. 2014. "Pengaruh Capital Adequacy Ratio (CAR), Non Performing Loan (NPL), Pertumbuhan Dana Pihak Ketiga (DPK), Biaya Operasional terhadap Pendapatan Operasional (BOPO) Terhadap Likuiditas Yang Diukur Dengan Loan to Deposit Ratio Pada Perusahaan Perbankan Yang Tercatat di Bursa Efek Indonesia". *Jurnal Dharma Ekonomi*, (36) (Oktober). *Jurnal Unisia*, 36 (81)" (Juli).