Almana : Jurnal Manajemen dan Bisnis
Volume 7, No. 3/ December 2023, p. 499-507
ISSN 2579-4892 print/ ISSN 2655-8327 online
DOI: 10.36555/almana.v7i3.2215

Factor Affecting Liquidity of Commercial Banks in Indonesia

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Abstract: Banks need to maintain soundness levels, one of which is the level of liquidity. Bank liquidity will be tested in the case of “Bank Runs”, which occurred frequently both in Indonesia and in the world. The main purpose of this study is to develop an understanding of factors that affect liquidity in the banking sector with a focus on bank groups that belong to the category of Bank Group based on Core Capital (KBMI) 4. This study was explanatory research. Data were collected using the documentation method from the financial data of KBMI 4 banks. The sample for this study consisted of 4 banks. The results of the study showed that NPL had a negative effect on LDR and NWC had a positive effect on LDR, while CAR did not affect LDR.
Keywords: CAR, Liquidity, NPL, Net Working Capital, Bank

INTRODUCTION

Banks play an important part in a country's economic development. As financial institutions that serve as intermediaries between individuals with excess funds and those requiring financial assistance, banks should maintain their level of financial soundness to effectively run their intermediary roles. This, in turn, allows banks to fulfill their objectives, namely promoting economic growth and maintaining national stability. The bank's soundness level is one of the factors that affect public trust in saving funds at the bank (Sengkey et al., 2018). For this reason, banks should be able to maintain the stability of their financial liquidity. In addition, they need to have sufficient capital to develop their business and be able to manage operational costs efficiently.

For banks, liquidity refers to their ability to handle deposit withdrawals, maturity of demands, and loan obligations (Yumaita et al., 2022). Adequate liquidity relies on the company's ability to respond effectively to both anticipated and unforeseen cash flows and security needs without interrupting operations and the financial condition of the company. Insufficient liquidity can prevent a company from generating profits and can even necessitate the sale of investments and other assets. This affects the profitability and long-term viability of the company. This happened during the 1998 monetary crisis, in which 16 commercial banks in Indonesia had to be liquidated due to a lack of liquidity (DetikFinance, 2021).

Bank liquidity will be tested during "Bank Runs", where a large number of customers simultaneously and immediately withdraw deposits on a large scale from a bank because they do not believe that banks will able to pay their funds in cash and on time. Bank runs have occurred many times both in Indonesia and in the world (Mae, 2023). For example, bank runs occur in banks with large assets such as Washington Mutual (2008), Silicon Valley Bank (2023), Continental Illinois National Bank and Trust (1984), First Republic Bank Corporation (1988), and American Savings and Loan (1988). These examples imply that large assets alone do not guarantee good liquidity. In recent economic conditions, after the COVID-19 pandemic and the spreading news of a global recession, massive withdrawal can happen again if banks do not pay proper attention to the factors that affect their liquidity. liquidity is proxied by LDR (Loan to Deposit Ratio). It is the “ratio of loan extended to third parties in Rupiah and foreign currencies, excluding loan to other banks, to third party funds covering demand deposits, savings, and time deposits in Rupiah and foreign currencies, excluding interbank funds” (Peraturan Bank Indonesia Nomor 15/7/PBI/2013, 2013).

Submitted: May 18, 2023; Revised: December 04, 2023;
Accepted: December 06, 2023; Published: December 28, 2023;
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Several researchers have reported that liquidity is affected by various factors. Septyloga (2018) revealed that CAR affects liquidity, proxy by LDR. Moreover, Utami & Muslikhati (2019); Saputro & Wildaniyati (2021); Makhmud et al. (2020) found that the adequacy of capital owned by a bank has a positive effect on liquidity where greater capital leads to greater liquidity. CAR is a parameter that reflects the extent to which all potential risks in a bank (including credit provided, investments in securities, and liabilities to other banks) are supported by the bank's internal capital, while also relying on external sources, such as funds originating from the public, borrowing, and other funding sources. The greater CAR means that the bank has sufficient capital and can solve problems in risky situations. However, Junianti et al. (2023); and Jaiz et al. (2020) found the opposite. They found that greater CAR has a negative effect on its liquidity. Therefore, it can be concluded, that the size of the CAR can provide information about the ability of the bank to avoid liquidity risk. Previous studies have reported that CAR has a positive effect on liquidity Makhmud et al. (2020); Saputro & Wildaniyati (2021); Utami & Muslikhati (2019). However, Akbar (2023); Hasibuan et al. (2021); and Ikhwana et al. (2020) found Conversely, CAR does not affect LDR.

The other factor that affects bank liquidity is bank risk. This risk includes the risk of problem loans commonly called NPL. NPL is a condition under which the customers are unable to pay part or all of their obligations to the bank following the terms of the initial agreement. The NPL level in Indonesia from 2020 to early 2022 has increased compared to the previous years (Kusnandar, 2022). The increase in NPLs was associated with the COVID-19 pandemic where the government imposed Large-Scale Social Restrictions to prevent transmission. Consequently, many entrepreneurs had to temporarily close their businesses and they 'failed' to pay their obligations to the bank. According to Kusnandar (2022), NPL in January 2022 increased by 16.28% from January 2020 when the pandemic had not yet occurred. In terms of ratio, compared to the previous year 2021, NPL in January 2022 increased 33 basis points (bps) from the previous year, from 2.77% to 3.1%.

NPL reflects the credit risk ratio, where the lower percentage of NPL indicates the lower credit risk borne by the bank. Meanwhile, with a large percentage of NPL, liquidity risk can arise at any time, hindering banks from fulfilling their obligations. Banks with many NPL are at a high-risk liquidity problem because depositors and investors can lose their trust in the banks. In Indonesia, the Central Bank (BI) sets a maximum NPL ratio of 5%. Thus, if commercial banks in Indonesia can suppress the NPL ratio below 5%, they can earn higher profits because the banks will save money that will be needed for reserves for non-performing loans or allowances for Earning Assets Write-Off (PPAP) (Bank Indonesia, 2021). In earlier empirical studies, Hasibuan et al. (2021) found that NPL affects the LDR ratio. Moreover, Sarnawiah (2019) demonstrates that NPL has a negative effect on liquidity. In the same vein, El-Chaarani (2019), and Agustuty et al. (2020) stated that NPL has a negative effect on bank liquidity because it can reduce the level of deposits and undermine trust among depositors. In addition, it makes banks eager to provide more loans to compensate for losses. However, without a proper and rough calculation, this can increase the NPL level and lead to worsened liquidity levels. The smaller the NPL level, the greater the liquidity level. Nonetheless, there is a study conducted by Budiyati & Kusumawardhani (2022); and Ikhwana et al. (2020) showing a contradictory result where NPL did not affect liquidity.

Another factor that can also influence bank liquidity is Net Working Capital (NWC). NWC is a measure of short-term liquidity and represents the ability of companies' management to utilize their assets effectively. With a high NWC, banks can reduce liquidity risk because they can immediately disburse their assets to pay short-term obligations. Studies conducted by Fitriani & Danisworo (2020); and Budiyati &

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Kusumawardhani (2022) found that NWC has a negative effect on the level of bank liquidity risk. In contrast, Pertiwi et al. (2020) found that NWC has a positive effect on the level of bank liquidity risk. According to Budiyati & Kusumawardhani (2022), NWC has a negative influence on liquidity risk. This means that NWC has a positive effect on bank liquidity. The result of this study is consistent with the results of the previous study, conducted by Fitriani & Danisworo (2020) which found a positive effect of NWC on liquidity.

Based on the earlier empirical studies and the theory above, the theoretical framework and hypothesis in this study were formulated as the following:

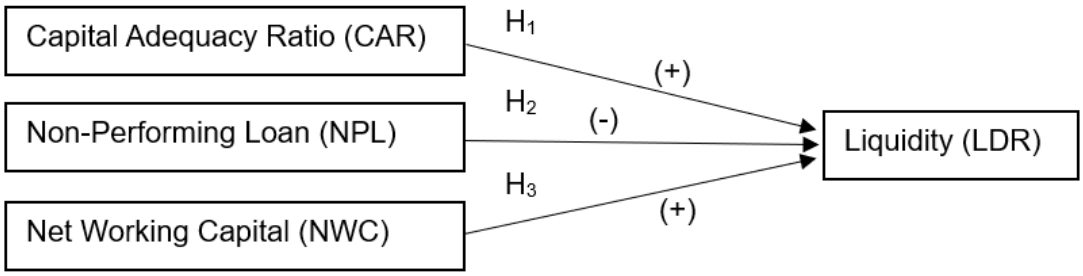

Figure 1. Theoretical Framework
Source: Authors' conclusion on literature (2023)

H_1: CAR has a positive effect on LDR.
H_2: NPL has a negative effect on LDR.
H_3: NWC has a positive effect on LDR.

METHODS

The method used in this study is explanatory research. This study used secondary data from financial data of banking companies listed on the IDX during 2019-2022. The data was collected from the IDX website and related company websites.

The population in this study involved financial data of all companies in the banking sector listed on the Indonesia Stock Exchange. This study used non-probability sampling with a purposive sampling technique for sample collection and used the following criteria: (1) Commercial banks that have been listed on the Indonesian Stock Exchange (IDX) during 2019-2022; (2) Commercial banks that publish their financial statements during 2019-2022; (3) Banks group that belong to the category of Bank Group based on Core Capital (KBMI) 4.

Based on the above criteria for sample selection, the sample of this study consisted of 4 banks, namely Bank Central Asia Tbk (BBCA), Bank Mandiri (Persero) Tbk (BMRI), Bank Rakyat Indonesia Tbk (BBRI), and Bank Negara Indonesia Tbk (BBNI). The samples were 60 samples of financial data consisting of CAR, NPL, NWC, and LDR. The following formula is used to calculate LDR, CAR, NWC, and NPL:

$$LDR = \text{Credits disbursed} / \text{Third party funds x } 100\%$$

$$CAR = \frac{Capital}{ATMR}\ x\ 100\%$$

$$Non\ Performing\ Loan = \frac{Total\ NPL}{Total\ Gross\ Loans}\ x\ 100\%$$

$$Net\ Working\ Capital = Current\ Assets - Current\ Liabilities$$

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This study used the Chow test and the Hausman test. The Chow test was used in the Model Estimation Test to evaluate whether the research model is best suited to employ the Common Effect Model (CEM) or the Fixed Effect Model (FEM), and the Hausman test was used to pick the best Fixed Effect Model (FEM) or Random Effect Model (REM) (Parlindungan & Dewi, 2022). For the Chow test, if the cross-section chi-square probability value is > 0.05, then the model chosen is CEM. If the cross-section chi-square probability value is ≤ 0.05, then the model chosen is FEM. For the Hausman test, if the random cross-section probability value is > 0.05, then the model chosen is REM. If the random cross-section probability value is ≤ 0.05, then the model chosen is FEM. Based on Meiryani (2021) If the Chow and Hausman tests reveal that the Fixed Effect approach is the best fit, the Lagrange Multiplier test is skipped. Based on the Chow test and Hausman test results, the Lagrange Multiplier Test is not employed in research because the results of the Chow test and Hausman test show that the most appropriate model is the Fixed Effect Model. To evaluate the hypotheses, the multiple linear regression test was used. The model for this study can be formulated as follows:

LDR= a + bCAR +bNPL+ bNWC + e

LDR : Loan to Deposit Ratio
CAR : Capital Adequacy Ratio
NPL : Non-Performing Loan
NWC : Net Working Capital
E : error

RESULTS AND DISCUSSION

Descriptive Statistics

Table 1. Descriptive Statistics

	LDR	CAR	NPL	NWC
Mean	0.833400	0.214333	0.027183	-613413866250000
Median	0.849500	0.210000	0.027500	-688147313000000
Maximum	0.979000	0.270000	0.043000	36478742000000
Minimum	0.605000	0.160000	0.013000	-1092737145000000
Std. Dev.	0.097069	0.029879	0.007007	356251872817322
Observations	60	60	60	60

Source: Processed data (2023)

Table 1 shows that the average value of LDR amounts to 83.3% annually. The average CAR is known to be 21.43% annually. Capital adequacy that is still well maintained shows how the company's ability to survive when experiencing losses is still quite good where the bank is still able to cover the possibility of failure in financing. In that case, the average NPL is 2.7% per year. The relatively high NPL shows that the company must be more careful in extending its credit. The higher the percentage of NPL, the greater the possibility that the bank will experience difficulties in channeling credit again and can also reduce the profit earned by the bank. Therefore, the average value of the NWC is -613 trillion. This shows that the current liabilities provided by the bank are far greater than the current assets owned. The continuity of the bank's business can be disrupted if things like this continue to be allowed.

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Model Testing

Table 2. Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	36.721271	(3,53)	0.0000
Cross-section Chi-square	67.467766	3	0.0000

Source: Processed data (2023)

Table 2 indicates the result of the Cross-section Chi-square value of 0.0000 < 0.05, thus Ha was accepted, meaning that the appropriate model was the fixed effect model.

Table 3. Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	110.163812	3	0.0000

Source: Processed data (2023)

Table 3 indicates the value of probability for the random cross-section 0000 <.05 so that H_0 is rejected, and the appropriate model is the Fixed Effect Model.

Normality Test

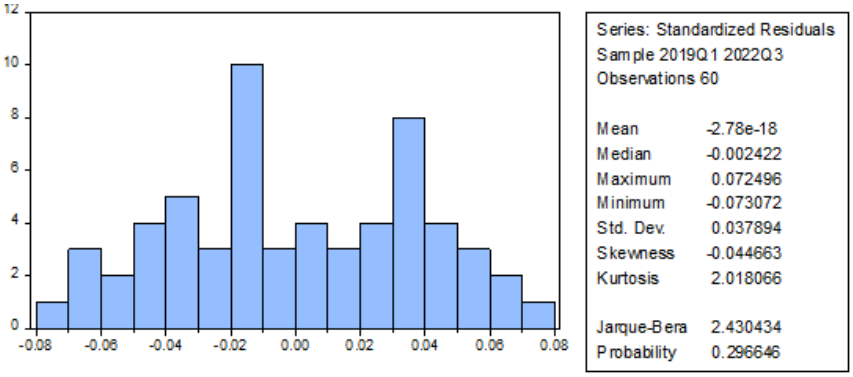

Figure 2. Jarque-Bera Normality Test
Source: Processed data (2023)

Figure 2 shows that the *Jarque-Bera's* coefficient was 2.430434 with a significance value of 0.296646. As the significance value (0.296646) > 0.05, the data were normally distributed.

Multicollinearity Test

Table 4. Multicollinearity Test Based on VIF

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.006231	233.8971	NA
X1_CAR	0.120525	208.8312	1.007329
X2_NPL	1.066698	30.62532	1.039404
X3_NWC	1.08E-33	16.26064	1.031967

Source: Processed data (2023)

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Table 4 reveals that the VIF value was less than 10, implying that the data are free of multicollinearity issues and can be used or applied to carry out the next step.

Heteroscedasticity Test

Table 5. Heteroscedasticity Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.007882	0.034219	-0.230328	0.8187
X1_CAR	0.239819	0.150494	1.593553	0.1170
X2_NPL	0.222209	0.447713	0.496320	0.6217
X3_NWC	2.83E-17	1.42E-17	1.985184	0.0523

Sources: Processed data (2023)

Table 5 shows that the significance values of each independent variable were 0.1170, 0.6217, and 0.0523 respectively. Because the significance value was larger than 0.05, it can be concluded that there was no heteroscedasticity detected in the regression model.

Autocorrelation Test

Table 6. Durbin Watson Autocorrelation Test

R-squared	0.847604	Mean dependent var	0.833400
Adjusted R-squared	0.830351	S.D. dependent var	0.097069
S.E. of regression	0.039981	Akaike info criterion	-3.491531
Sum squared resid	0.084721	Schwarz criterion	-3.247190
Log likelihood	111.7459	Hannan-Quinn criter.	-3.395956
F-statistic	49.12952	Durbin-Watson stat	0.690876
Prob(F-statistic)	0.000000		

Source: Processed data (2023)

Table 6 shows that the Durbin Watson (DW) stat coefficient was 0.690876. Because the DW coefficient (0.690876) ranges between -2 and +2, it can be concluded that there was no autocorrelation detected in the regression model.

Hypothesis Testing

Table 7. F-test

R-squared	0.847604	Mean dependent var	0.833400
Adjusted R-squared	0.830351	S.D. dependent var	0.097069
S.E. of regression	0.039981	Akaike info criterion	-3.491531
Sum squared resid	0.084721	Schwarz criterion	-3.247190
Log likelihood	111.7459	Hannan-Quinn criter.	-3.395956
F-statistic	49.12952	Durbin-Watson stat	0.690876
Prob(F-statistic)	0.000000		

Source: Processed data (2023)

Table 7 shows that the probability value (F-statistic) is .0000 <.05. It can be emphasized that CAR, NPL, and NWC have a significant effect on LDR simultaneously.

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Table 8. T-test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.153152	0.078939	14.60808	0.0000
CAR	-0.353156	0.347167	-1.017249	0.3137
NPL	-5.580259	1.032811	-5.402982	0.0000
NWC	0.000000000000000151	3.28E-17	4.585780	0.0000

Source: Processed data (2023)

Derived from Table 8, the following results were obtained: (1) CAR had a t-statistic value of -1.017249 < t-table of 1.673 and a significance value of 0.3137 > 0.10. Thus, Ho was accepted meaning that CAR partially had no positive effect on LDR; (2) NPL had a t-statistic value of -5.402982 < - t-table of -1.673 and a significance value of 0.0000 < 0.10. Thus, Ha was accepted, meaning that NPL partially had a negative effect on LDR; (3) NWC had a t-statistic value of 4.585780 > t-table of 1.673 and a significance value of 0.0000 < 0.05. Thus, Ha was accepted, meaning that NWC partially had a positive effect on LDR.

The research model is formulated as:

LDR= 1.153152 -0.353156 CAR - 5.580259 NPL + 0.000000000000000151 NWC

The findings indicate that NPL or risk has a negative relationship with LDR, whereas NWC has a positive relationship with LDR. CAR is proven to have not a significant negative effect on LDR. The fluctuations of CAR of the banks did not affect its liquidity. The results of this study are in line with research conducted by Akbar (2023); Hasibuan et al. (2021); Ikhwana et al. (2020). Furthermore, for the NPL variable, NPL had a significant negative effect on bank liquidity of KBMI 4 banks. The results of this study are in line with research conducted by Agustuty et al. (2020); Sarnawiah (2019); and El-Chaarani (2019). This finding shows that by increasing the existing NPL level, bank liquidity would decrease or be disrupted. Even though the KBMI 4 bank currently has a safe NPL value, it is still necessary to pay special attention to this variable because this variable can increase dramatically following the COVID-19 pandemic and in case of a global recession. As for the NWC variable, this variable had a significantly positive effect on liquidity. This means that the greater the net working capital owned by the KBMI 4 banks, the greater its liquidity. This result supports the research conducted by Budiyati & Kusumawardhani (2022). Therefore, banks need to pay attention to their current assets and current liabilities to increase NWC, which in turn can enhance their liquidity as well.

Coefficient of Determination Test

Table 9. Coefficient of Determination

R-squared	0.847604	Mean dependent var	0.833400
Adjusted R-squared	0.830351	S.D. dependent var	0.097069
S.E. of regression	0.039981	Akaike info criterion	-3.491531
Sum squared resid	0.084721	Schwarz criterion	-3.247190
Log likelihood	111.7459	Hannan-Quinn criter.	-3.395956
F-statistic	49.12952	Durbin-Watson stat	0.690876
Prob(F-statistic)	0.000000		

Source: Processed data (2023)

Table 9 shows that the Adjusted R^2 coefficient was 0.830351. This showed that the contribution of CAR, NPL, and NWC to Liquidity was 83 % while the remaining 17 % was the contribution by other variables not examined in this study.

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CONCLUSION

From the results of this study and the discussion in the previous section, the authors can draw the following conclusions: There is no positive effect of CAR on LDR; There is a negative effect of NPL on LDR; and There is a positive effect of NWC on LDR. This study found that factors affecting the liquidity of KBMI 4 banks listed on the IDX during 2019-2022 are NPL and NWC. Meanwhile, CAR has no effect because during the COVID-19 pandemic, one of the bank's functions, namely providing credit, did not function according to its function. Many bank loans are stuck and eroding CKPN so banks temporarily stop disbursing credit. Because of this, additional capital during a crisis like this does not affect liquidity. The findings of this study suggest that banks should control their current assets and current liabilities to increase NWC and credit distribution. The limitation of this study is the number of samples that are used to estimate the model. Future studies could include other KBMIs, and it would be interesting to implement a comparative analysis between the KBMIs.

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Submitted: May 18, 2023; Revised: December 04, 2023;
Accepted: December 06, 2023; Published: December 28, 2023;
Website: http://journalfeb.unla.ac.id/index.php/almana/article/view/2215