THE EFFECT OF NON-PERFORMING LOANS ON BANK LIQUIDITY DURING THE COVID-19 PANDEMIC

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ABSTRACT

This study aims to determine the impact of the Covid-19 pandemic on banking liquidity in Indonesia. This study used data samples from 25 banks in Indonesia listed on the stock exchange from 2016 Q1 – 2021 Q4. Data collection for 6 years was chosen to determine banking trends before and during the pandemic. The research method used was regression panel data using the independent variable non-performing loan ratio and the dependent variable loan-to-deposit ratio to measure bank liquidity. The period before the COVID-19 pandemic (2016 Q1 - 2020 Q1) and after the COVID-19 pandemic (2020 Q2 - 2021 Q4) used dummy variables. The result was that the ratio of non-performing loans affected bank liquidity during the COVID-19 pandemic. This is due to the disruption of bank cash inflow because many debtors have difficulty fulfilling obligations to the bank.

Keywords: *Banking Liquidity; Credit Risk; Non-Performing Loans.*

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INTRODUCTION

The first COVID-19 case was detected on March 2, 2020, in Indonesia (Basri, 2020). Data from the Central Statistics Agency (Badan Pusat Statistik, 2020) shows Indonesia's economic growth was minus 5.32% in the second quarter of 2020 (yoy). The existence of Large-Scale Social Restrictions and the Implementation of Restrictions on Community Activities has caused people, both individuals and companies in Indonesia, to experience a decrease in income. As a result, credit risk or Loan at Risk (LaR) in the banking sector has increased significantly. In the second quarter of 2020, LAR soared to 20.66% and continued to increase until the second quarter of 2021 which reached 22.67%. The International Monetary Fund (IMF) stated that the decline in banking performance and the increasing risk of bad loans must be considered by the government because it will impact economic growth and a country's monetary crisis (International Monetary Fund and World Bank, 2020). Neglected risky credit can affect the level of credit collectability and affect the health of the bank.

The condition of the bank when experiencing credit problems such as constrained credit distribution and the inability of creditors to pay principal and interest loans at the right period can be classified as *Non-Performing Loans* (NPL). The higher the NPL value of a bank, the performance and management of the bank's business can be considered poor. Meanwhile, low NPLs indicate good bank conditions (Dwihandayani, 2017). According to Bank Indonesia Regulation No. 15/2/PBI/2013, non-performing loans are loans classified into substandard collectibility (KL), doubtful (D), and bad (M) and the ratio of non-performing loans must be less than 5% (Bank Indonesia Regulation No. 06/10/2004). Based on data published by OJK, bank NPLs reached IDR 176.48 trillion in April 2021.

During the pandemic, banks face liquidity risks because people find it difficult to fulfill their obligations, resulting in bad loans. On the one hand, banks still have to fulfill their obligations to depositors who have entrusted their funds to be collected by the bank (Barua & Barua, 2021). This condition can be seen from the risk profile of financial service institutions that have NPL Gross Banking credit risk of up to 3.11% as of July 15, 2020. A similar event was also seen in the increased liquidity risk to 122.6% as of July 15, 2020 (Fdic, 2022). Therefore, the pandemic situation causes bad loans and affects bank liquidity.

Acharya and Mora (2013) stated that banks that failed during the financial crisis have mostly experienced problems with liquidity. Most banks fail because they attract customers by providing high-interest deposits. This relates to Calomiris' (2015) statement that banks must have sufficient liquid assets to face liquidity risk. Therefore, banks that diversify income perform better.

Saleh and Afifa (2020) stated that the company's liquidity can be examined by the Loan to Deposit Ratio (LDR). The LDR ratio measures how much money comes in from different sources divided by the total volume of credit that banks disburse. The loan-to-fund ratio (LDR ratio) indicates the maximum amount of the loan that can be funded with interest-insensitive loan funds. Banks are more aggressive and active lenders if their LDR ratio is higher (Andrianto, 2019). A low LDR ratio indicates good liquidity quality. Meanwhile, this indicates that many funds are idle and have not been distributed in the form of credit to the community. Conversely, when the LDR ratio is high, it means optimal fund distribution but bank liquidity is not good. According to data published by OJK in April 2020, the LDR of Indonesian banks reached 92.18%. The LDR of Indonesian banks decreased in April 2021 by the LDR of Indonesian banks to 80.83%.

Liquidity has several concepts depending on conditions but is interrelated. Liquidity reflects how easily a financial instrument can be exchanged for money without losing value (Nikolaou, 2009). Liquidity in the banking world is the ability of banks to fulfill their obligations (Banque de France, 2008). Stated differently, the new bank maintains the liquidity of its assets to enable it to fulfill its short-term commitments at any moment.

Olagunju et al. (2011) stated that bank liquidity management has two interrelated elements. A bank's capacity to fulfill maturing commitments by selling assets is not a concern if it is highly liquid and can sell its assets quickly for a defined price. Furthermore, banks miss out on the chance to make money from interest on debtor loans. On the other hand, if the bank prioritizes profits by lending the funds raised, then the bank does not have enough funds to meet its short-term obligations. This is because the funds that debtors want to withdraw are still being distributed to creditors. Banks can lose customer trust and receive central bank penalties (Goodhart, 2008).

According to Seto and Septianti (2021), during the pandemic, there was no significant difference in bank liquidity performance. The statement is based on the results of the Wilcoxon test which has a significance value of 0.191 > 0.05. The study used banking data from 2017 to semester 1 of 2020. Meanwhile, various government policies, both fiscal and monetary, have just been implemented after the research period. The Financial Services Authority together with the Financial System Stability Committee (KSSK) provides various policy synergies as they see the NPL condition of Indonesian Banking in June 2020 increasing to 3.11% (Financial Services Authority, 2020). These efforts resulted in results stated by the Minister of Finance that in the third quarter of 2020 there was a significant economic improvement and government consumption experienced a turning point exceeding 17%.

This study aims to determine the impact of the Covid-19 pandemic on banking liquidity in Indonesia. This study used data samples from 25 banks in Indonesia listed on the stock exchange from 2016 to 2021. Data collection for 6 years was chosen to determine banking trends before and during the pandemic. This study used data before and after various government policies were implemented to see more significant results.

LITERATURE REVIEW

Credit Risk

Credit risk or credit risk is the risk of loss caused by the failure of the counterparty or debtor to make payments according to the agreement. Credit analysis is the assessment of the credit risk associated with specific obligor transactions or the overall eligibility of the obligor. The eligibility of the obligor to get a loan or not is assessed by credit scoring or credit scoring (Elaine & Thomas, 2015).

The Non-Performing Loan Ratio or non-performing loan ratio shows balances in arrears or unpaid for more than 90 days and balances that are still running but have a high risk of default. Bank Indonesia classifies collectibility status 3 to 5 as non-performing loans which include NPLs. The NPL ratio depends on changes in non-performing loans to total loans from time to time. The non-performing loan ratio reflects bad credit financing so the higher the NPL ratio, banks must be prepared to face risks from poor credit quality (Andrianto, 2019). The Non-Performing Loan Ratio can be calculated using the following formula:

NPL = total loans / (total deposits + equity) x 100%

Liquidity Risk

Risk relates to the probability of having a realization of a random variable different from the realization preferred by the economic agent. In our economic context agents would have a preference over liquidity. Liquidity risk greatly affects banks (Arif & Anees, 2012). Due to customers' excessive withdrawals from banks, there is a high liquidity risk in the banking sector. This has a negative impact on banking performance since it keeps away potential customers and manageable buyers. As a result, the bank's utility plummets, and its advantages are significantly reduced (Ejoh et al., 2014). In other words, liquidity risk results from unanticipated outflows of cash and the lack of enough liquidity to satisfy a bank's short-term obligations (Diamond & Rajan, 2005). Excessive and insufficient cash flow plays a significant role in a financial organization's liquidity risk, respectively.

As banks attempt to reduce their liquidity risk by raising their cash balance by issuing long-term obligations, liquidity is a result of the discord between long-term assets and short-term liabilities (Matz & Neu, 2007). When Bourke (1989) examined the fundamental causes of bank profitability and found that banks with higher levels of liquidity generate higher profits. According to Kosmidou (2008), banks with high levels of liquidity typically have high profitability. Rahman et al. (2015) observed a sample of 25 Bangladesh banks from 2003 to 2006 in addition. The results demonstrated a positive association between bank performance and liquidity risk, suggesting that banks require higher levels of liquidity to function more effectively. Islam and Nishiyama's (2016) research indicates that liquidity has a positive impact on profitability, although it does not considerably increase it.

Based on Bank Indonesia Regulation No. 6/10/PBI/2004 (Governor of Bank Indonesia, 2004) concerning the Soundness Rating System for Commercial Banks, the assessment of liquidity factors includes the following components:

1. Liquid asset/liquid liability ratios, potential maturity mismatch, Loan to Deposit Ratio (LDR) conditions, cash flow projections, and funding concentrations;
2. Policy adequacy and liquidity management (assets and liabilities management/ALMA), access to funding sources, and funding stability.

Loan to Deposit Ratio is the ratio used to calculate the difference between the amount of credit given and the amount of money raised and owned capital is called a ratio. The LDR ratio shows how much a loan can be financed from borrowed funds that are not sensitive to interest. The higher the LDR ratio, the more aggressive and active the bank is in extending credit (Andrianto, 2019). Loan to Deposit Ratio can be calculated using the following formula:

Loan to Deposit Ratio = Credit / Third Party Funds

METHOD

This study used data samples from 25 banks in Indonesia listed on the stock exchange from 2016 to 2021. Data collection for 6 years was chosen to determine banking trends before and during the pandemic. This research method uses panel data regression, which is a regression technique by combines time-series data and cross-section data. The coefficient of determination is used to indicate the extent to which the contribution of the independent variable in the regression model can explain the variation of the dependent variable. Hypothesis testing is performed using the t-test and the f-test. The equation of multiple linear regression analysis in this study is as follows:

$$yit= a + b2t\ X1t + b2t\ X2t + b3t\ X3t + b4t\ X4t + b4t\ X4t + e$$

RESULTS AND DISCUSSION

Panel Data Regression

Common Effect Model

According to Baltagi (2021), a model without individual influence (*common effect)* is an estimator that combines (*pooled*) all-*time series* and *cross-section* data and uses the OLS (*Ordinary Least Square*) approach to guess the parameters. The results of regression analysis with the common effect method are as follows:

Table 1
Common Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	430.9040	105.9327	4.067716	0.0001
NPL	-11.31671	3.802440	-2.976171	0.0030

Source: Data Analyzed, 2023

From the results of the regression estimation obtained, it can be explained that the meaning of the regression coefficient β0 = 430.9040 shows the constant value of Liquidity, meaning that if the Credit Risk (NPL) is equal to zero, the value of Bank Liquidity (LDR) in Indonesia is 430.9040. The value of the constant β1 = -11.31671 indicates that the NPL variable negatively affects liquidity (LDR), meaning that if the NPL variable increases by 1%, then the Liquidity (LDR) will decrease by -11.31671%, assuming the other independent variables are constant.

Fixed Effect Model

The fixed effect *model technique* is a technique of estimating panel data assuming that the slope and intercept coefficients are the same over time (Mummolo & Peterson, 2018). Based on the results of data processing, the following estimation results are obtained:

Table 2
Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1381.546	262.1490	-5.270078	0.0000
NPL	53.87250	9.427555	5.714367	0.0000

Source: Data Analyzed, 2023

From the results of the regression estimation obtained, it can be explained the meaning of the regression coefficient β0 = -1381.546 shows a constant value if the NPL is equal to zero, then the Liquidity value (LDR) is -1381,546. The value of the constant β1 = 53.87250 indicates that the NPL variable negatively affects Liquidity (LDR), meaning that if the variable NPL value increases by 1%, then Liquidity (LDR) will increase by 53.87250%.

Random Effect Model

The random effect model technique is a technique of estimating panel data with the assumption that the slope and intercept coefficients are the same between times (Bell & Jones, 2015). Based on the results of data processing, the following estimation results are obtained:

Table 3
Random Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-828.4750	206.8387	-4.005416	0.0001
NPL	33.97995	7.377673	4.605782	0.0000

Source: Data Analyzed, 2023

From the results of the regression estimation obtained, it can be explained the meaning of the regression coefficient β0 = -828.4750 shows a constant value if the NPL is equal to zero, then the value of Bank Liquidity (LDR) in Indonesia is -828.4750. The value of the constant β1 = 33.97995 indicates that the NPL variable has a negative effect on Liquidity (LDR), meaning that if the NPL variable increases by 1%, the Liquidity (LDR) will increase by 33.97995%.

Determination of Estimation Models

Chow Test

This test is used to choose between *a Common Effect* model or a *Fixed Effect Model* (FEM) in processing panel data (Bell & Jones, 2015). The following are displayed the results of the *Chow* test using the *Likelihood Ratio test* :

Table 4
Chow Test

Fixed Effect Test	Prob.
Cross-section F	0.0000
Cross-section Chi-square	0.0000

Source: Data Analyzed, 2023

Table 4 shows that the *p-value* (Prob) of *Cross-section* F, *Cross-section Chi-square*, *Cross-Section*/Period F, and *Cross-Section*/Period *Chi-square* is 0.000 (smaller than 0.05). This means that based on the F-Statistical Test (*Chow Test*), the FEM Method method is more appropriate to use than *the Common* Effect-OLS.

Hausman Test

The *Hausman* test is used to select models between *Random Effect* (H0) and *Fixed Effect* (H1). The results of the *Hausman* test are as follows:

Table 5
Hausman Test

Random Effect Test	Prob.
Cross-section random	0.0001
Period random	0.7924
Cross-section and period random	0.0007

Source: Data Analyzed, 2023

The output obtained shows the p-value of *Cross-section random* and *Cross-section and period random* (0.0001) and (0.0007) smaller than the probability of α (0.05) then the null hypothesis is rejected. So the model used is a *Fixed Effect*. Based on the results of testing panel data consisting of the Hausman test, it can be concluded that the selection of the right model for the regression model to Liquidity (LDR) is to use a *Fixed Effect*.

1. **F-Test**
   The F test is used to see the significance of the simultaneous influence of the independent variable on the dependent variable (Lix et al., 1996). From the calculation results obtained sig. F-calculate *Fixed Effect* of 0.000 ~ 0.05 then Ho is rejected, which means that the independent variable namely NPL has a significant effect on Liquidity (LDR).
2. **T-Test**
   From the calculation results obtained Sig. t calculate = 0.0030 smaller than 0.05 then Ho is rejected, and Ha is accepted, which means there is an influence between NPL on Liquidity (LDR).

The Effect of Non-Performing Loans on Bank Liquidity

The effect of non-performing loans on bank liquidity has a significant effect. Credit here is indicated by *Non-Performing Loan* and banking liquidity is *Loan to Deposit Ratio. This* shows that during the pandemic, there is an increasing trend in the ratio of non-performing loans which can affect bank liquidity. The increase in the ratio of non-performing loans can be caused by weakening economic activity during the pandemic due to Large-Scale Social Restrictions and the Implementation of Restrictions on Community Activities in Indonesia. Therefore, the government issued a credit restructuring policy for customers and affected financing written in the Financial Services Authority Regulation (POJK) No. 11/POJK.03/2020. This policy aims to provide credit relaxation to debtors affected by the pandemic with various schemes, including extending the credit period, applying grace periods, reducing interest rates, reducing principal arrears (cut loss), reducing interest arrears, adding credit facilities and converting companies into shares (Nopiyani et al., 2021). The implementation of the policy causes banks to face liquidity risks.

The amount of principal and interest that is paid to the bank decreases as the number of problematic loans increases. This will impede the bank's receivables turnover. The excess reserve of bank funds (excess reserve) does not rise in proportion to the quantity of money received from delayed debtors. While banks still must pay depositors' interest on deposits. Banks also find it difficult to benefit from *spread-based income* due to the lack of funds to be allocated as credit to the public. This condition causes banks to face liquidity risks, thereby reducing bank profitability. Dermine (1986)states that liquidity risk is considered a *profit-lowering cost*. Similarly, (Goodell, 2020) stated that

the financial services sector, including banks and other financial institutions, was severely affected by COVID-19 due to increased bad loans due to deteriorating revenues and increased deposit withdrawals.

The negative impact that can be raised by policies to reduce NPL ratios through credit restructuring is also revealed by Fasa et al. (2021) as a "*Black Hole*" in banks in Indonesia. Fasa et al. (2021)explained that credit restructuring will reduce cash inflows to banks, which will have an impact on decreasing profits and liquidity bottlenecks. The existence of a restructuring policy is considered not to change the condition of bank liquidity shortages because as long as the debtor is unable to pay installments, the bank's *cash inflow* will be disrupted. Banks can provide interbank loans to each other to address this issue under normal circumstances. However, the economic catastrophe brought on by the epidemic has not only impacted one bank but all banks. Furthermore, banks need a lot of capital and stable liquidity to withstand this loan restructuring phase. It will be extremely difficult for small banks, therefore these institutions cannot make efforts to restructure loans for an extended period, according to Fasa et al. (2021). However, for some large banks, this may not be problematic because the capital is large and liquidity is always maintained. There will be a disruption in the national financial system if these institutions face difficulties.

A few banks decide to minimize lending during the epidemic to act quietly. This is evident from the often low ratio of NPl to LDR. Certain banks, on the other hand, have a tendency to channel credit to the public more actively. In banks that have unwise management, NPL and LDR ratios increase and show declining performance.

CONCLUSION AND SUGGESTION

Based on the analysis and discussion that has been carried out, it can be concluded that the ratio of non-performing loans has a significant effect on bank liquidity in Indonesia during the COVID-19 pandemic.

This study only uses the Loan to Deposit Ratio as a variable that affects Indonesian banking liquidity. Further studies may examine additional factors, such as state-owned or privately owned bank company structures, that may impact banking liquidity.

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