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FACTORS AFFECTING THE LIQUIDITY RISK OF COMMERCIAL BANKS LISTED ON THE INDONESIAN STOCK EXCHANGE

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ABSTRACT

Introduction*: This study aims to identify variables that affect the liquidity risk of the banking sector in Indonesia.*
Methods: *This research method was conducted by collecting data from 41 banking companies over five years (2019-2023), and applying data processing analysis using panel data regression analysis techniques.*
Results: *The results of this study found that CAR, NPL, and SIZE harm liquidity risk (LA), while NPL, SIZE, OIR, and DAR harm liquidity risk (LD).*
Keywords. Liquidity risk, capital adequacy, asset quality, bank size, efficiency, and deposit.

INTRODUCTION

The banking sector is an important part of every country's economy. The banking sector is an important pillar of the financial sector. Banks play an important role in the mobility of deposits as well as credit seeking by various sectors. The strength of the economy depends on the strength and potential of the economic system, which in turn depends on a healthy banking system (Gupta & Dongre, 2024). The bank becomes an institution that collects funds obtained from the public in the form of deposits and will be channelled back to the public in the form of credit.

Banks get funds in various forms of deposits, loan repayments, short-term loans from the money market, and the central bank (Ahamed, 2021). Commercial banks have an important role in economic development by allocating funds for commercial and industrial purposes while maintaining communication with depositors (Nizami oğlu İslamzadə, 2022).

Based on Bank Indonesia Governor Perry Warjiyo's statement in the press conference of the Board of Governors Meeting held on July 17, 2024 in Jakarta, in the second quarter of 2024 there was a gap between credit growth which reached 12.36% (yoy) and Third Party Fund (DPK) growth which only amounted to 8.45% (yoy). The growth gap creates liquidity pressures in the banking sector, which has the potential to increase liquidity risk. Banks need to plan their net liquidity position so that they can minimize the occurrence of liquidity risk, which can maintain customer confidence in the bank. Banks that have a lot of liquidity can face conditions when customers make urgent deposit withdrawals. On the other hand, having less liquidity can lead to liquidity risk (Ahamed, 2021).

Liquidity Risk in the banking world has a very important role in the sustainability of a bank. Liquidity Risk indicates that the bank cannot fulfill its short-term financial obligations (Sifrain, 2025). Liquidity Risk is a major threat to the stability of the entire banking sector. Banks identify the causes of liquidity risk as very important for the continuity of banking stability (Alsharif, 2024). Liquidity risk focuses on the liquid assets to total assets ratio, which can assess liquidity risk through cash flow analysis, and also liquidity risk has a relationship with the liquid assets to deposit ratio through the proportion of bank loans to deposits (Antony, 2023). The Liquid Assets to Total Assets Ratio (LA) evaluates the proportion of highly liquid bank assets to provide insight into the bank's capacity to meet short-term obligations without triggering a liquidity crisis (Antony, 2023). A higher LA indicates stronger liquidity to effectively manage unexpected financial obligations (Kasana, Chauhan, Sahoo, 2022). The Liquid Assets to Deposit Ratio (LD) has a very important role in seeing the financial health of banks to analyze the liquidity risk that will be faced in the banking sector. The Liquid Assets to Deposit Ratio has an important role in the stability of commercial bank performance (Diriba, 2022).

CAR functions as an instrument to measure the bank's ability to cover its liabilities and bear the risk of loss, so it is relevant to observe how capital strength can affect the bank's liquidity in deposit management. Better CAR allows these banks to be better prepared to deal with financial instability and maintain bank operations more effectively (Bhowmik, Hossain, Sarker, 2024). When banks have higher CAR levels, they tend to retain a higher proportion of LAs, which increases their resilience to market fluctuations (Fernandez, 2024). Fatima & Naseem (2021) found that there is a negative and significant effect of CAR on LD in commercial banks. Non-performing loans (NPL) include all bank loans that are not paid within 90 days of maturity (Žunić, Kozarić, Dzelihodzić, 2021). NPL has a negative influence on LA in the banking sector. Banks will be more careful in providing new loans to customers, which has an effect on reducing financial ratios (Odebode, Ishioro, Ezi, 2024). High NPL in a high banking sector can have a negative effect on LD. Banks that have a high NPL ratio have difficulty in providing new loans which will result in a decrease in LD (Kütük & Yılmaz, 2024). There is a negative effect of NPL on LD, this reflects that an increase in NPL will result in a decrease in LD which makes companies in the banking sector experience liquidity risk (Tasnova, 2022).

Return on Assets (ROA) can be calculated as the ratio of net income to Total Assets. A higher ROA indicates stronger performance and more effective asset utilization in generating profits (Sifrain, 2025). Adequate liquidity monitoring will contribute to the financial stability of the bank which will strengthen the confidence of shareholders and enhance the reputation of the bank itself. ROA and LD have a positive influence where an increase in profitability will trigger effective management of liquid assets (Fernandez, 2024). Ben-Ahmed, Kasraoui, Soulama (2023) increased profitability has a negative impact on liqudity risk. Increased profitability allows banks to meet short-term obligations which can reduce liquidity risk. Bank Size (SIZE) indicates the scale and scope of a bank's operations and is measured by total assets including loans, investments, and other holdings (Sifrain, 2025). Banks with high total assets will be better able to maintain liquidity, cope with market fluctuations, and meet the needs of

urgent deposit withdrawals (Pant, 2023). Antony (2023) bank size has a positive and significant effect on liquidity risk, measured by the ratio of loans to deposits, in commercial banks.Naoaj (2023) bank size has a negative effect on liquidity risk, which suggests that larger banks tend to maintain a higher liquid assets position and consequently, face lower liqidity risk.

Efficiency (OIR) is something that must be considered by banking companies, companies that have high operating costs tend to have difficulty maintaining liquidity because more resources are expended. Cost efficiency plays a key role in supporting bank liquidity risk. When banks bear significant fixed costs, which can cause the company's ability to hold sufficient liquid assets to meet sudden obligations (Bhowmik et al., 2024). Nourrein, Mennawi, (2020) Efficiency has a positive influence on LA. Banks that do efficiency well, have a good ability to maintain the availability of liquid assets, which can meet the bank's short-term obligations. Pasha, (2024) Efficiency has a positive influence on LD, where banks that are able to operate efficiently will be able to optimize liquidity, thereby reducing liqudity risk associated with short-term liabilities and increasing the bank's ability to meet liquidity demand. Deposit (DAR) is one of the main sources in the bank to obtain funding, Deposit is an indicator to maintain sufficient liquidity. Deposits are the main indicator that shows the extent to which banks can meet short-term obligations by utilizing liquid assets owned by banks (Kurdi & Naji, 2024). Effective deposit management can maintain bank liquidity. Banks maintain a high level of deposits, then the bank has the flexibility to allocate assets to liquid and safe investments (Pant, 2023). Abbas, Jawad, Abdulhassan, (2023) showed that increasing the number of deposits can have a positive effect on reducing liquidity risk. When banks have a strong deposit base, banks are able to rely on more stable sources of funds to cover bank liabilities. Abbas et al. (2023) also suggested that an increase in deposit volume correlates with an increase in the bank's liquidity potential, which reduces the likelihood of liquidity risk.

Net Interest Margin (NIM) has a strong influence on LA. Banks that can increase their income through interest can invest more in liquid assets, making the bank's ability to deal with sudden withdrawals from customers. Without a good policy by banks in managing NIM, banks can pose a threat to liquidity (Fernandez, 2024). NIM has a positive effect on LD, banks note that an increase in NIM can generally make banks experience an increase in liquid assets to fulfill their obligations (Suharyanto, 2024). Kasana et al., (2022) showed that NIM has a negative relationship with liquidity risk, which can cause problems in dealing with sudden changes in financial markets.

LITERATURE REVIEW

Liquidity Risk

Liquidity Risk in banks is a risk associated with the bank being unable to meet its financial obligations as they fall due without affecting the bank's operational activities and financial condition. This often happens when the bank does not have enough cash or high liquid assets to fulfill requests from customers to pay short-term obligations (Sifrain, 2025).

Liquid Assets to Total Assets Ratio is used to measure how proportionally liquid assets owned by a bank are compared to total assets. Liquid assets consist of cash, securities, and financial instruments that can be quickly converted into cash without major losses. This ratio indicates a better ability to deal with deposit withdrawal requests from customers, thus reducing liquidity risk (Vojtková & Mihalech, 2023). Liquid Assets to Total Deposit Ratio measures the bank's ability to fulfill customer deposit obligations. This ratio calculates the amount of liquid assets available compared to the total assets received (Addou & Bensghir, 2021).

Capital Adequacy

Capital Adequacy (CAR) is an important indicator to be used to measure how good the condition of a bank is in maintaining capital adequacy to face the risks arising from operational activities. CAR measures the bank's

ability to meet obligations and can utilize the potential of losses that can make financial strength and stability (Mushafa & Mumtaz, 2022).

Asset Quality

Assets quality is a crucial indicator because it reflects the health and financial stability of banks as measured by NPL. NPL or non-performing loans indicate the existence of loans that are defaulted on by the debtor in accordance with the previously agreed terms.(Sazzad, Patwary, Tasneem 2019).

Profitabilty

Profitability is the ability of a bank to generate profits which can be influenced by various factors, in this case profitability is measured by ROA which reflects how effective a bank is in generating profits. ROA is used to see the ability of banks to manage their assets effectively to make a profit (Simanullang, Rasinta, Simorangkir, 2021.)

Bank Size

Bank Size recognizes the size of a bank's operations and is often measured by the total assets of a bank which includes loans, investments, and other holdings. Bank Size reflects the overall value of a bank's resources and serves to measure the scale of its operations (Haddad, 2024).

Efficiency

Efeciency (OIR) is the bank's ability to maximize operating income by minimizing the costs of these activities, the efficiency of the banking sector has a significant effect on economic growth and financial stability. This highlights the importance of efficiency measurement for financial institutions to ensure continuity of operations (Czechowska & Florczak, 2022).

Deposit

Deposit is a financial ratio used to measure the proportion of banking assets financed by depositors' deposits. DAR illustrates the level of bank dependence on deposits as the main source of funding in operations. DAR is an important ratio in seeing the bank's resilience to economic changes (Sifrain, 2025).

Net Interest Margin

Net Interest Margin (NIM) is a key indicator of bank profitability that measures the difference between interest income from the acquisition of assets, such as loans, and interest payable on liabilities such as deposits. NIM reflects the bank's effectiveness in managing its interest income compared to its interest expenses (Sifrain, 2025).

The effect of capital adequacy ratio on liquidity risk

According to research conducted by Sifrain, (2025) found that CAR has a significant positive effect on LA. which is where compliance with CAR regulations does not always have a negative impact on liquidity. In contrast, research conducted by Huong & Yen (2024) found that CAR has a significant negative effect on LA. According to research conducted by Sifrain (2025) found that CAR has a significant positive effect on LD, where compliance with CAR regulations does not always have a negative impact on liquidity. Conversely, research conducted by Gharaibeh (2023) found that CAR has a significant negative effect on LD Based on these reviews, the formulation of the first hypothesis in this study, namely:

H_1: There is an effect of capital adequacy on liquidity risk

The effect of assets quality on liquidity risk.

According to research conducted by Sifrain (2025) found that NPL has a significant positive effect on LA. Conversely, research conducted by Karki & Aryal (2019) found that NPL has a significant negative effect on LA. According to research conducted by Sifrain (2025) it was found that NPL has a significant positive effect on LD.

Conversely, research conducted by Islam & Yasmin (2021) found that NPL has a significant negative effect on LD. Based on these reviews, the formulation of the second hypothesis in this study, namely:

H_2 *:* There is an effect of asset quality on liquidity risk

The effect of profitability on liquidity risk.

Antony (2023) found ROA has a significant positive effect on LA. Conversely, research conducted by Dao & Nguyen (2020) found ROA has a significant negative effect on LA. Research conducted by AlAli (2020) found ROA has a significant positive effect on LD. on the other hand, research conducted by Antony (2023) found ROA has a significant negative effect on LD. Based on these reviews, the third hypothesis formulation in this study is:

H_3 : There is an effect profitability on liquidity risk

The effect of bank size on liquidity risk.

According to research conducted by Shaibu & Okafor (2020) found that SIZE has a significant positive effect on LA. On the other hand, research conducted by Antony (2023) found that SIZE has a significant negative effect on LA. Research conducted by Antony (2023) found that SIZE has a significant positive effect on LD. In contrast, research conducted by Karki (2021) SIZE has a negative effect on LD which indicates that larger banks have a percentage that cannot maintain liquidity when associated with bank deposits. Based on these reviews, the fourth hypothesis formulation in this study is:

H_4 : There is an effect bank size on liquidity risk

The effect of efficiency on liquidity risk.

According to research conducted by Sifrain (2025) found that OIR has a significant positive effect on LA. Conversely, research conducted by Shaibu & Okafor (2020) found that OIR has a significant negative effect on LD. Research conducted by Sifrain (2025) found that OIR has a significant positive effect on LD. Conversely, research conducted by Gupta & Dongre (2024) found that OIR has a significant negative effect on LD. Based on these reviews, the formulation of the fifth hypothesis in this study, namely:

H_5 : There is an effect efficiency on liquidity risk

The effect of deposit on liquidity risk.

According to research conducted by Sifrain (2025) found that DAR has a significant positive effect on LA. Conversely, research conducted by Shaibu & Okafor (2020) found that DAR has a significant negative effect on LA. Research conducted by Sifrain (2025) found that DAR has a significant positive effect on LA. Conversely, research conducted by Fernandez (2024) found that DAR has a significant negative effect on LD. Based on these reviews, the sixth hypothesis formulation in this study is:

H_6*:* There is an effect deposit on liquidity risk

The effect of net interest margin on liquidity risk.

According to research conducted by Sifrain (2025) found a significant positive effect between NIM on LA. Conversely, research conducted by Khalilullah (2023) found a significant negative effect on LA. Research conducted by Sifrain (2025) found a significant positive effect between NIM on LD. on the contrary, research conducted by Fernandez (2024) found a significant negative effect on LD Based on these reviews, Based on these reviews, the sixth hypothesis formulation in this study is:

H_7 : There is an effect net interest margin on liquidity risk

Based on the explanation above, the conceptual framework that describes the effect of the independent variable (Liquidity Risk) on the dependent variable (CAR, NPL, ROA, SIZE, OIR, DAR, NIM) can be formed as follows:

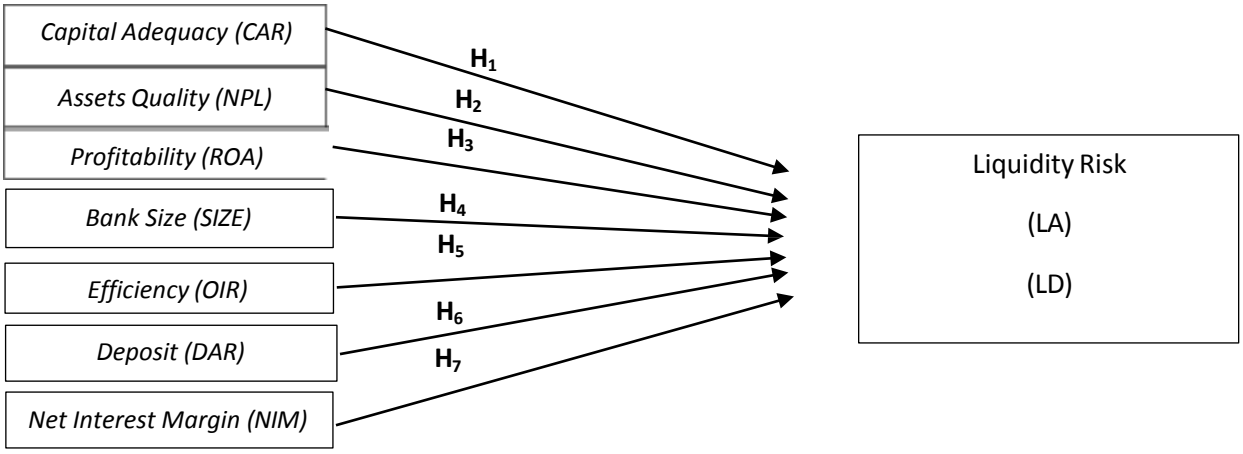

Figure 1. Conceptual Framework Chart

RESEARCH METHODS

Variables and Variable Measurement

The measurement of each variable used in this study aims to determine the effect between the independent variable and the dependent variable. The independent variables in this study are Capital Adequacy, Assets Quality, Profitability, Bank Size, Efficiency, Deposit, Net Interest Margin. While the dependent variable is Liquidity Risk which is measured using Liquid Assets To Total Assets Ratio (LA) and Liquid Assets To Deposit Ratio (LD). The measurement of each variable is as follows:

Table 1. Variable Operational Definition

Variable Type	Variables	Description	Reference
Dependent Variable	*liquidity risk (LA)*	$\frac{Liquid\ Assets}{Total\ Assets}$	(Sifrain, 2025)
	Liquidity risk (LD)	$\frac{Liquid\ Assets}{Total\ Deposit}$	(Sifrain, 2025)
Independent Variables	*Capital adequacy*	$\frac{\text{Total Modal}}{\text{ATMR}}$	(Dwihandayani, 2017)
	Assets quality	$\frac{Non\ Performing\ Loans}{Gross\ Loans}$	(Sifrain, 2025)
	Profitability	$\frac{Net\ Income}{Average\ Total\ Assets}$	(Sifrain, 2025)
	Bank size	Ln (Total Assets)	(Sifrain, 2025)
	Efficiency	$\frac{Operating\ Expenses}{Operating\ Income}$	(Sifrain, 2025)
	Deposit	$\frac{Total\ Deposit}{Total\ Assets}$	(Sifrain, 2025)
	Net interest margin	$\frac{Interest\ Income - Interest\ Expenses}{Interest\ Income}$	(Sifrain, 2025)

Sampling Method

In this study, the sampling method used was purposive sampling. The selection of this method is carried out on the basis of considerations that focus on specific objectives. In other words, the sample in this company is a company that has met the specified requirements. The sample of this study includes 205 periods of financial statements, consisting of 41 companies in the banking industry for 5 years (2019-2023 period). The criteria underlying the selection of data as a research sample are as follows: Banking companies listed on the IDX during the period 2019 - 2023

Table 2. Sampling Criteria

Description	Total
Banking companies listed on the IDX during the period 2019-2023	47
Banking companies that do not have complete financial reports in accordance with the research variables 2019-2023	(2)
Banking companies that are only engaged in Islamic banking	(4)
The number of research samples	41
Number of observations over 5 years x number of research samples	205

Data Analysis Technique

This study uses a panel data regression testing method processed using Eviews 9 software which aims to test and analyze the effect of the independent variables consisting of the dependent variable, namely Capital Adequacy, Assets Quality, Profitability, Bank Size, Efficiency, Deposit, Net Interest Margin. While the dependent variable is Liquidity Risk which is measured using Liquid Assets To Total Assets Ratio (LA) and Liquid Assets To Deposit Ratio (LD). The panel data regression method has three models consisting of Common Effect, Fixed Effect, and Random effect.

$$\mathbf{LA_{it}} = \alpha + \beta_1 \mathbf{CAR_{it}} + \beta_2 \mathbf{NPL_{it}} + \beta_3 \mathbf{ROA_{it}} + \beta_4 \mathbf{SIZE_{it}} + \beta_5 \mathbf{OIR_{it}} + \beta_6 \mathbf{DAR_{it}} + \beta_7 \mathbf{NIM_{it}} + \varepsilon_{it}$$

$$\mathbf{LD_{it}} = \alpha + \beta_1 \mathbf{CAR_{it}} + \beta_2 \mathbf{NPL_{it}} + \beta_3 \mathbf{ROA_{it}} + \beta_4 \mathbf{SIZE_{it}} + \beta_5 \mathbf{OIR_{it}} + \beta_6 \mathbf{DAR_{it}} + \beta_7 \mathbf{NIM_{it}} + \varepsilon_{it}$$

Description:

α = coefficient constant
b = coefficient
LA = liquid asset to total asset
LD = *liquid asset to total deposit*
CAR = capital adequacy
NPL = non performing loans
ROA= return to asset
SIZE = bank size
OIR= cost to income ratio
DAR= total deposit to total asset ratio
NIM = net interset margin
e = Error

The following are the steps for testing the regression model in this study:

Chow Test

Tabel 3. Chow Test

Chow test				
Effect test	***Model***	***Prob.***	***Hypothesis***	***Conclusion***
Cross-section Chi -Square	Model 1 (*Liquid Assets To Total Assets*)	0.0000	H_0 ditolak	*Fixed Effects Model*
	Model 2 (*Liquid Assets To Deposit Ratio*)	0.0000	H_0 ditolak	*Fixed Effects Model*

Source: Data processed using E-views 9

There are two possible results from the Chow test results, namely common effect or fixed effect. The chow test can be used in this study to determine which model is more effective and acceptable. The chow test is based on two hypotheses, namely the null hypothesis that there is no individual heterogeneity and the alternative hypothesis that there is cross-sectional heterogeneity.

The results show that the value of Prob. Cross-Section Chi-Square Model 1 (LA) of 0.0000 <0.05, then H0 is rejected (Ha is accepted). It can be concluded that the right model for the liquidity risk model is the Fixed Effects Model. The results show that the value of Prob. Cross-Section Chi-Square Model 2 (LD) of 0.0000 <0.05, H0 is rejected (Ha is accepted). It can be concluded that the right model for the Financial Performance model is the Fixed Effects Model (FEM).

Hausman test

Tabel 4. Hausman Test

Hausman test				
Effect test	***Model***	***Prob.***	***Hypothesis***	***Conclusion***
Cross-section Chi - Square	Model 1 (*Liquid Assets To Total Assets*)	0.0000	H_0 ditolak	*Fixed Effects Model*
	Model 2 (*Liquid Assets To Deposit Ratio*)	0.0000	H_0 ditolak	*Fixed Effects Model*

Source: Data processed using E-views 9

The Hausman test in panel data analysis is used to determine whether the Fixed Effect Model (FEM) or Random Effects Model (REM) is more appropriate. If the Hausman test shows significance, then the FEM model is more appropriate because it accommodates fixed individual effects. However, if the Hausman test is not significant, then the REM model is more appropriate to use which indicates that no individual effects need to be included in the model.

The results show that the value of Prob. Cross-Section Chi-Square Model 1 (LA) of 0.0000 <0.05, H0 is rejected (Ha is accepted). It can be concluded that the best model chosen is the Fixed Effects Model. The results show that the value of Prob. Cross-Section Chi-Square Model 2 (LD) of 0.0000 < 0.05, H0 is rejected (Ha is accepted). It can be concluded that the best model chosen is the Fixed Effects Model (FEM).

***Goodness of Fit* test (R^2)**

Tabel 5. Goodness of Fit

Koefisien Determinasi		
Testing	***Model***	***Value***
Adjusted R-Squared	Model 1 (*Liquid Assets To Total Assets*)	0.844309
	Model 2 (*Liquid Assets To Deposit Ratio*)	0.804249

Source: Data processed using E-views 9

This test aims to determine how much contribution the influence of the independent variable has on the dependent variable provided that the F test results in the regression analysis are significant. Adjusted R-square has a range of values between 0 and 1 (0 < R2> 1), an adjusted R-square value close to 1 indicates that the regression model accounts for most of the variation in the dependent variable using the independent variables in the model. Conversely, a value close to 0 indicates that the model is not able to explain the variation in the dependent variable well. In practice, the higher the adjusted R-square value, the better the regression model fits the data, with values close to 1 indicating a higher level of fit. However, it is important to remember that the interpretation of the adjusted R-square value should be done taking into account the specific context of the data and the model used.

There is a model 1 (LA) obtained adjusted R2 value of 0.844309 which means that the variation or behavior of the independent variables, namely Capital Adequacy, Assets Quality, Profitability, Bank Size, Efficiency, Deposit, Net Interest Margi. can be explained by 84.43% while the remaining 15.57% is the variation of other independent variables that affect liquidity risk but are not included in the model. These results indicate that the resulting model has a fairly good fit model. In model 2 (liquidity risk), the adjusted R2 value is 0.804249, which means that the variation or behavior of the independent variables, namely Capital Adequacy, Assets Quality, Profitability, Bank Size, Efficiency, Deposit, Net Interest Margin, can be explained by 80.98% while the remaining 19.58% is the variation of other independent variables that affect financial performance but are not included in the model. These results indicate that the resulting model has a fairly good fit model.

F-test

Tabel 6. F-Test

Simultant test (F- Test)				
Effect test	***Model***	***Prob.***	***Hypothesis***	***Conclusion***
Prob. (F- Statistic)	Model 1 (*Liquid Assets To Total Assets*)	0.0000	H_0 ditolak	Berpengaruh signifikan
	Model 2 (*Liquid Assets To Deposit Ratio*)	0.0000	H_0 ditolak	Berpengaruh signifikan

Source: Data processed using E-views 9

F-Test is a statistical tool used to test the overall significance of a regression model or the difference between two models. It tests whether the independent variables jointly affect the dependent variable in the regression model. If the F-Test value is significant, then at least one independent variable affects the dependent variable significantly. The F-Test is also used to compare two regression models and determine whether a more complex model is significantly better at explaining the data compared to a simpler model. The alpha used in this study is 0.05. Alpha, or significance level, determines the decision threshold in statistical tests. In the F-Test, if the

sig of F < 0.05 means that simultaneously the independent variables have an influence on the dependent variable, so the regression model is suitable for use. Conversely, if the sig of F > 0.05 means that simultaneously the independent variables have no influence on the dependent variable, so the regression model is not suitable for use.

In Model 1 (LA), the test results show the value of the Prob (F-Statistic) of 0.000 <0.05, H0 is rejected (Ha is accepted). It can be concluded that it is proven that there will be at least one variable that has a significant effect on the dependent variable, so the model is Fit. In Model 2 (LD), the test results show the value of the Prob (F-Statistic) at 0.000 <0.05, H0 is rejected (Ha is accepted). It can be concluded that it is proven that there will be at least one variable that has a significant effect on the dependent variable, so the model is Fit.

RESULT AND ANALYSIS

Descriptive Statistical Analysis

The LA variable shows a minimum value of 0.000287 owned by PT Allo Bank Indonesia (BBHI) in 2022, with a maximum value of 0.035564 owned by PT Pembangunan Daerah Jawa Timur (BJTM) in 2019. The standard deviation of 0.006725 < the mean value of 0.009151 which indicates that there is a small variable data distribution and there is no data gap. The LD variable shows a minimum value of 0.000607 owned by PT Bank Raya Indonesia (AGRO) in 2023, with a maximum value of 0.54752 owned by PT Krom Bank Indonesia (BBSI) in 2021. Standard Deviation of 0.009651 < mean value of 0.013355 which shows that there is a small variable data distribution and there is no data gap. The CAR variable shows a minimum value of 0.0090076 owned by PT Bank Pembangunan Daerah Banten (BEKS) in 2019, with a maximum value of 2.838783 owned by PT Krom Bank Indonesia (BBSI) in 2022. Standard Deviation of 0.356330 < mean value of 0.360000 which indicates that there is a small variable data distribution and there is no data gap.

The NPL variable shows a minimum value of 0.000024 owned by PT Neo Commerce (BBYB) in 2022, with a maximum value of 0.284287 owned by PT Bank Pembangunan Daerah Banten (BEKS) in 2020. Standard Deviation of 0.030967 < mean value of 0.034433 which shows that there is a small variable data distribution and there is no data gap. The ROA variable shows a minimum value of -0.180577 owned by PT Bank Raya Indonesia (AGRO) in 2021, with a maximum value of 0.041398 owned by PT Allo Bank Indonesia (BBHI) in 2021. Standard Deviation of 0.022109> mean value of 0.004969 which shows that there is a large enough data distribution so that there are data gaps. The SIZE variable shows a minimum value of 27.58365 owned by PT Krom Bank Indonesia (BBSI) in 2019, with a maximum value of 35.31545 owned by PT Bank Mandiri (BMRI) in 2023. Standard Deviation of 1.754018 < the mean value of 31.46794 which indicates that there is a small variable data distribution and there is no data gap. The OIR variable shows a minimum value of 0.200204 owned by PT Bank OCBC NISP (NISP) in 2021, with a maximum value of 93.37800 owned by PT Bank Jtrust Indonesia (BCIC) in 2021. Standard Deviation of 10.77750 < mean value of 6.526181 which indicates that there is a small variable data distribution and there is no data gap.

The DAR variable shows a minimum value of 0.060579 owned by PT Bank Bumi Arta (BNBA) in 2022, with a maximum value of 0.992205 owned by PT Bank Pembangunan Daerah Banten (BEKS) in 2022. Standard Deviation of 0.155038> mean value of 0.0865116 which indicates a large enough data distribution so that there is a data gap. The NIM variable shows a minimum value of 0.024915 owned by PT Bank Victoria Internasional (BVIC) in 2020, with a maximum value of 0.982571 owned by PT Krom Bank Indonesia (BBSI) in 2023. Standard Deviation of 0.195223 < the mean value of 0.542181 which shows that there is a small variable data distribution and there is no data gap.

Table 7. Descriptive Statistics Test Results

Variables	Mean	Median	Maximum	Minimum	Std Dev.
LA	0.009151	0.008023	0.035564	0.000287	0.006725
LD	0.013355	0.010854	0.054752	0.000607	0.009651
CAPITAL ADEQUACY	0.360000	0.252297	2.838783	0.090076	0.356330
ASSET QUALITY	0.034433	0.026703	0.284287	0.000024	0.030967
PROFITABILTY	0.004969	0.006625	0.041398	-0.180577	0.022109
BANK SIZE	31.46794	30.95792	35.31545	27.58365	1.754018
EFFICIENCY	6.526181	3.556839	93.37800	0.200204	10.77750
DEPOSIT	0.0865116	0.7342	0.992205	0.060579	0.155038
NET INTEREST MARGIN	0.542181	0.554903	0.982571	0.024915	0.195223

Source: Data processed using E-views 9

Individual Test (T-test)

Tabel 8. Results of models with LA as dependent variable.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAPITAL ADEQUACY	-0.001726	0.000830	-2.079978	0.0392
ASSET QUALITY	-0.033186	0.011517	-2.288139	0.0045
PROFITABILTY	0.001834	0.012084	0.151791	0.8795
BANK SIZE	-0.006544	0.000774	-8.457910	0.0000
EFFICIENCY	-1.46E-05	2.33E-05	-0.627156	0.5315
DEPOSIT	-0.003642	0.002419	-1.505642	0.1342
NET INTEREST MARGIN	0.000285	0.002106	-0.135205	0.8926
C	0.219636	0.002106	-0.135205	0.0000

Source: Data processed using E-views 9

Individual Test (T-test)

Tabel 9. Results of models with LD as dependent variable.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAPITAL ADEQUACY	-0.001912	0.001304	-1.466301	0.1446
ASSET QUALITY	-0.044326	0.018094	-2.449793	0.0154
PROFITABILTY	0.013080	0.018984	-0.689004	0.4918
BANK SIZE	-0.009189	0.001215	-7.559596	0.0000
EFFICIENCY	-0.00104	3.67E-05	-0.627156	0.0053
DEPOSIT	-0.022983	0.003800	-6.048997	0.0000
NET INTEREST MARGIN	0.002417	0.003308	-0.730789	0.4660
C	0.0322871	0.039046	8.268901	0.0000

Source: Data processed using E-views 9

H_1: There is an effect of capital adequacy on liquidity risk

The results of the t test in model 1 (Liquid Assets To Total Assets) show that the Capital Adequacy variable has a significant value of 0.0392 <0.05, which means that Ho is accepted with a coefficient of -0.001726, which means that increasing Capital Adequacy will reduce Liquid Assets To Total Assets, these results are not in line with research Sifrain (2025) where CAR has a positive effect on Liquidity Risk (LA), this reflects that if CAR increases, Liquidity Risk (LA) will increase. in line with research Meliza, Hasan, Saputri (2024) which indicates that CAR has a negative effect on Liquidity Risk (LA), this reflects that if CAR increases, LA will decrease.

The t test results in model 2 (Liquid assets to Total Deposits) show that the CAR variable has a significant value of 0.1446> 0.05 which means Ho is accepted with a coefficient of -0.001912 which means that the high and low CAR does not affect liquidity risk (LD). So it can be concluded that Capital Adequacy has no proven effect on Liquid Asset to Deposit Ratio. The results of this study are not in line with the research of Sifrain (2025) which shows a positive effect of CAR on liquidity risk (LD), meaning that the greater the CAR will increase liquidity risk (LD). The results of this study are in line with Karki (2021) which focuses on the banking sector in Nepal found that CAR has no effect on liquidity risk (LD), meaning that high and low CAR does not affect liquidity risk (LD).

H_2: There is an effect of asset quality on liquidity risk

The t test results in table 7 for model 1 (Liquid assets to Total Assets) show that the Asset Quality variable has a significant value of 0.0045> 0.05 which means Ho is accepted with a coefficient of -0.033186 which means that increasing Asset Quality will reduce Liquid Assets to Deposit. The t test results in table 7 for model 1 (Liquid assets to Total Assets) show that the Asset Quality variable has a significant value of 0.0154> 0.05 which means Ho is accepted with a coefficient of -0.044326 which means that increasing Asset Quality will reduce Liquid Assets to Deposit. So it can be concluded that Deposit is proven to have a significant negative effect on the Liquid Asset to Deposit Ratio. In model 1 and model 2, it is not in line with research conducted by Sifrain (2025) where the results of NPL research have a positive effect on Liquidity Risk (LA) and liquidity risk (LD), this means that the higher the level of non-performing loans owned by a financial institution, the greater the liquidity risk it faces. In model 1 in

line with research conducted by Ahmed (2024) getting the results of NPL, getting the results of NPL negatively affect Liquidity Risk (LA) as well as high NPL will hinder cash inflows resulting in the use of liquid assets due to banks, with this banks that have a level of having to allocate more funds to resources to build low loan reserves will find it difficult to provide liquid assets. In model 2 in line with the research of El-Chaarani, Abraham, Azzi (2023) There is a negative influence between NPL and liquidity risk (LD), this reflects that banks with many liquid assets will make unproductive assets, resulting in liquidity risk (LD) going down.

H_3 : There is an effect profitability on liquidity risk

The t test results in table 7 for model 1 (Liquid Assets To Total Assets) show that the Profitability variable has a significant value of 0.8795> 0.05, which means that Ho is rejected and Ha is accepted with a coefficient of 0.001834, which means that increasing Profitability will increase Liquid Assets To Total Assets and vice versa. So it can be concluded that Profitability is proven to have no effect on financial performance. The t test results in table 7 for model 1 (Liquid assets to Total Assets) show that the Profitabilty variable has a significant value of 0.4918> 0.05 which means Ho is accepted with a coefficient of -0.013080 which means that increasing Profitability will reduce Liquid Assets to Deposit and vice versa. In model 1 and model 2 in line with research Sifrain (2025) where profitability has no effect on liquidity risk (LA) or liquidity risk (LD), which states that profitability has no effect on liquidity risk, this indicates that the level of profit earned by financial institutions does not directly affect the institution's ability to manage liquidity risk. So it can be concluded that Profitability has no proven effect on the Liquid Asset to Deposit Ratio. This research is not in line with the research of Chun & Ardaaragchaa (2024) where profitability has a positive effect on liquidity risk (LA) where banks succeed in increasing the ratio of return on assets will make bank liquidity better. And this research is not in line with research Fernandez (2024) where ROA has a significant negative effect on liquidity risk (LD) which is reflected when banks increase ROA through cost cutting, often neglecting sufficient liquid assets.

H_4 : There is an effect bank size on liquidity risk

The t test results for model 1 (Liquid Assets To Total Asset) show that the Bank Size variable has a significant value of 0.0000 <0.05 which means Ho is rejected and Ha is accepted with a coefficient of - 0.006544 which means that increasing Bank Size will reduce Liquid Assets To Total Asset and vice versa. So it can be concluded that Bank Size is proven to have a significant negative effect on Liquid Assets To Total Asset. The t test results for model 2 (Liquid assets to Total Asset) show that the Bank Size variable has a significant value of 0.0000 <0.05 which means Ho is accepted with a coefficient of -0.009189 which means that increasing Bank Size will reduce Liquid Assets to Deposit and vice versa. So it can be concluded that Deposit is proven to have a significant negative effect on the Liquid Asset to Deposit Ratio.

In model 1 and model 2 are not in line with research conducted by Sifrain (2025) where Bank Size has no effect on liquidity risk (LA) or liquidity risk (LD), the size of the bank affects the bank's ability to manage funds and fulfill its liquidity obligations, where larger banks tend to have wider access to funding sources and more complex risk management instruments. consistent with research conducted by Tran et al. (2019) where Bank Size is often considered a financial stabilizer, factors such as asset and liability management, banking policies, and market conditions play an important role in determining the liquidity level of a bank. This reflects that bank size has a negative influence on liquidity risk (LA). These results are also in line with research Karki (2021) where Bank size has a negative effect on liquidity risk (LD) which indicates that larger banks have a percentage that cannot maintain liquidity when contextualized with bank deposits.

H_5 : There is an effect efficiency on liquidity risk

The t test results for model 1 (Liquid Assets To Total Asset) show that the Efficiency variable has a significant value of 0.5315> 0.05 which means Ho is rejected and Ha is accepted with a coefficient of - 0.000014 which means that increasing Efficiency will reduce Liquid Assets To Total Asset, so it can be concluded that

Efficiency has no proven effect on Liquid Assets To Total Asset. In model 1, it is not in line with research Sifrain, (2025) where OIR has no effect on liquidity risk (LA), operating income does not directly affect liquidity risk. This research is not in line with research by Ghimire & Agrawal, (2025) showing a significant negative effect between OIR on liquidity risk (LA), this is reflected in banks that are more efficient in carrying out their operations lean towards a low proportion of liquid assets.

The t test results for model 2 (Liquid assets to Deposit) show that the Efficiency variable has a significant value of 0.0053 <0.05 which means Ho is accepted with a coefficient of -0.000104 which means that increasing Efficiency will reduce Liquid Assets to Deposit. So it can be concluded that Deposit is proven to have a significant negative effect on Liquid Asset to Deposit Ratio In model 2, it is not in line with research Sifrain (2025) where OIR has a positive effect on liquidity risk (LD), an increase in OIR is considered to reflect operational pressure which can worsen liquidity conditions. In model 2 in line with research conducted by Sultana & Rahman (2020) OIR has a negative effect on LD, this reflects an excessive focus on cost efficiency can result in neglect of liquid reserves, which can cause the bank's liquidity position.

H_6: There is an effect deposit on liquidity risk

The t test results for model 1 (Liquid Assets To Total Asset) show that the Deposit variable has a significant value of 0.1342> 0.05, which means that Ho is rejected and Ha is accepted with a coefficient of - 0.003642, which means that increasing deposits will reduce Liquid Assets To Total. So it can be concluded that Deposits have no proven effect on Liquid Assets To Total Assets. In model 1 it is not in line with research Sifrain (2025) DAR has a positive effect on liquidity risk (LA), the higher the level of debt to assets owned by the bank, the higher the liquidity risk borne, because large liabilities have the potential to suppress cash flow and short-term liquidity. In model 1 in line with research Drechsler (2018) DAR has no effect on liquidity risk (LA), this is reflected by deposits not affecting the amount of liquidity risk (LA) owned by the bank compared to its total assets. This is because banks usually have loyal customers and always keep their money in the bank.

The t test results for model 2 (Liquid asset to Deposit Ratio) show that the Deposit variable has a significant value of 0.0000> 0.05 which means Ho is accepted with a coefficient of -0.022983 which means that the increase in Deposit will reduce Liquid Asset to Deposit. So it can be concluded that Deposit is proven to have a significant negative effect on the Liquid Asset to Deposit Ratio, in model 2 it is not in line with research conducted Sifrain (2025) DAR has a positive effect on liquidity risk (LD), a high debt ratio reflects the bank's dependence on external funding, which can increase pressure on liquidity and increase the risk of meeting short-term obligations. In model 2 in line with the results of research Fernandez (2024) DAR has a negative effect on liquidity risk (LD) which can be seen from the tendency of banks to allocate funds obtained from depositors into credit or investment which makes bank liquidity decline.

H_7: There is an effect net interest margin on liquidity risk

The t test results for model 1 (Liquid Assets To Total Asset) show that the Net Interest Margin variable has a significant value of 0.8926> 0.05, which means that Ho is rejected and Ha is accepted with a coefficient of - 0.000285, which means that increasing Net Interest Margin will reduce Liquid Assets To Total Asset and vice versa. So it can be concluded that Net Interest Margin has no proven effect on Liquid Assets To Total Asset. The t test results for model 2 (Liquid Assets To Deposit Ratio) show that the Net Interest Margin variable has a significant value of 0.8926> 0.05, which means that Ho is rejected and Ha is accepted with a coefficient of - 0.000285, which means that increasing Net Interest Margin will reduce Liquid Assets To Total Asset and vice versa. So it can be concluded that Net Interest Margin has no proven effect on Liquid Assets To Total Asset.

In model 1 and model 2 are different from the research Sifrain (2025) showing that NIM has a positive effect on liquidity risk (LA) and liquidity risk (LD), the high NIM is considered to reflect a more aggressive interest rate setting strategy, which in turn can increase exposure to liquidity risk. In model 1 and model 2 in accordance with the

research of Jagirani et al. (2023) shows that NIM has no effect on liquidity risk (LA), although NIM contributes to increasing firm value which indicates that the role of NIM is more dominant in the aspect of profitability compared to short-term liquidity management. Research conducted by Gurung & Gurung (2022) shows that NIM has no effect on liquidity risk (LD), because NIM is not always the main determinant in liquidity risk (LD).

Table 10. Regression Model Results

Variables	**LA MODEL**		**Conclusion**
	COEFF	**PROB**	
(1)	(2)	(3)	(4)
Constanta	0,219636	0.0000	-
Capital Adequacy	– 0,001726	0.0392	Negatively significant to LA
Assets Quality	– 0,033186	0.00045	Negatively significant to LA
Profitabilitiy	0,001834	0.8795	Insignificant
Bank Size	– 0,006667	0.0000	Negatively significant to LA
Efficiency	– 0,000014	0.5315	Insignificant
Deposit	– 0,003642	0.1342	Insignificant
Net Interest Margin	– 0,000285	0.8926	Insignificant

Source: Data processed using E-views (2024)

The panel data regression model used in this study can be written as follows:

$LA = 0{,}219636 - 0{,}001726CAR_{it} - 0{,}033186NPL_{it} + 0{,}001834ROA_{it} - 0{,}0066679SIZE_{it} - 0{,}000014OIR_{it} - 0{,}003642DAR_{it} - 0{,}000285NIM_{it}$

Table 11. Regression Model Results

Variables	**LD MODEL**		**Conclusion**
	COEFF	**PROB**	
(1)	(2)	(3)	(4)
Constanta	0,207472	0.0000	-
Capital Adequacy	– 0,001912	0.1446	Insignificant
Assets Quality	– 0,044326	0.0154	Negatively significant to LD
Profitabilitiy	– 0,013080	0.4918	Insignificant
Bank Size	– 0,009189	0.0000	Negatively significant to LD
Efficiency	– 0,000104	0.0053	Negatively significant to LD
Deposit	– 0,022983	0.0000	Negatively significant to LD
Net Interest Margin	– 0,002417	0.4660	Insignificant

Source: Data processed using E-views (2025)

The panel data regression model used in this study can be written as follows:

$LD = 0{,}207472 - 0.001912CAR_{it} - 0.044326NPL_{it} - 0.013080ROA_{it} - 0.009189SIZE_{it} - 0.000104OIR_{it} - 0.022983DAR_{it} + 0.002417NIM_{it}$

CONCLUSION

This study found that CAR, NPL, and SIZE have a negative effect on liquidity risk (LA), and ROA, OIR, DAR, NIM have no effect on liquidity risk (LA). while NPL, SIZE, OIR, DAR have a negative effect on liquidity risk (LD). and CAR, ROA, NIM have no effect on liquidity risk (LD).The results of this study can contribute to bank management in making strategic decisions, especially in managing financial risks. The finding that the capital adequacy ratio (CAR) and non-performing loans (NPL) affect financial performance shows the importance of increasing the efficiency of capital utilization and strict supervision of lending to reduce the level of non-performing loans. In addition, management is expected to pay attention to liquidity management in order to remain able to meet short-term obligations and maintain the bank's financial stability.

Further research is expected to add or use other independent variables to reveal other variables that can affect liquidity risk, such as bank diversification. Such research has been conducted by Tisa Maria Antony & Maria Antony (2023) who used bank diversification to minimize liquidity risk. Therefore, further research can examine the potential impact of bank diversification on liquidity risk.

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