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The effect of liquidity risk, capital and third-party fund on bank performance with credit risk as intervening variable: Cases in conventional Bank in Indonesia

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Abstract

Purpose – this research examines the effect of liquidity risk as measured by the loan to deposit ratio (LDR), bank capital as measured by the capital adequacy ratio (CAR), credit risk as measured by non-performing loans (NPL) and third-party funds (TPF). on profitability as measured by return on assets (ROA). The research also tests whether credit risk can be an intervening variable in the influence of LDR, CAR and TPF on profitability

Design/methodology/approach – The population of this research is 42 conventional banks on the Indonesia Stock Exchange (BEI), with a sample of 24 banks taken using purposive sampling technique. The observation period is 4 years with quarterly data. Hypothesis testing uses multiple regression analysis tools with a significance level of 0.05

Findings – The research results show that liquidity risk has a significant positive effect on profitability, credit risk has a significant negative effect on profitability. Meanwhile, capital and third-party funds have no effect on profitability. Another result turns out that credit risk can only be an intervening variable in the influence of liquidity risk on profitability.

Research limitations/implications – This research only tested three independent variables and one intervening variable. Besides that, this research uses multiple regression analysis, so that future researchers can research further by adding variables that influence profitability and can use panel data regression analysis.

Practical implications – It is hoped this research can be used by bank management in its efforts to increase profitability by considering four variables that influence it and shows the role of credit risk in mediating the influence of independent variables on profitability.

Originality/value – The novelty in this research is including the role of credit risk as an intervening variable which is still rarely researched.

Keywords: Profitability, credit risk, liquidity risk, capital adequacy ratio, third-party fund

Introduction

One indicator of a country's economic condition is the banking industry. If the banking industry is good, it can be ensured that the country's economy is also good (Karim et al., 2016). Based on Bank Indonesia Statistics as of April 2023, banking performance in Indonesia has so far shown good performance as shown by total assets reaching IDR 1,436 trillion at the end of 2022 with third party funds amounting to IDR 989.17 trillion and a return on assets of 2.43%, as well as

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strong capital of 24.10%. Likewise, remains very lowy non-performing loans (NPL) is also small, namely 2.03% and a low operating cost ratio (78.65%), as well as an ideal loan to deposit (LDR) of 78.78%. (Kartika, 2024; Kontan, 2023). Thus, in general banking in Indonesia is in a stable condition in supporting economic growth.

Table 1. Commercial Bank Performance

Explanation	Year		Growth
	2021	2022	(%)
Return on Assets (ROA)	1,84	2,43	32,07
Capital Adequacy Ratio (CAR)	24,07	24,10	0,12
Loan to Deposit Ratio (LDR)	77,13	78,78	2,14
Non-Performing Loan (NPL)	2,11	2,03	-3,79
Operating Expense to Operating Income ratio (OEI)	83,58	78,65	-5,90
Third Party Fund (TPF) in Triliun Rupiahs	970,14	989,17	1,96
Total Asset in Triliun Rupiahs	1.348,64	1.436,18	6,49

Source: Indonesian Banking Statistics, April 2023

Banks are institutions that are highly regulated by the government through the Financial Services Authority (OJK), because if a bank is liquidated it could have a systemic impact on the country's economy. Therefore, bank management is expected to manage their bank by paying attention to the principle of prudence. Management is required to be able to develop its bank, one of which is increasing its profitability, because with high profitability the bank is able to make its owners prosperous (Mir & Shah, 2022). Profitability is a bank's ability to obtain profits from its assets (Mehzabin et al., 2023; Pradana et al., 2022) which is called return on assets (ROA) or from its equity or return on equity (M. Ali & Puah, 2019; Ikpesu & Oke, 2022). To increase profitability, bank management must pay attention to several factors that influence profitability.

An important factor that influences profitability is bank liquidity as measured by the loan to deposit ratio (LDR). LDR is a comparison between the loan amount given and third-party funds. The higher the LDR indicates the larger the loan provided (Bhati et al., 2019). The bank's main income comes from interest income obtained from the size of the loan, so the larger the loan given, the higher the interest income, thus increasing profitability (Belkhaoui et al., 2020; Islam et al., 2017). Research results from Huong et al., (2021) in Southeast Asian countries, Dao & Nguyen., (2020) in Vietnam, and Syafi'i & Rusliati., (2016) in Indonesia, found that LDR has a positive effect on profitability. However, Mehzabin et al., (2023) did not find the effect of LDR on profitability. But several researchers found that LDR had a negative effect on profitability (Hosen, Lathifah, et al., 2021; Mir & Shah, 2022; Siddique et al., 2022).

For the banking industry, capital is an important aspect, so it is regulated by the government. Bank capital functions as a buffer against losses experienced by the bank. In this function, bank capital provides protection against bank failure or bank losses and protects the interests of depositors. Banks must provide minimum capital called a capital adequacy ratio (CAR) of 8% (Abusharbeh et al., 2013). Apart from functioning as a buffer to cover losses, excess bank capital can also be used to be channeled into loans, so that it can be used to make a profit (Alajmi & Alqasem, 2015). Thus, the greater the bank's capital, the more trusted it will be by customers and can be used to increase profits. Research results from Mehzabin et al., (2023); Ikpesu & Oke (2022) and Derbali (2021) found that bank capital has a positive effect on profitability. On the contrary, several researchers have found that capital that is too high actually reduces profitability so that capital has a negative effect on profitability (Abbas et al., 2019; Kinanti & Purwohandoko, 2017; Laryea et al., 2016).

Banks as financial intermediaries are tasked with collecting funds from the public in the form of savings and distributing them to the public in the form of credit. Credit provided by banks comes from public funds or third party funds. The greater the third party funds, the more likely they are to be able to provide large amounts of credit, so they will receive high interest income. Therefore, third party funds will have the effect of increasing profitability (Hermuningsih et al., 2020). Research results from Hermuningsih et al., (2020); Kinanti & Purwohandoko (2017) and

Sidharta (2023), found a positive and significant influence between third party funds and profitability. However, research results from Sari & Murni (2017) actually found the opposite, namely that third party funds have no effect on profitability. This is because banks are unable to channel funds properly.

The bank's main income comes from the credit provided, so the greater the credit provided, the greater the bank's income. However, there is a risk that must be borne if you are not careful in providing credit, namely failing to repay the credit given, both principal installments and interest installments. Credit risk is measured by non-performing loans (NPL), where the higher the NPL will reduce the bank's profitability because the bank must provide reserves for losses due to this NPL. In accordance with research results from Sari & Murni (2017); Shrestha & Khadka (2024) and Ali et al., (2024), found a significant and negative influence between credit risk (NPL) on profitability. But several researchers found that NPLs actually have a positive effect on profitability (Ali & Puah, 2019; Huong et al., 2021; Kinanti & Purwohandoko, 2017; Mehzabin et al., 2023).

The credit provided must be managed well, because credit risk will have an impact on reducing profits. A high LDR should increase profitability, but if credit handling is poor which results in high NPL, it will cause profitability to decrease (Sari et al., 2022). Likewise, with high capital, if the NPL is high, then part of the equity will be used to cover losses due to non-performing loans. Third party funds, if managed well and distributed as loans, will increase profitability, but on condition that the credit risk is small. Thersefore, credit risk acts as an intervening variable on profitability.

Literature Review and Hypotheses

Profitability

Company management is elected by shareholders to increase the welfare of the owners which can be measured by higher share prices or increased company value (Muslim & Hamzah, 2022). The value of the company will increase, one of which is influenced by profitability, because with high profitability the company can provide high dividends, so that share prices go up (Lembong, 2020). Profitability is the Company's ability to earn profits which can be measured by return on assets (ROA) or return on equity (ROE). Return on assets is the Company's ability to generate profits with all assets owned, which is measured by the comparison between profit after tax and total assets. According to Rivai et al., (2013), bank profitability can be measured by several measures, namely return on equity (ROE), return on assets (ROA), and return on investment (ROI). ROE is the company's ability to generate profits with the equity working in it, meaning that the profits obtained are the rights of the owners or shareholders. ROE is measured by dividing profit after tax (EAT) by total equity. ROI is the company's ability to generate profits with all the investments that work in it. Meanwhile ROA is the ability to generate profits with all the assets used. Return on Assets (ROA) aims to measure the ability of bank management to generate profitability from managing the assets entrusted to it. According to Ajayi & Lawal (2021) return on assets is a ratio to measure the level of return on assets from the net profit obtained by the company. Total assets are the sum of productive assets consisting of placements of securities and placement of funds in the form of financing.

Liquidity and Profitability Risks

Bank liquidity is the bank's ability to provide liquid assets used to fulfill customer fund withdrawals and credit commitments. In this research, bank liquidity is measured by the loan to deposit ratio (LDR), namely the amount of credit provided compared to third party funds. The higher the LDR indicates the higher the credit given. Credit is the main function of banks which provides income in the form of interest (Arintoko, 2021; Islam et al., 2017). This is supported by research results from Huong et al., (2021) in Southeast Asian countries, Dao & Nguyen, (2020) in Vietnam, and Shafi'i & Rusliati, (2016) in Indonesia, found LDR positive effect on profitability. Therefore, the hypothesis proposed is:

H_1: Loan to deposit ratio (LDR) has a positive effect on profitability

Capital and Profitability

In the banking industry, capital is important because it functions as a buffer if the bank experiences losses. Therefore, the government regulates bank capital in accordance with Bank for International Settlement (BIS) regulations which determine bank capital as measured by a minimum capital adequacy rate (CAR) of 8%. The greater the bank capital, the better, because excess bank capital can be used to be distributed as loans (Alajmi & Alqasem, 2015). Thus, the greater the bank's capital, the more trusted it will be by customers and can be used to increase profits. This is in accordance with research results from Mehzabin et al., (2023), Ikpesu & Oke., (2022), ; Hosen et al., (2021) and Derbali, (2021) which found that bank capital has a positive effect on profitability. Therefore, the hypothesis proposed is:
H_2: Capital Adequacy ratio (CAR) has a positive effect on profitability

Third Party Funds and Profitability

Banks function as financial intermediaries where one of their functions is to raise public funds in the form of current accounts, savings and deposits or often called third party funds (DPK). These third party funds will be distributed to the community in the form of credit. The larger the TPF, the greater the opportunity to increase the credit provided. The higher the credit provided, the greater the interest income. Therefore, third party funds will have the effect of increasing profitability (Hermuningsih et al., 2020). This is supported by research results from Hermuningsih et al., (2020); Kinanti & Purwohandoko (2017) and Sidharta (2023), which found a positive and significant influence between third party funds and profitability. Therefore, the hypothesis proposed is:
H_3: Third Party Funds (DPK) have a positive effect on profitability

Credit Risk and Profitability

The amount of credit given, on the one hand, has the opportunity to increase profitability, but on the other hand, if the credit granting process is not good, it could result in credit problems. The risk of non-smooth payment of credit installments, both principal and interest, is called a non-performing loan (NPL). NPL is a credit risk that banks must avoid, because it will erode bank profits. The higher the NPL will reduce the bank's profitability because the bank must provide reserves for losses due to this NPL. This is supported by research (Hosen, Lathifah, et al., 2021; Mir & Shah, 2022; Siddique et al., 2022) who found a significant and negative influence of credit risk (NPL) on profitability. Therefore, the hypothesis proposed is:
H_4: Non-performing loans (NPL) have a negative effect on profitability

Credit Risk as an Intervening Variable

A high LDR indicates that the amount of funds disbursed for credit is increasing, which will increase interest income. However, if you are not careful in providing credit, for example just to meet credit targets, it could result in problematic credit, thereby increasing non-performing loans (NPL). Thus, a high LDR will increase profitability provided the NPL is low. Likewise, if the bank's equity is high, it can be used to increase credit, but if the NPL is high, the bank's equity will actually decrease because it is used to cover losses due to high credit risk. Third party funds, if managed well and channeled as loans, will increase profitability, but on condition that the credit risk is small. Therefore, credit risk acts as an intervening variable on profitability.
H_5: Credit risk acts as an intervening variable in the influence of LDR on profitability
H_6: Credit risk acts as an intervening variable in the influence of CAR on profitability
H_7: Risk acts as an intervening variable in the influence of TPF on profitability

Research Conceptual Framework

Based on the background, problem formulation and hypothesis development, the research conceptual framework can be described as follows:

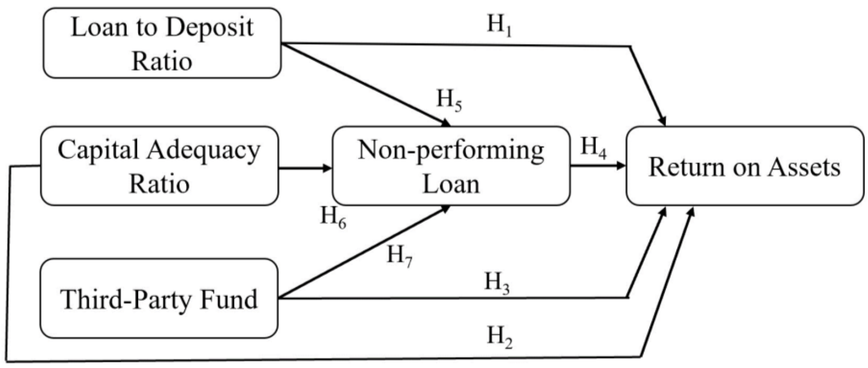

Figure 1. Research Conceptual Framework

Research Methods

Population and Sample

The population in this research are banks operating in Indonesia and listed on the Indonesia Stock Exchange (BEI) 42 conventional banks. Samples were taken using a purposive sampling technique from 24 conventional banks with an observation period of 4 years and data on a quarterly basis, so that 384 observation data were obtained. The data source in this research is secondary data taken from the websites of each bank.

Research Variable

In this study, there is 1 dependent variable, namely profitability, which is measured by return on assets (ROA) and 3 independent variables consisting of liquidity risk (LDR), bank capital (CAR), and third-party funds (TPF), as well as one intervening variable, namely risk. credit (NPL). The table below shows the variables and variable measurements:

Table: Variable and Measurement

Variable	Measurement	Source
Dependend Variable:		
Return on Assets (ROA)	EAT/Total Asset	(Pradana et al., 2022; Siddique et al., 2022)
Independend Variable:		
Loan to Deposit Ratio (LDR)	Total Loan/Thir party fund	(Mir & Shah, 2022; Dao & Nguyen, 2020)
Capital Adequacy Ratio (CAR)	Equity/Risk weighted assets	(Bhattarai, 2019; Hosen et al., 2021)
Third Party Fund (TPF)	Ln Total third party fund	(Pradana et al., 2022; Hermuningsih et al., 2020)
Intervening Variable:		
Non-Performing Loan (NPL)	Bad loan/Total loan	(Menicucci & Paolucci, 2016; Ali & Puah, 2019)

Data Analysis

To test the hypothesis, this research uses multiple regression analysis tools with a confidence level of 95% or a significance level of 0.05. The regression equation is:

Model 1 To test hypothesis 1 to hypothesis 4

$ROA = \alpha + \beta 1LDR + \beta 2CAR + \beta 3TPF + \beta 4NPL + \varepsilon$

Model 2 To test hypotheses 5 to hypothesis 7

$ROA = \alpha + \beta 1LDR*NPL + \beta 2CAR*NPL + \beta 3TPF*NPL + \varepsilon$

Results and Discussion

Descriptive Statistics

From the data that has been collected and to provide an overview of each variable, descriptive statistical data is presented below.

Table: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	374	-10.61	4.74	1.02	1.88827
LDR	374	29.67	210.43	87.24	25.18416
CAR	374	11.02	110.54	23.74	12.31254
NPL	374	0	4.96	1.78	1.26024
DPK	374	28.02	34.66	31.54	1.77578
Valid N (listwise)	374				

Source: Data processed

Profitability as measured by ROA shows an average value of 1,015 with a minimum value of -10.61% and a maximum value of 4.74%. This data indicates that bank profitability is quite good even though there are banks that experience quite large losses. Liquidity risk (LDR) shows a very good average of 87.24%, while the minimum value is 29.67% and the maximum value is too large 210.43%. Bank capital is very safe and tends to be too large because the average CAR is 23.74%, with a minimum of 11.02% and a maximum of 110.54%. Meanwhile, credit risk (NPL) is very good because the average value is 1.78% with a maximum of 4.96%, which is still below the maximum NPL limit set.

Hypotheses Test Results

The data that has been obtained is then processed using SPSS 24.0. The following are the results of a multiple regression test to determine the effect of the independent variable on the dependent variable.

Table: Hypotheses Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-9.978002	1.766787	-5.647875	0.0011
LDR	0.007001	0.001733	4.038935	0.0001
CAR	-0.004342	0.002501	-1.736370	0.0834
TPF	-0.165037	0.107618	-1.533552	0.1260
NPL	-0.055713	0.028671	-1.943209	0.0428
LDR*NPL	-0.0095	0.0026	-3.5936	0.0004
CAR*NPL	0.0021	0.0038	0.5596	0.5761
TPF*NPL	0.0056	0.0084	0.6669	0.5053

Dependen variable: ROA
Source: Data processed

The results of the hypothesis test on the effect of liquidity risk (LDR) on profitability show a significance value of 0.0001, which is smaller than 0.05 with a positive coefficient direction. Thus, the hypothesis that liquidity risk has a positive effect on profitability is proven. This result is in accordance with the theory that the greater the liquidity risk as measured by LDR, the greater the profitability. The size of the LDR shows that the greater the credit provided, and the greater the credit provided, the greater the interest income will increase, thereby increasing the Company's profits. The research results are in accordance with research from Huong et al., (2021) in Southeast Asian countries, Dao & Nguyen., (2020) in Vietnam which found a significant positive influence between LDR and profitability. Likewise, the results of research from Shafi'i & Rusliati, (2016) in Indonesia, which found that LDR had a positive effect on profitability. However, several researchers found different results, such as research from Mehzabin et al., (2023) that did not find the effect of LDR on profitability. There are even research results which actually find that LDR has a negative effect on profitability (Hosen, Muhari, et al., 2021; Mir & Shah, 2022; Rasheed et al., 2017).

The results of the hypothesis test on the effect of capital (CAR) on profitability show a significance value of 0.0834 which is greater than 0.05. Thus, the hypothesis which states that capital has a positive effect on profitability is rejected, meaning that CAR has no effect on profitability. These results indicate that bank capital management is not good enough, so that a lot of bank capital is idle. This result can be seen from the average CAR of 23.74%, which is too large, because the minimum CAR requirement is 8%. Capital that should be channeled as credit is not distributed, resulting in idle capital. This result is in accordance with the findings of several researchers who found that capital that is too high actually reduces profitability and can even have a negative effect on profitability profitability (Abbas et al., 2019; Kinanti & Purwohandoko, 2017; Laryea et al., 2016). However, there are still many researchers such as Mehzabin et al., (2023); Ikpesu & Oke (2022) and Derbali (2021) who found that bank capital has a significant and positive effect on profitability.

The results of the hypothesis test on the influence of third party funds (TPF) on profitability show a significance value of 0.1260 which is greater than 0.05. These results show that the hypothesis which states that TPF has a positive effect on profitability is not proven, meaning that the size of TPF is not able to relate to profitability. The higher the TPF, the greater the funds that can be channeled in the form of credit, thereby increasing profitability. However, if the size of the TPF is not balanced with the size of the credit provided, it will actually burden the bank because it has to pay interest charges as compensation for third party funds. This result is in accordance with research from Sari & Murni, (2017) which found the opposite, namely that third party funds had no effect on profitability. However, research from Hermuningsih et al., (2020); Kinanti & Purwohandoko (2017) and Sidharta (2023), found a positive and significant influence between third party funds and profitability.

The results of the credit risk (NPL) hypothesis test on profitability produced a significance value of 0.0428, which is smaller than 0.05 with a negative coefficient. Thus, the hypothesis statement which states that NPL has a negative effect on profitability is proven, meaning that the higher the NPL will reduce profitability. Therefore, bank management must be careful and pay attention to good credit principles in distributing credit. If credit provision is not carried out with the principle of prudence, it is possible that many credits will not perform which will eventually be written off and ultimately reduce profitability. These results are in accordance with research from Budiarto (2021); Hosen et al., (2021); Siddique et al., (2022); Bhattarai (2019); and Hamza, (2017), found a significant and negative influence between credit risk (NPL) on profitability. On the other hand, several researchers found that NPLs actually have a positive effect on profitability (Ali & Puah, 2019; Huong et al., 2021; Kinanti & Purwohandoko, 2017; Mehzabin et al., 2023).

The results of the hypothesis test on the role of credit risk as an intervening variable on the influence of LDR, CAR and TPF on profitability, it turns out that it is only capable of being an intervening variable on the influence of DR on profitability, while the influence of CAR and TPF on profitability is not proven. These results indicate that credit risk can only be an intervening variable with a significant influence. LDR has a significant and positive effect on profitability, and if the NPL is high, no matter how good the LDR is, it will actually reduce profitability.

Conclusion and Future Direction

Based on the results of hypothesis testing and discussion, it can be concluded that there are two proven direct influence hypotheses, namely that liquidity risk as measured by LDR has a positive effect on profitability and credit risk as measured by NPL has a negative effect on profitability. Meanwhile, capital (CAR) and third-party funds (TPF) have no influence on profitability. Meanwhile, for indirect effects, only the effect of LR on profitability can be intervened by credit risk.

It is hoped that the results of this research can be utilized by conventional bank management in managing their banks, especially when they need to pay attention to several factors that influence their profitability. It is hoped that this research can be developed by other researchers. Because this research still has many weaknesses, such as the research sample of only 24 banks out of 42 banks listed on the Indonesian Stock Exchange.

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