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Research Paper

Bank Specific Factors that Affect Credit Risk

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Abstract

Indonesian's banking has taken steps to improve financial performance by managing credit risk and supporting economic recovery in 2023, efforts carried out by banks include providing credit and acting as intermediaries with very vulnerable credit risk challenges.This research has purpose to find out which bank spesific internal factor can significantly affect the credit risk in a bank. The independent variables in this study are efficiency, leverage, liquidity, ROA, ROE, solvency, banking spread, banking size, and ownership concentration. While the dependent variable is credit risk using NPL and Z-Score. The study used panel data regression models to test the data collected from 98 banks registered with OJK over three years (2020-2022). The results stated that leverage, ROA, ROE, solvency, bank size, have a positive influence on ZScore, while efficiency, liquidity, and bank spread have no influence on Zscore. The results also show that efficiency and ROA have a positive influence on NPL. Liquidity, ROE, solvency, bank spread, bank size, and ownership concentration variables have an influence on NPLs and leverage has no influence on NPL. Additionally, investors should be able to use this research's insights about company performance to get a general understanding of the credit risk associated with linked companies, which they can use to inform their investment decisions.

Keywords: *Credit Risk, Efficiency, Leverage, Liquidity, Ownership Concentration*

INTRODUCTION

Indonesian banking has taken steps to manage credit risk and support economic recovery in 2023, One of those is for the banking sector to target moderate loan growth, with expectations of 10 -12%. This cautious approach followed the rapid expansion that occurred the previous year. OJK recorded growth in bank lending of 11,35% when compared to records in the previous year. Efforts to improve financial performance carried out by banks include providing credit and acting as intermediaries with very vulnerable credit risk challenges. One of the main causes of the failure of the banking sector in Indonesia is excessive credit risk which could possibly result in the collapse of the entire financial system

The external bank spesific factors and internal bank spesific factors play distinct roles in shaping a bank's operations and performance. The internal bank spesific factors directly influenced by its daily operations and its includes credit risk management practices and financial stability. The aim of the current research is to identify variables that influence financial stability in the banking sector such as kredit trisk,liquidity risk, funding risk,a combination of credit and liquidity risks which are used in this research as an analysis of bank-spesific impacts related to bank financial stability. In this examination, variable possession focus was added by research by Naili & Lahrichi (2022), which demonstrates that ownership concentration may influence bank credit risk in addition to bank efficiency and size. The value of non-performing loans (NPL) indicates how ownership concentration affects credit risk (NPL).

LITERATURE REVIEW

Credit Risk

The risk posed by debtor default is known as credit risk or counterparties to fulfill their obligations. This research uses indicators from Non-Performing Loans and ZScore, if the NPL has a

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high value it can cause one of the ratios to measure credit quality and ZScore is an instrument that can estimate the health of a bank to avoid the possibility of bankruptcy.

Efficiency

Efficiency is a ratio used to control a bank's operational costs efficiently and effectively. If the Company cannot have control over its operations, it will cause their loan portfolio to increase.

Leverage

Leverage is the level of a company's long-term and short-term ability to use assets to increase shareholder profits. The danger that companies often encounter is the use of debt.

Liquidity

Liquidity is the level of a company's ability to meet short-term financial obligations. A company is said to be in a "liquid" condition if it is able to fulfill its financial obligations on time.

Return On Asset

ROA is a profitability ratio to assess the ability of a company to earn profits through assets. The higher the ROA, the higher the level of asset productivity to obtain net profits.

Return On Equity

ROE is a ratio that shows the company's ability to use its capital to obtain maximum profits. The higher ROE, the stronger the company's value.

Solvency

Solvency is a ratio used to measure the amount of debt to offset the assets owned by a company. So the calculation uses debt to assets and debt to equity ratio.

Bank Spread

Banking spread is the difference between the interest rate that will be paid by a financial institution or bank on savings or deposits and the interest rate that will be charged to the borrower.

Banking Size

Banking size is the size of the company as seen from the total assets owned by the company which can be used for the company's operational activities.

Ownership Concentration

The percentage of a company's shares held by its largest shareholder is known as ownership concentration. Concentration of ownership can influence the increase in company value by increasing the control capacity of shareholders.

Following on the aforementioned explanation, Figure 1 presents the research framework.

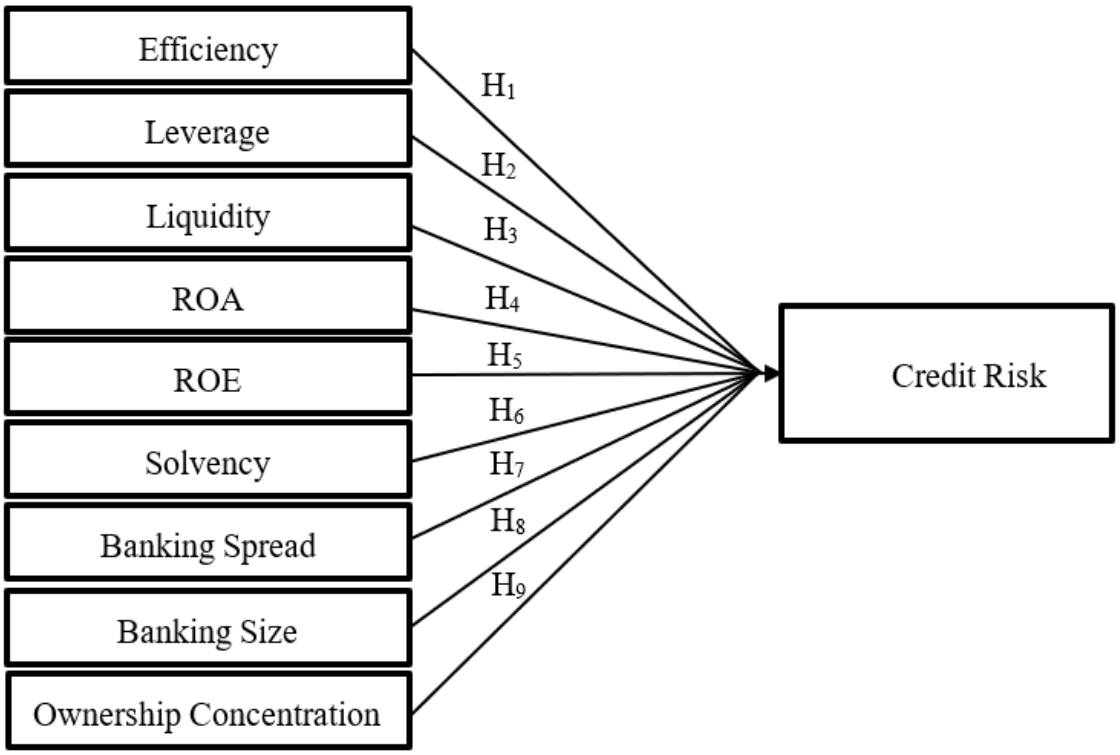

Figure 1. Framework

RESEARCH METHOD

The variables and measurements used in this research intend to determine the relationship between the independent variable and the dependent variable, each measurement of which is described as follows:

Table 1. Identification and Measurement of Variables

Variable Type	Variable Name	Symbol	Definition of Operational Variables	Reference
Dependent Variable	Credit Risk	ZScore	$\frac{ROA + \frac{Equity}{Assets}}{\sqrt{ROA}}$	(Khan et al., 2023)
		NPL	$\frac{Non\ Performing\ Loans}{Total\ Loans}$	(Khan et al., 2023)
Independent Variable	Efficiency	EF	$\frac{Operating\ Expenses}{Operating\ Income}$	(Antony & Suresh, 2023)
	Leverage	LEV	$\frac{Total\ Equity}{Total\ Liabilitas}$	(Khan et al., 2023)
	Liquidity	LIQ	$\frac{Total\ Loans}{Total\ Deposit}$	(Khan et al., 2023)
	Return on Assets	ROA	$\frac{Net\ Income}{Total\ Assets}$	(Khan et al., 2023)
	Return on Equity	ROE	$\frac{Net\ Income}{Total\ Equity}$	(Khan et al., 2023)
	Solvency	SOLV	$\frac{Total\ Equity}{Total\ Assets}$	(Goswami, 2022)

Variable Type	Variable Name	Symbol	Definition of Operational Variables	Reference
	Banking Spread	SPRD	$(Lending\ Rate\ -\ Deposit\ Rate) \times 100\%$	(Hunjra et al., 2020)
	Banking Size	SIZE	Total assets	(Rachman, 2023)
	Ownership Concentration	OC	$\frac{Total\ share\ held\ by\ ownnership > 5\%}{Total\ Shares\ Equity}$	(Anantiputeri et al., 2023)

Due to the indirect nature of the data collection, this study uses secondary data. This study uses bank data from 68 banks that were registered with the OJK 2023 between 2019 - 2022. Access to the Indonesian Stock Exchange website and the websites of each sample company served as the data source for this study.

This study's data analysis technique is the panel data regression method. The purpose of this approach is to investigate and evaluate the impact of the variables in the preceding column. The common effect, fixed effect, and random effect panel data models are all components of panel data regression. The software e-views 9 is used to process and test the available data.

In order to quantify the impact of bank-specific characteristics on credit risk, this study employs two regression models. The first model is as follows:

Model 1:

$$CR_{i,t} = \alpha + \beta_1(EF)_{i,t} + \beta_2(LEV)_{i,t} + \beta_3(LIQ)_{i,t} + \beta_4(ROA)_{i,t} + \beta_5(ROE)_{i,t} + \beta_6(SOLV)_{i,t} + \beta_7(SPRD)_{i,t} + \beta_8(SIZE)_{i,t}\,\beta_9(OC)_{i,t} + \mu_{i,t} \quad \text{.....(1)}$$

Model 2:

$$Z\text{-}Score = \alpha + \beta_1(EF)_{i,t} + \beta_2(LEV)_{i,t} + \beta_3(LIQ)_{i,t} + \beta_4(ROA)_{i,t} + \beta_5(ROE)_{i,t} + \beta_6(SOLV)_{i,t} + \beta_7(SPRD)_{i,t} + \beta_8(SIZE)_{i,t}\,\beta_9(OC)_{i,t} + \mu_{i,t} \quad \text{.....(2)}$$

Notes:

CR	=	Credit Risk
EF	=	Efficiency
LEV	=	Leverage
LIQ	=	Liquidity
ROA	=	Return on Assets
ROE	=	Return on Equity
SOLV	=	Solvency
SPRD	=	Bank Spread
SIZE	=	Bank Size
OC	=	Ownership Concentration
μ	=	error item

FINDINGS AND DISCUSSION

Chow Test

If the overall model results, as shown in the chow test results table, indicate that the cross section Chi-square probabilistic value <0.05, then the decision that was made was rejected, and the model that was used was a Fixed effect one.

Table 2. Chow Test Result

Model	Dependent	Chi-square	Prob	Decision
1	NPL	207.162930	0.0000	Rejected H_0, Fixed Effect selected
2	ZSCORE	163.082036	0.0000	Rejected H_0, Fixed Effect selected

Hausman Test

The decision to use the Fixed effect model for this study was made based on the table of Hausman test results.

Table 3. Hausman Test Result

Model	Dependent	Chi-square	Prob	Decision
1	NPL	0.000000	1.0000	Accepted H_0, Random Effect selected
2	ZSCORE	44.677450	0.0000	Rejected H_0, Fixed Effect selected

Goodness of Fit Test $(R)^2$

The adjusted r-square value for model 1 is 0.109884, as determined by the results of the goodness of fit test. This indicates that the independent variables are able to account for 10.9884 percent of the variation in credit risk, and the remaining 89.0116% of the variation in credit risk can be explained by additional factors that are not included in this model. The adjusted r-square value for Model 2 is 0.867579. This indicates that the independent variables are able to account for 86.7579% of the variation in the company's Zscore, and the remaining 13.2421% explains that Zscore can be affected by other factors that are not included in this model.

Table 4. Goodness of Fit Test $(R)^2$ Result

Model	Dependent	R^2	Adjusted R^2
1	NPL	0.139445	0.109884
2	ZSCORE	0.904715	0.867579

Concurrent Test

The probability F-statistic in model 1 yields a value of 0.000000<0.05 in light of the test results. As a result, the regression model is appropriate for this study because the analysis's findings demonstrate that the dependent variable, credit risk, is influenced by the independent variables. The result of Model 2 is 0.000000<0.05. Subsequently the consequences of the examination in this study demonstrate that the autonomous factors impact the reliant variable, specifically z score so the relapse model is attainable to use in this review.

Table 5. Simultaneous Test Result (F-test)

Model	Dependent	F-Statistic	Prob	Decision
1	NPL	4.717198	0.000000	Rejected H_0
2	ZSCORE	24.36183	0.000000	Rejected H_0

Individual Test (T-test)

Efficiency (EF) has positive and significant influence on efficiency against NPLs. The results are the same as those of Ayunku & Uzochukwu (2020). The high efficiency figures indicate the poor management of the bank over the control of operating costs resulting in a high risk of failure to pay. Efficiency (EF) has a negative and significant influence between efficiency and Zscore. This proves

that the smaller the efficiency figure, the healthier a bank is and indicates the bank's ability to give credit and be able to cope with credit risk.

Table 6. Regression T-test Result

Independent Variable	Dependent Variable				Note
	NPL		*Z score*		
	Coefficient	Probability	Coefficient	Probability	
Constanta	2.243525	-	30.73690	-	
EF	1.042435	0.0000	-1.166174	0.0000	Significant positive to NPL, Significant negative to Zscore
LEV	0.136848	0.2315	-0.466954	0.0094	Significant Negative to Zscore
LIQ	-0.027051	0.2629	0.426894	0.0000	Significant positive to Zscore
ROA	-1.341807	0.7467	-23.73523	0.0933	Not Significant
ROE	0.281935	0.6514	6.851787	0.0003	Significant positive to Z score
SOLV	-3.204594	0.0456	1.655227	0.0000	Significant negative to NPL, Significant positive to Zscore
SPRD	-0.059433	0.0008	0.096145	0.0333	Significant negative to NPL, Significant positive to Zscore
SIZE	-0.168612	0.0001	-1.071.156	0.0001	Significant negative to NPL, Significant negative to Zscore
OC	-0.982369	0.0293	1.828.109	0.0000	Significant negative to NPL, Significant positive to Zscore

This study's findings indicate that leverage has no significant impact on NPLs. The results are the same as those of Ayunku and Uzochukwu (2020). Leverage (LEV) has a significant influence between leverage and Zscore. As a result, Leverage and Zscore both have a negative and significant impact. The study found that banks with low leverage rates tended to mark well-run management of companies marked by low dependence on capital loans or debt.

Liquidity has significant influence with NPL. This indicates that liquidity does not influence corporate credit risk in line with Stefano and Dewi (2022) finding. The high liquidity of the bank indicates that the customer funds held by the bank in the form of savings are more often used to lend to the debtor. With the increasing amount of liquidity, surveillance is also becoming more stringent, affecting credit risk. However, the level of debt that the banks are lending is also dependent on the decision made by the bank to loosen the policy so that the credit risk is also higher. So the low level of loans does not necessarily reflect credit quality where credit quality is not always associated with credit growth. Liquidity also reflects how banks can manage customer funds in providing profitable interest income so that savings cannot be described as credit risk factors. Liquidity has positive and significant influence with Zscore. These results show that high levels of liquidity indicate that banks can provide loans due to good bank conditions.

The results of both models show that ROA does not influence credit risk, which is consistent with the research carried out by Farag et al., (2023). High income indicates a low level of credit risk because most of the bank's income and assets come from financing which signals that banks are more careful in lending. But this can't happen if banks don't follow the policies they're supposed to

follow resulting in increased credit risk.

Return on Equity (ROE) has a significant and positive relationship with Return on Equity on Zscore, indicating that the bank's high income may also pose a high credit risk. However, Return on Equity (ROE) has no significant influence on NPL. The results of this study are in line with the research of Yusuf et al., (2021) and Antony and Suresh (2023).

Solvency (SOLV) has a negative and significant influence with NPL. The results are in line with the results of the research conducted by Hasnaoui and Hasnaoui (2022) and Naili and Lahrichi (2022). This indicates the higher the solvency value, the smaller the credit risk figure because banks can cover existing risks with the capacity they have which is seen in the bank's Solvency. Solvency (SOLV) has a positive and significant influence with Zscore. The higher the solvency rate then the company will also be more prepared to face any kind of risk from the use of assets. Banks improve their ability to cope with credit risk through capital increases. These results are in line with Farag et al., (2023).

The banking spread (SPRD) has a negative and significant influence between the Banking Spread on NPLs. These results are similar to the results of the study conducted by Khan et al., (2023) and Hasnaoui and Hasnaoui (2022). The higher the banking spread, the lower the credit risk due to the interest rate charged by the borrower so that not a few debtors feel objection to the high-interest rate. The banking spread (SPRD) has a positive and significant influence with Zscore. These findings indicate that a high interest rate is followed by a high Zscore, which indicates increased income as a result of higher interest rates. However, this is distinct from credit risk due to the debtor's difficulty repaying loans, which increases the rate of credit risk as well. The findings are consistent with Morina (2020).

The bank size (SIZE) has a negative and significant influence with NPLs. These results are consistent with the results of the studies of Khan et al., (2023), Hasnaoui and Hasnaoui (2022), and Anantiputeri et al., (2023). Large banks are usually more able to analyze their activities so that they can reduce all existing risks including credit risk. The bank size (SIZE) has a negative and significant influence with Zscore. These results indicate the size of the company is not necessarily the state of the bank in good condition and it indicates poor management in managing the company's assets.

Ownership concentration (OC) has a significant negative influence with NPLs. The results showed that the high concentration rate of the ownership could suppress the credit risk figure due to the existence of competition between banks and stricter supervisory controls and the presence of investors in monitoring the performance of banks so that management tends to suppress all existing risks including credit risk. The results of this study are in line with the results of Antony and Suresh (2023). Ownership concentration (OC) has a positive and significant influence with Zscore. These results showed that the high concentration rate of the ownership resulted in a high number of companies that mark management running the company well because there was supervision carried out by the investors so that the bank is in a healthy condition.

CONCLUSIONS

Liquidity, ROE, Solvency, Bank Spread, and ownership concentration have a positive influence on Zscore. Leverage, Bank size, and Efficiency have a negative influence on Zscore. Efficiency has a positive influence on NPL. Solvency, Bank Spread, Bank Size, and ownership concentration have a negative influence on NPL.

It is anticipated that this study will provide an understanding of the company's credit risk. So that companies pay attention to factors that affect credit risk in order to maintain or reduce the risk of default, and it is hoped that managers can make decisions or solutions if there is a problem regarding a factor related to this research. As a result of this research, which is anticipated to provide input on company performance, investors will be able to obtain an overview of the credit

risk that is owned by related businesses.

LIMITATION & FURTHER RESEARCH

Interested parties, including company managers, should take into account certain limitations based on the research. These limitations include factors that can influence credit risk, such as independent variables of efficiency, leverage, liquidity, ROA, ROE, solvency, bank spread, bank size, and ownership concentration, as these can minimize credit risk. For future researchers who will conduct the same research, it is recommended to be able to examine other sectors and a longer period of time and is expected to add other variables in order to be able to show other factors that can influence credit risk. Among the variables that can be added is corporate governance (Sadaa et al., 2023).

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