
EFFECTS OF FINANCIAL RATIOS ON FINANCIAL DISTRESS: EVIDENCE FROM STATE-OWNED BANKS LISTED ON THE INDONESIA STOCK EXCHANGE

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ABSTRACT

This study analyzes the determination of financial ratio in predicting the financial distress by using Altman Z' Score as a proxy of financial distress. The data source used is secondary data from four state-owned Banks that listed on Indonesia Stock Exchange over 15 years from 2007 to 2021, totaling 240 samples. The process used is quantitative method with multiple linear regression. The empirical result of this study showed that the Current Ratio, Cash Ratio, Loan To Deposit Ratio (LDR), Return On Asset (ROA) and Capital Adequacy Ratio (CAR) are significant determinants of financial distress of the state-owned banks and can be used as an early warning system to prevent financial distress, on the other hand, debt to asset (DAR), debt to equity (DER) and return on equity (ROE) is insignificant determinants of financial distress of the stated-owned banks that listed on the Indonesia Stock Exchange. The results of this study are expected to help and provide information that can be used for banking companies to assist management in evaluating the results of its operations, especially in maintaining financial ratio. The findings can provide regulatory authorities in Indonesia with instruments to assist in detecting financial distress or corporate failure before they occur to minimize costs, and enriched the theoretical and empirical literatures with related studies on failure prediction.

Keyword: State-owned Bank, Financial Distress, Financial Ratio, Altman Z-Scores.

1. INTRODUCTION

As the country's economic foundation, banking is central as intermediation, and a bank failure can cause a domino impact on other industries. The global crisis due to COVID-19 that moved so fast has also impacted Indonesia's Banks. Before the COVID-19, the exchange rate remained stable at IDR 14,000 from 2018 until 2019. However, the position of the rupiah's currency rate had to plummet due to the spread of COVID-19, whereas in March 2020, the IDR continued to decline, touching IDR 16,824. When the rupiah's value falls, the price of imported raw materials rises, and neither does the currency of foreign debt. It will be a significant issue in a variety of industries. This condition is known as financial distress. The evidence shows that in the range of the year 2019 until year 2021 the banks has experienced considerable decrease in their net profit. Financial distress is used as an early warning or an early indicator before bankruptcy occurs (Shubhan, Indrawati & Utari, 2020). The emergence of various bankruptcy prediction models is important to identify and even improve situations before they reach a point of crisis. The researcher applied the Altman's Z'-Score concept as a predictor for assessing financial distress. Financial statements can

measure bankruptcy predictions by analyzing the ratio of financial statements issued by the company concerned. This research evaluated financial performance by analyzing financial ratios of four state-owned banks listed on Indonesia Stock Exchange, as shown on Table 1. At the end of 2020, the market capitalization of these four state-owned banks has a value of IDR 1.812 trillion. This value equals 24.99% of the entire market capitalization of the Indonesia Stock Exchange (IDX), therefore, the role of state-owned banks in Indonesia is very strategic in carrying out economic recovery and economic growth after the COVID-19 Pandemic.

Table 1. State-Owned Banks Listed on Indonesia Stock Exchange

No	Company Name	Company Code
1	PT. Bank Rakyat Indonesia Tbk,	BBRI
2	PT. Bank Negara Indonesia Tbk	BBNI
3	PT. Bank Tabungan Negara Tbk	BBTN
4	PT. Bank MandiriTbk	BMRI

Source: Derived from Indonesia Stock Exchange (2021)

Indonesian Law Number 37 Year 2004 declared no distinction of bankruptcy based on the ownership. Therefore, a state-owned Bank bankruptcy must be viewed as the bankruptcy of an ordinary legal entity (Shubhan et al., 2020). This phenomenon shows that detecting financial distress of State-Owned Banks before they occur is an essential area of research. A company's financial wellness substantially impacts its ability to compete in the marketplace. Therefore, due to the limited research on banking financial distress, this study focuses on the internal determinants of financial distress to the State-Owned Banks on the Indonesia Stock Exchange. By selecting Altman Z"-Score model as a proxy to financial distress, this research aimed to explore the role of variables in predicting the financial distress (Altman Z"Score) and assess the relationship between financial ratio, such as Current Ratio, Cash Ratio, Loan to Deposit Ratio, Debt to Asset Ratio, Debt to Equity Ratio, Capital Adequacy Ratio, Return on Asset and Return on Equity, and financial distress to determines which variable can predict the financial distress. The result of this paper contributed to fill the gap to the research of financial distress in Banking sectors in Indonesia and provided further empirical evidence that could help related parties in the future.

2.LITERATURE REVIEWAND HYPOTHESES DEVELOPMENT

Determinant of Financial Distress

Evaluation of financial risks is one of the essential predictions in determining the financial health of financial institutions. Nasruddin (2020) examined the internal factors that affect the potential for bankruptcy based on the financial ratios in the bank's annual report. In this study, the financial ratios used by researchers to investigate the factors that influence the potential for bank bankruptcy are Liquidity Ratios (Current Ratio, Cash Ratio, Loan to Deposit Ratio), Solvency ratio (Debt to Asset Ratio, Debt to Equity Ratio), Capital Ratio (Capital Adequacy Ratio), and Profitability Ratio (Return on Asset, Return on Equity).

The emergence of various bankruptcy prediction models is financial distress anticipation because these models may be used as an instrument to identify and even repair conditions before they reach a bankruptcy condition (Simbolon, 2018). An early warning system model for

predicting financial distress must be developed as a tool for identifying bankruptcy conditions even before it reaches a crisis condition (Sirait, 2016). The Altman model is one method for predicting bankruptcy with a high accuracy level. When formulating the Z model, Altman examined 22 financial ratios from 1960 to 1965, consists of 33 bankrupt manufacturers and 33 non-bankrupt manufacturers. Altman used financial ratios to construct his model. This research will use the Altman Z score modification (Z" Score) adapted from the research of Kusdiana (2014). The Altman Z"-Score model is the best in predicting the level of bankruptcy risk and can be practiced in all companies, private companies, manufacturing companies, and non-manufacturing companies. Another research also found that the accuracy of the bankruptcy model shows that Altman's Z"-score rated best with the validity of the bankruptcy estimation model by 100% (Sucipto & Muazaroh, 2017).

The relationships between Liquidity Ratio and Financial Distress

The liquidity ratio is important in measuring bank financial performance. According to Bank Indonesia, this ratio is one of the references for assessing bank soundness (Suryani & Habibie, 2018). The liquidity ratio in this study expressed by current ratio, cash ratio and loan to deposit ratio. Current ratio is a significant financial indicator for predicting financial distress. Cash ratio is an important financial indicator used to measure how much cash or cash equivalents are available to pay the short-term debt. The Loan to Deposit Ratio is an indicator of its ability to repay debts to customers who have put their money in the bank with credits that have been given to debtors (Ferbian et al., 2018). Kristanti, Rahayu, and Huda (2016) found that the current ratio is the most significant financial ratio in predicting the occurrence of financial distress. The research of Arini et al. (2021) showed that Current ratio liquidity is influential but not significant to financial distress. Gunawan and putra (2021) stated that financial distress negatively affected current ratio liquidity. Previous researches by Nurhayati et al. (2017) and Khafid et al. (2019) revealed that the current ratio does not affect financial distress. Ruslinawati (2017) discovered that the cash ratio has a substantial impact on financial distress. In contrast, the study of Ferbian et al. (2018) revealed that cash ratio has no significant effect on financial distress. One of the financial ratios that can be utilized as a proxy for determining the level of liquidity risk is the Loan to Deposit Ratio (LDR). Suryani and Habibie (2018) concluded that LDR had a significant effect on the estimation of the banking crisis. The previous empirical finding of Kowanda et al. (2015) demonstrated that LDR has a positive and significant influence, i.e., poor working capital management will raise the chances of bank distress. The relationship between liquidity ratios and financial distress has been a matter of debate in recent years. Therefore, this study proposed the following hypotheses to examine the issues.

H1: The effect of Liquidity Ratio on financial distress of stated-owned banks is significant.

H1a: The effect of Current Ratio on financial distress of stated-owned banks is significant.

H1b: The effect of Cash ratio on financial distress of stated-owned banks is significant.

H1c: The effect of Loan to deposit ratio on financial distress of stated-owned banks is significant.

The relationships between Solvency Ratio and Financial Distress

The solvency ratio is an important financial indicator for predicting financial distress (Sucipto & Muazaroh, 2017). The debt to total asset ratio measures how far the funds are granted by

creditors. Debt to equity ratio is a ratio that measures the level of solvency of a company. The higher those ratios indicate, the worse financial distress is (Wahyuni, Farisi & Jufrizen, 2020). According to the findings of Sirait (2016), debt to assets has a strong negative effect on financial distress. However, Gunawan and Putra (2021) found that Debt to Assets does not significantly correlates with the proxy of financial distress. Arini et al. (2021) stated that Debt to assets ratio has a positive effect on financial distress. The results implied that the total debt to assets ratio is the most significant financial ratio in predicting the occurrence of financial distress. Also, research by Nasruddin (2020) showed a significant relationship between the ratio debt to assets and financial distress. Widati and Pratama (2015) stated that the Debt to Equity ratio had a positive and significant effect on Financial Distress. In contrast, Wahyuni et al. (2020) showed that the partially Debt to Equity Ratio has no significant effect on Financial Distress. The relationship between solvency ratio and financial distress has been in debate. The solvency ratio in this study will be measured by debt to assets ratio and debt to equity ratio. Therefore, this study proposed the following hypotheses to examine the issue.

H2: The effect of Solvency Ratio on financial distress of stated-owned banks is significant.

H2a: The effect of Debt to asset on financial distress of stated-owned banks is significant.

H2b: The effect of Debt to equity on financial distress of stated-owned banks is significant.

The relationships between Capital Adequacy Ratio and Financial Distress

Capital Adequacy Ratio (CAR) is a ratio used to measure capital and write-off reserves covering loans, especially risks incurred when interest rates are not collected. Analysis of capital ratio can provide information of the emergence of financial distress (Simbolon, 2018). A low CAR ratio means that the bank has less capital to cover risky assets. It is more likely that the bank will experience trouble conditions because the capital owned by the bank is not sufficient to bear the decline in the value of risky assets (Suryani & Habibie, 2018). The greater the CAR percentage of a bank, the greater the bank's resilience in dealing with the depreciation of bank assets arising from problematic assets. Simbolon (2018) proved that Capital ratio has a negative effect on financial distress. In addition, the finding of Kwanda et al. (2014) showed that CAR has a negative implication but is insignificant to the probability of bank distress. However, the research of Rahmania and Hermanto (2014) discovered that CAR has a positive and insignificant effect. Another research by Widati and Pratama (2015) also stated that the CAR ratio positively affects financial distress. Based on the descriptions above, there is still a debate on the relationship between the capital factor and financial distress. Therefore, this study proposed the following hypotheses to examine the issue.

H3: The effect of Capital Adequacy Ratio on financial distress of stated-owned banks is significant.

The relationships between Profitability Ratio and Financial Distress

Profitability ratio is used to assess the company's ability to generate profits. Return on Assets (ROA) is one of the components in the profitability ratio. Since the company's principal existence is based on the strength of earnings from assets, this ratio seems very suitable for studies dealing with company financial distress. The finding of Gunawan and Putra (2021) showed that the ROA ratio negatively influenced financial distress, which is consistent with the result of Nurhayati et al. (2017). However, Khafid et al. (2019) found that ROA cannot predict the financial

distress condition. In comparison, Jaafar et al. (2018) depicted that the lower the ROA ratio shows poor financial performance in which the company is unable to maximize its assets to generate profits, resulting in lower profitability and a higher risk of financial distress. According to the research of Sirait (2016) revealed that ROE significantly positively influenced financial distress. The research finding of Nurcahyono and Sudharma (2014) showed that the ROE has a significant negative effect on the possibility of financial distress in a company. The higher the ROE level, the lower the probability that the company will experience financial distress (Suryani & Habibie, 2018). Based on the literature review, there is still a debate on the relationship between the earning factor and profit growth. Therefore, this study proposed the following hypotheses to examine the issue.

H4: The effect of Profitability Ratio on financial distress of stated-owned banks is significant.

H4a: The effect of Return on Asset on financial distress of stated-owned banks is significant.

H4b: The effect of Return on Equity on financial distress of stated-owned banks is significant.

3. METHODOLOGY

Research design

This study uses secondary data in the form of financial data of Quarterly financial reports from 2007 to 2021. The reason for selecting this research period is to find out more specifically and broadly to get better research results and examine indications of financial distress in banking with the latest year. The conceptual framework is proposed as the followings

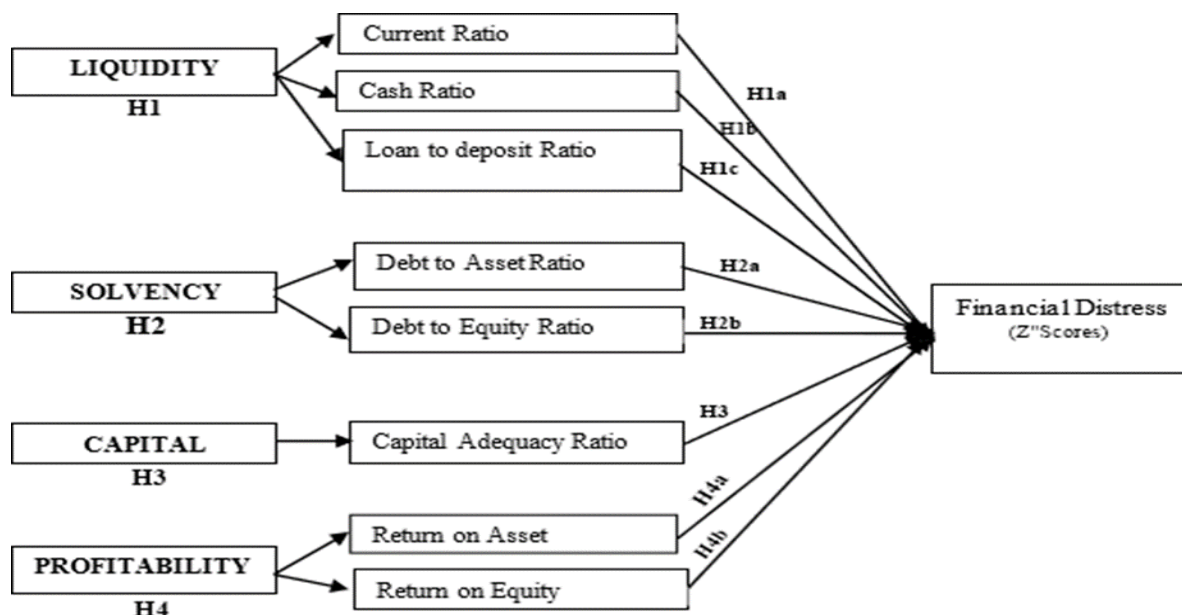


Figure 1-Hypothesized model of the research framework

Sample and Data Collection

The sampling method used in this study is purposive sampling. The sample criteria to be used are:

1. Bank that are listed on Indonesia Stock Exchange from 2007 to 2021.
2. Provide complete financial reports and published the reports every year for the period 2007-2021.
3. Have complete data related to the variables used in this research.

Based on the criteria determined above, this research obtained a sample of four state-owned banks with a completed quarterly financial statement for the 15 years from 2007 to 2021 totaling 240 samples. The data used in this study are secondary data published on the Indonesia Stock Exchange website (www.idx.co.id), the website of the Financial Services Authority (www.ojk.co.id), and the website of Bank Indonesia (www.bi.co.id) as well as the websites of each bank.

Data Analysis

In this research, Z”Score was used to represent the level of financial distress experienced by state-owned banks. The following is a modified Altman Z”Score model adapted from the research of Rahmanet et al. (2021)

$$Z = 6,56 X1 + 3,26 X2 + 6,73X3 + 1,05X4$$

Where:

Z = Financial distress

X1 = Working Capital/Total Assets X2 = Retained Earnings/ Total Assets

X3 = Earnings Before Interest/ Total Assets

X4 = Book Value of Equity/ Book Value of Total Debt

As the classification shown on Table 2, Altman applies the threshold for a healthy company is if the Z- Score value > 2.6, "Safe zone" is categorized as a healthy company. Conversely, "Distress Zone" mean if the company's Z-Score is below 1.1 then the company can be declared that the firm has the potential to go bankrupt. If the score is 1.1 < Z-Score < 2.6, the firm in this case is neither in the bankrupt category nor in the healthy category and has a moderate chance of bankruptcy, this middle condition is called the gray category or "grey zone"(Kusdiana, 2014).

Table 2 Altman Z-Score Modification Classification

Score	Condition
Z > 2,6	Safe Zone
1,1 < Z < 2,6	Grey Zone
Z <1,1	Distress Zone

Source: Derived from Kusdiana(2014)

To test the hypotheses, multiple linear regression analysis was applied in this study to examine the dependent variable (Z”Score) in relation to independent variables classified as four ratio: liquidity ratio, solvency ratio, capital ratio and profitability ratio. Liquidity ratio was measured by current ratio, cash ratio and loan to deposit ratio (LDR). Solvency ratio was evaluated by debt to asset (DAR) and debt to equity (DER). Capital ratio was measured by capital adequacy ratio (CAR) and profitability ratio consisted of return on asset (ROA) and return on Equity (ROE). To have a comprehensive picture of the ways in which the variables are related to one another, multiple regression analysis was carried out in this study to investigate the relationship between financial characteristics and financial distress. The following Multiple Regression Model was adapted in this study:

$$Z''\text{Score}_{i,t} = \beta_0 + \beta_1\text{CR}_{i,t-1} + \beta_2\text{CashRatio}_{i,t} + \beta_3\text{LDR}_{i,t} + \beta_4\text{CAR}_{i,t} + \beta_5\text{DAR}_{i,t} + \beta_6\text{DER}_{i,t} + \beta_7\text{ROA}_{i,t} + \beta_8\text{ROE}_{i,t} + \epsilon_{i,t}$$

Where:

- β_0 is a constant
- i is a company
- $t-1$ is a quarter
- $Z''\text{Score}$ is Altman $Z''\text{Score}$
- CR is Current Ratio
- CashRatio is Cash Ratio
- DAR is Debt to Asset
- DER is Debt to Equity
- CAR is Capital Adequacy Ratio
- ROA is Return on Asset
- ROE is Return on Equity
- ϵ is Standard error.

4. RESULT AND DISCUSSION

Descriptive Statistics

The Bank of Indonesia considers a bank's liquidity to be healthy if the current ratio is between 70% and 90%. If a bank's current ratio is less than 70%, it may be difficult for a bank to reach its short-term obligations. In this study, banks have a mean current ratio value of 102.67%, as the results shown on Table 3. According to the regulations of the Bank of Indonesia, these four stated banks can be classified as healthy. According to regulatory standards of the Bank of Indonesia, a bank's liquidity level is considered healthy if the cash ratio is between 70% and 90%. According to the results shown on Table 3, banks in this study have a mean current ratio value of 69.54%, which mean they can be classified as healthy. According from regulatory standards of the Bank of Indonesia, a bank's liquidity level is considered quite healthy if the LDR ratio is between 85% and 100%. If a bank has an LDR < 75%, It is asserted that banks hold an excessive amount of liquidity instruments, which places income pressure on banks in the form of high costs for the maintaining of unused cashflows. While the LDR > 100%, the bank is considered not liquid (lack of liquidity). In this study, banks have a mean LDR value of 89.66% which is ideal with Bank of Indonesia regulations. According from regulatory standards of the Bank of Indonesia, a bank's capital level is considered very healthy if the CAR ratio is higher than 12%, In this study, banks have a mean CAR value of 18.39% indicates that the bank is expansive enough in investing assets in obtaining income for the bank.

Table3. Descriptive Statistical Results for Operational Variables

	N	Minimum	Maximum	Mean	Std. Deviation
Altman Z”Scores (Y)	240	1.147	13.438	8.02611	3.581577
Current Ratio	240	67.700	136.100	102.67892	9.142206
Cash Ratio	240	48.400	107.700	69.54992	12.902135
LDR	240	21.210	148.730	89.66021	15.637181
DAR	240	40.030	88.370	53.68871	9.613199
DER	240	75.400	235.900	119.13067	39.830667
CAR	240	12.020	83.970	18.39108	5.206755
ROA	240	.130	8.970	2.66771	1.267761
ROE	240	5.110	81.350	21.7635	12.94316
Valid N (listwise)	240				

Source: Derived from secondary data processed with SPSS 25

Based on table 4, the results of the Z”-Score calculation from 2007 to 2021 showed there were several years that experienced the 'Grey Zone,' which is the years 2007, 2008, 2009, 2010, 2020, and 2021 showed a score of $1.1 < Z”\text{-Score} < 2.6$ in this case the company is neither in the bankrupt category nor in the healthy category and has a moderate chance of bankruptcy. In 2007, one company entered the gray zone, namely BMRI. It is recorded at a value of $1.24 < 2.6$ at the end of the year, then in 2008, BBRI, BBNI, BBTN and BMRI is in the gray zone marked with a value of $Z” < 2.6$. In 2009, at the beginning of the year, BBNI recorded a value of $1.49 < 2.6$, and BMRI recorded $2.15 < 2.6$. In 2010 one company entered the gray zone, namely BMRI is recorded a value of $2.37 < 2.6$. Confirmed by the collected data of the Z”Score calculation, the company's position entering the gray zone again occurred in 2020 where the company recorded a Z” value < 2.6 , namely BBRI, BBNI, BBTN and BMRI and in early 2021 these four companies are still in the gray zone with a value of Z” Score $1.85 < 2.6$ owned by BBRI, Z”Score value of $2.55 < 2.6$ owned by BBNI, another value is $2.69 < 2.6$ owned by BBTN and Z” Score value of $2.40 < 2.6$ owned by BMRI until at the end of 2021 they have a Z value > 2.6 and can be categorized as a healthy company "Safe zone."

Table 4 Altman Z”-Score Calculation Results “Grey Area”

YEAR		COMPANY CODE			
		BBRI	BBNI	BBTN	BMRI
2007	Q1	3.33	2.85	2.77	3.20
	Q2	2.91	2.94	2.73	1.24
	Q3	3.37	3.76	2.94	3.63
	Q4	3.68	3.57	3.43	1.46
2008	Q1	2.77	1.35	2.41	3.93
	Q2	2.34	1.86	2.42	1.40
	Q3	2.05	1.37	4.26	1.43
	Q4	4.49	1.49	4.83	1.91
2009	Q1	7.71	2.46	2.72	2.15
	Q2	9.62	2.85	3.10	5.14
	Q3	9.05	6.85	7.04	5.12
	Q4	7.31	6.18	6.78	5.17
2010	Q1	9.05	7.05	6.82	2.37
	Q2	8.80	7.74	7.07	5.62
	Q3	9.53	7.88	7.61	6.42
	Q4	10.05	8.28	7.72	7.02
2020	Q1	1.30	1.55	2.27	2.51
	Q2	1.38	1.62	2.45	11.58
	Q3	1.15	7.61	2.58	11.26
	Q4	1.74	7.90	3.23	11.92
2021	Q1	1.85	2.55	2.69	2.40
	Q2	1.67	8.75	11.97	10.20
	Q3	2.76	2.75	11.85	3.09
	Q4	2.84	8.70	11.88	11.55

Notes:

BBRI company code of PT. Bank Rakyat Indonesia

BBNI company code of PT. Bank Negara Indonesia

BMRI company code of PT. Bank Mandiri

BBTN company code of PT. Bank Tabungan Negara

Source: Compiled by Researcher

Hypotheses Testing

Table 5 demonstrated the correlation coefficient among liquidity ratio, solvency ratio, capital ratio, profitability ratio and financial distress (Z”Scores). The p-value of current ratio is $0.000 < 0.01$, with the value of Pearson correlation is 0.471 therefore, current ratio has moderate to strong correlation with Z”Score, another ratio is cash ratio with p-value $0.000 < 0.01$ and the value of Pearson correlation is -0.404 therefore, cash ratio has moderate correlation with Z”Score, the result of the table 5 revealed that loan to deposit ratio (LDR) has p-value $0.000 < 0.01$ with the value of Pearson correlation is 0.504 therefore, loan to deposit ratio (LDR) has moderate to strong correlation with Z”Score, the p-value of debt to asset (DAR) is $0.095 > 0.01$ with the value of

Pearson correlation -0.108 this means that there is no correlation between debt to asset (DAR) with Z”Score, same with that the p-value of debt to equity (DER) is 0.085 > 0.01 with the value of Pearson correlation -0.111 therefore, there is no correlation between debt to equity (DER) with Z”Score. The p-value of capital adequacy ratio (CAR) is 0.832 > 0.01 with the value of Pearson correlation is -0.014 therefore, there is no correlation between capital adequacy ratio (CAR) with Z”Score, another variable return on asset (ROA) show the p-value 0.000 < 0.01 with the value of Pearson correlation is 0.297 has weak to moderate correlation with Z”Score and the p-value of return on equity (ROE) is 0.115 > 0.01 with the value of Pearson correlation is 0.102 this means that there is no correlation between return on equity (ROE) with Z”Score. Debt to asset ratio (DAR), debt to equity ratio (DER) capital adequacy ratio (CAR), and return on equity (ROE) has negative effects on financial distress (Z”Scores). Meanwhile, current ratio, cash ratio, loan to deposit ratio (LDR), return on asset (ROA), has positive effects on financial distress (Z”Scores). This is implied that current ratio, cash ratio, loan to deposit ratio (LDR), return on asset (ROA) has significant effect on financial distress (Z”Scores).

Table 5 Pearson correlation coefficient between financial ratio and Z”Score

	CASH RATIO	LDR	DAR	DER	CAR	ROA	ROE	Z”SCORE
CURRENT RATIO	-0.099 (0.125)	0.153 (0.018)	-0.143 (0.027)	-0.301 (0.000) **	-0.124 (0.054)	0.294 (0.000) **	0.015 (0.820)	0.471 (0.000) **
CASH RATIO		-0.034 (0.597)	-0.063 (0.332)	-0.079 (0.225)	-0.189 (0.003) **	0.293 (0.000) **	0.028 (0.669)	-0.404 (0.000) **
LDR			0.154 (0.017)	0.070 (0.280)	-0.037 (0.571) **	0.270 (0.000) **	0.010 (0.876)	0.504 (0.000) **
DAR				0.669 (0.000) **	-0.080 (0.217)	0.219 (0.001) **	0.042 (0.518)	-0.108 (0.095)
DER					0.012 (0.849) **	0.019 (0.773)	0.019 (0.774)	-0.111 (0.085)
CAR						0.021(.743)	0.047 (0.467)	-0.014 (0.832)
ROA							0.128 (0.047)	0.297 (0.000) **
ROE								0.102 (0.115)

** . Correlation is significant at the 0.01 level (2-tailed).

Table 6 indicated the value of R2 or the coefficient of determination was 0.601 that mean the current ratio, cash ratio, loan to deposit ratio (LDR), debt to assets ratio (DAR), debt to equity ratio (DER), capital adequacy ratio (CAR), return on assets ratio (ROA), and return on equity ratio (ROE) can explain 60.1% of the variation that occurs in financial distress, meanwhile the remaining 39.9% is determined by other indicators outside the scope of this study. Multiple linear

regression analysis is to obtain a comprehensive picture of the relationship among variables. Based on the results shown on Table 6, the multiple regression equations can be demonstrated as the following:

$$Z''\text{Scores} = -8.825 + 0.120CR - 0.086\text{CashRatio} + 0.109\text{LDR} + 0.064\text{CAR} + 0.889\text{ROA}$$

Table 6 Results of Multiple Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
(Constant)	-8.825	2.631		-3.354	0.001**
Current Ratio	0.120	0.022	0.270	5.562	0.000**
Cash Ratio	-0.086	0.012	-0.309	-6.984	0.000**
LDR	0.109	0.009	0.537	11.976	0.000**
DAR	-0.031	0.024	-0.076	-1.273	0.204
DER	-0.005	0.006	-0.048	-0.786	0.433
CAR	0.064	0.032	0.085	2.003	0.046*
ROA	0.889	0.186	0.247	4.778	0.000**
ROE	0.001	0.001	0.057	1.375	0.170
R ²	0.601				

*mean significant at the 0.05 level

**mean significant at the 0.01 level

Test for hypothesis 1

Hypothesis H1 addressed that there is a significant relationship between liquidity ratio (Current Ratio, Cash Ratio, Loan to Deposit Ratio) and Financial Distress of stated-owned banks. hypothesis H1_a stated that the effect of Current Ratio on Financial Distress of State-Owned Banks is Significant. The results shown on the table 6 revealed the P-value of Current Ratio is 0.000 < 0.05 and the regression coefficient is 0.120, thus, hypothesis H1_a is accepted. The findings that current ratio has a significant, positive effect on financial distress (Z''scores) was found in this study. The result supported the implication of Sirait (2016) that if the current ratio value increases, it will increase the value of Z''Score, which demonstrates that the company is in a healthy condition or reduces the occurrence of financial distress. In contrast to the study of Widati and Pratama (2015), which revealed that current ratio has no effect on financial distress, this study found the opposite. The hypothesis H1_b implies that the effect of Cash Ratio on Financial Distress of Stated-Owned Banks is Significant. According to the results presented on Table 6 demonstrated that the P-value of the cash ratio is 0.000 < 0.05 and the regression coefficient is -0.086, thus, hypothesis H1_b is accepted. This result implied that cash ratio has a negative and significant effect on financial distress (Z''scores). This research finding supported the previous study by Ruslinawati (2017) that showed the firm with a high amount of cash can bear short-term debt and decrease the chance of experiencing financial difficulties. The hypothesis H1_c states that the effect of Loan to Deposit Ratio (LDR) on Financial Distress of Stated-Owned Banks is Significant. Based on the results described on Table 6, the P-value of the Loan to Deposit Ratio (LDR) is 0.000 < 0.05 and the regression coefficient is 0.109, thus, hypothesis H1_c is accepted. The results indicated that the loan to deposit ratio (LDR) has a significant effect with a positive value on financial distress (Z''scores),

which implied that the firm is in good financial health or reduces the chances of experiencing financial distress. This study result strengthened the previous study by Suryani and Habibie (2018) that LDR had a significant effect on the prediction of the banking crisis. With the significant relationship between liquidity ratio and financial distress, it can be concluded that liquidity ratio (Current Ratio, Cash Ratio, Loan to Deposit Ratio) can be applied as an advance warning system to prevent financial distress of the stated-owned banks. Therefore, Hypothesis H1 was accepted. If the firm can increase their liquidity current ratio, the company will be more liquid and healthier, in other words, the company is able to avoid the threat of bankruptcy.

Test for hypothesis 2

Hypothesis H2 addressed that there is a significant relationship between Solvency Ratio (Debt to Assets Ratio and Debt to Equity Ratio) and Financial Distress of stated-owned banks. The hypothesis H2a states that the effect of Debt to Asset (DAR) on Financial Distress of Stated-Owned Banks is Significant. As the information on Table 6, the P-value of the Debt to asset (DAR) is $0.204 > 0.05$ and the regression coefficient is -0.031 , thus, hypothesis H2a is rejected. The findings of this research revealed that debt to assets (DAR) has a negative and not significantly affect the financial distress (Z'' -Score). A negative effect mean a rise in the value of the debt to asset ratio (DAR) will have the effect of decreasing the value of the Z'' Score, which revealed the firm is more possible to encounter financial distress. This study agreed with Sirait (2016) that found a high ratio of debt to assets has a negative effect on a financial distress. This study had similar results with other researches such as Mas'ud (2015) that the debt-to-assets ratio does not significantly predict financial distress. The hypothesis H2b states that the effect of Debt to Equity (DER) on Financial Distress of Stated Owned Banks is Significant. According to the findings presented on Table 6, the P-value of the Debt to Equity (DER) is $0.433 > 0.05$ and the regression coefficient is -0.005 , thus, hypothesis H2b is rejected. Partial test results show that Debt to equity (DER) has a negative and not significantly affect the Financial Distress (Z'' -Score). The negative effect means that if the DER value increases, the Z'' Score will decrease, which implied that a business is more possible to encounter financial distress. This result supports the previous study that was conducted by Wahyuni et al. (2020) that the partially Debt to Equity Ratio has negative and no significant effect on Financial Distress. With the insignificant relationship between debt to assets ratio (DAR), debt to equity (DER) and financial distress, it is possible to conclude that the debt to assets ratio (DAR) and debt to equity ratio (DER) cannot be applied as an early warning system to prevent financial distress of the stated-owned banks. Therefore, Hypothesis H2 was rejected.

Test for hypothesis 3

The hypothesis H3 states that the effect of Capital Adequacy Ratio (CAR) on Financial Distress of Stated-Owned Banks is Significant. According to the findings presented on Table 6, the P-value of the Capital Adequacy Ratio (CAR) is $0.046 < 0.05$ and the regression coefficient is 0.064 , thus, hypothesis H3 was accepted. The final result of the partial test between the capital adequacy ratio (CAR) and financial distress (Z'' scores) variables showed CAR has a significant and positive effect on financial distress. Positive coefficient value implies that CAR is directly related to financial distress. The greater the CAR percentage of a bank, the greater the bank's resilience in dealing with the depreciation of bank assets that arise from problematic assets (Simbolon, 2018).

According to the result of this study, a positive effect implied that if CAR value increases, it will increase the value of Z''Score, meaning the firm is in a healthy condition or minimizing the chances of financial distress. This study supported the empirical study by Widati and Pratama (2015) that Capital Adequacy Ratio (CAR) significantly influences financial distress conditions. The significant relationship between the capital adequacy ratio (CAR) and financial distress leads to the conclusion that the capital adequacy ratio (CAR) can be applied as an advance warning system to prevent financial distress of the stated-owned banks. Therefore, Hypothesis H3 was accepted.

Test for hypothesis 4

Hypothesis H4 addressed that there is a significant relationship between profitability ratio (Return on Asset and Return on Equity) and Financial Distress of stated-owned banks. The hypothesis H4a states that the effect of Return on Asset (ROA) on Financial Distress of Stated-Owned Banks is Significant. According to the results shown on Table 6, the P-value of Return on Asset (ROA) is $0.000 < 0.05$ and the regression coefficient is 0.889, thus, hypothesis H4a is accepted. According to the findings of this study, return on assets (ROA) has a positive and significant effect on Financial Distress (Z''-Score). A positive value shows that every increase in the profitability variable (ROA) is followed by an increase in the Z''-Score value. If a company can optimize their profits, then the firms can prevent the level of bankruptcy which has been measured by the dependent variable, namely Z''-Score. The findings of this study are aligned with the research conducted by Gunawan and Putra (2021) showed that the ROA ratio significantly influenced financial distress. The finding suggested that return on assets (ROA) can be applied as an early warning system to prevent the financial distress of state-owned banks. The hypothesis H4b states that the effect of Return on Equity (ROE) on Financial Distress of Stated-Owned Banks is significant. According to the results shown on Table 6, the P-value of the Return on Equity (ROE) is $0.170 > 0.05$ and the regression coefficient is 0.001, thus, hypothesis H4b is rejected. This study revealed that the return on equity (ROE) has an insignificant positive effect on financial distress. This result was opposite to the finding of Widati and Pratama (2015) that found ROE has a significant positive effect on financial distress. Moreover, the findings of this study supported the study of Nurcahyono and Sudharma (2014) which concluded that there was no significant evidence of the influence of ROE on the probability of bank bankruptcy, which mean that return on equity (ROE) cannot be used as an early warning system to prevent financial distress of the stated-owned banks.

5. CONCLUSION AND SUGGESTIONS

Indonesian Law Number 37 Year 2004 declare no distinction of bankruptcy based on the ownership. Therefore, a state-owned Bank bankruptcy must be viewed as the bankruptcy of an ordinary legal entity (Shubhan et al., 2020). The companies should estimate the problem of facing bankruptcy by building a model to predict bankruptcy to prevent any corporate failure in its early stage itself. This study intends to analyze the potential variables predict the financial distress and assess the relationship between Liquidity Ratio (current ratio, cash ratio, and loan to deposit ratio), Solvency Ratio (debt to asset ratio and debt to equity ratio), Capital Ratio (capital adequacy ratio), Profitability Ratio (return on asset and return on equity), and Altman Z'' score as a proxy of financial distress. A greater value of Z''Score represented the bank is in a healthy condition or minimizing the chances of financial distress. Secondary data from four state-owned banks was

used, with 240 samples totaled over a 15-year period from 2007 to 2021 by using multiple regression method. The empirical results of this study revealed that the current ratio, cash ratio, loan to deposit ratio, capital adequacy ratio, and return on asset are significant determinants of financial distress of state-owned banks, while debt to asset, debt to equity, and return on equity are insignificant determinants of financial distress for state-owned banks listed on the Indonesia Stock Exchange.

The findings of the study revealed that the Current Ratio has a significant effect with a positive value on financial distress (Z"scores), which supported the findings of Kristanti et al. (2016) that current ratio is the most significant financial ratio in estimating the occurrence of financial distress and confirmed the findings of Ruslinawati (2017) that the cash ratio has a significant effect on financial distress. The result that found the loan to deposit ratio has a significant effect with a positive value on financial distress (Z"scores) supported the study of Kowanda et al. (2015). This study agreed with the findings of Gunawan and Putra (2021) that revealed Debt to Assets does not significantly predict financial distress conditions. The study also revealed that Debt to equity has a negative and not significant effect on the Financial Distress (Z"-Score), which strengthened the study of Wahyuni et al. (2020). This study also supported the research of Widati and Pratama (2015) that found the CAR ratio positively affects financial distress. This study revealed that return on assets has a positive and significant effect on Financial Distress (Z"-Score). This finding is similar with the research of Kowanda et al. (2015). The results are expected to help and contribute information to related parties such as companies, investors, and regulators. The implication is expected to be an early warning for banking companies, advising them to be more careful when carrying out their business operations, especially in maintaining financial ratios such as liquidity, capital, and profitability which in this study resulted in a significant impact to the risk of bank financial distress

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