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Analysis of CAMEL ratio on financial distress banking companies in Indonesia

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Abstract The purpose of this research is to determine the influence of banking financial ratio on Financial Distress. The independent variables used in this research are CAR, NPL, BOPO, ROA and LDR, also the dependent variable that is used in this research is Financial Distress. The population used in this research are the 48 banking companies that is listed in the Indonesia Stock Exchange during the period of 2016-2020, and the samples used are 40 manufacture companies which were taken by using purposive sampling method. The analysis method used in this research is logistic regression and is processed using SPSS Statistics 25 software. The result of the this research states that ROA has a significant effect on Financial Distress, while CAR, NPL, BOPO and LDR has no significant effect towards Financial Distress. The resulting managerial implication is for company managers to be able to improve financial performance, especially with regard to ROA, for regulators, especially Bank Indonesia, it is recommended to keep the ROA level of all banks in Indonesia stable.

Keywords CAMEL; financial ratio; financial distress

INTRODUCTION

Pandemic conditions that occur globally can cause instability in the company's financial performance in all fields. A company can experience a continuous decline in revenue for several years until it finally goes bankrupt, this condition is called Financial Distress or financial difficulties. According to Balassubramanian et. al. (2019) Financial Distress is a liquidation condition of the company's total assets which is less than the total value of creditors' claims, this is a scenario where the company's operating cash flows cannot replace negative net worth. If it persists, this situation may lead to forced liquidation or bankruptcy. Mselmi et al (2017) also mention that Financial Distress is a condition where the company's cash flow is not sufficient to meet the payments required by the contract.

Many factors can cause companies to experience Financial Distress, as described by Whitaker (1999), namely, increased operating costs, excessive expansion, technology lag, competitive conditions, economic conditions, weakness of company management and a decrease in industrial trading activities. In unfavorable economic conditions, most companies that experience Financial Distress are the result of management weaknesses. As explained by Brigrham and Daves (2018), difficulties begin when the company cannot meet scheduled payments or when cash flow projections indicate that the company will not be able to do so immediately.

To anticipate such bankruptcy, it is necessary to check and manage regularly regarding the condition and level of banking soundness. For this reason, the health of banking is very important to be highlighted. In general, to assess a company's financial performance, especially banking, five aspects of the assessment are used, namely CAMEL (Capital, Assets, Management, Earning, Liquidity). Assessment of the soundness of commercial banks in Indonesia using CAMEL analysis. CAMEL is not only used to measure the soundness of banks, but can be used as a measuring tool in compiling rates and predicting bank bankruptcy (Yurivin, 2018). The CAMEL ratio itself consists of the Capital Adequacy Ratio (CAR) as a proxy for Capital, Non-Performing Loan (NPL) as a proxy for Assets, Operating Costs to Operating Income (BOPO) as a proxy for Management, Return on Assets (ROA) as a

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proxy for Earnings. , and Loans to Deposits Ratio (LDR) as a proxy for Liquidity.

The theoretical basis used in this study is the Financial Crisis Theory (the theory of the first generation, second generation, third generation, and theories outside the generation system) which explain the causes of the financial crisis, especially in the banking sector, ranging from excessive liquidity, macro policies, exchange rates. , until the rush or withdrawal of money on a large scale and the Financial Instability Hypothesis by Hyman Minsky in 1922 which explained the theory of business cycles that occurred in financial crises, especially banking.

The difference between this research and previous research lies in the measurement of Financial Distress where in previous studies it was measured by net income or company income, while in this study the measure used was Earning Per Share (EPS). Furthermore, the time period for the data used in this study is the latest in 2016-2020 where in 2020 there was also a global pandemic that had an impact on banking companies.

This study aims to analyze the effect of Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), Operational Costs on Operating Income (BOPO), Return on Assets (ROA), Loans to Deposits Ratio (LDR) on Financial Distress of conventional general banking. in Indonesia during the 2016-2020 period.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Effect of capital adequancy ratio (CAR) on financial distress

The Capital Adeque Ratio (CAR) serves to show the extent to which the decline in bank assets can still be covered by available bank equity. An increase in the CAR ratio can indicate an increase in the health of a bank, a high CAR value indicates the bank has capital reserves to absorb various losses from unexpected asset risks. However, capital reserves that are too high will become an idle fund and increase the costs to be borne so that it will not provide optimal benefits for banks. Meanwhile, a low CAR value indicates that the bank does not have sufficient capital reserves to cover the risk of loss on assets that contain risk (Sofiasani & Gautama, 2016).

The results of this CAR value can influence the decisions of investors/company shareholders in the future. A high CAR value gives an impact in the form of a good signal to external parties or investors, so they also believe that the bank is in good condition and can invest their capital in the bank. In the end, banks can run their business activities smoothly and can avoid the risk of experiencing financial distress conditions (Kuncoro & Agustina, 2017).

H1: Capital Adequacy Ratio has a negative effect on Financial Distress

Effect of non-performing loan (NPL) on financial distress

The NPL ratio shows a bank's ability to manage its credit. NPL shows the size of the level of bad loans owned by banks, so it also shows the quality of non-performing productive assets. The greater the NPL, the higher the credit risk that must be faced by a bank. Conversely, the lower the NPL, the lower the credit risk that must be faced by the bank (Kurniasari, 2013).

A high NPL value can cause banks to show bad signals to external parties (investors). In the end it will reduce the level of investment of investors. This can lead to the possibility of banks experiencing Financial Distress (Kuncoro & Agustina 2017).

H2: Non-Performing Loans have a positive effect on Financial Distress

Effect of operating cost operating income (BOPO) on financial distress

The lower the BOPO value, the more efficient the operations of the bank. (Mahariyani et al., 2020). Meanwhile, a high BOPO value indicates that the use of resources managed by the bank is less efficient, so that it will increase the operational costs that must be borne and cause operational activities to not run properly, this will hinder the optimal income gain by bank operational activities (Sofiasani and Gautama, 2016).

A high BOPO value will cause operational expenses to swell, so that banks must incur more costs to carry out

their operational activities. This can cause banks to experience Financial Distress risk if the costs required to carry out operational activities are too high. (Sjahril et al., 2014).

H3: Operating Expenses Operating Income has a positive effect on Financial Distress

Effect of return on assets (ROA) on financial distress

The higher the ROA value of a bank, the higher the profit achieved by the bank. A high ROA value also indicates the better position of the bank in its business, so that it will increase investor confidence in the bank (Khadapi, 2017). The smaller the ROA value, it can indicate that the bank's performance is less effective in processing its assets to generate profits, so that it can cause losses to the bank resulting in negative cash flow. This can also lead to Financial Distress conditions in banks if they occur in several consecutive years. (Muflihah, 2017).

H4: Return on Assets has a negative effect on Financial Distress

Effect of loan to deposit ratio on financial distress

A high LDR value indicates that the credit extended by the bank is higher than the Third Party Funds (DPK) collected by the bank and this indicates that the bank is experiencing liquidity difficulties, and if this condition ontinues for a certain period of time it can cause the bank to experience Financial Distress conditions (Mahariyani et al., 2020). The higher the LDR, the more illiquid a bank is, this is because the bank will find it difficult to fulfill its short-term obligations, such as sudden withdrawals by customers of their deposits. On the other hand, the lower the LDR, the more liquid a bank is. However, the more liquid bank conditions indicate that there are more and more idle funds, thereby reducing the opportunity for banks to obtain greater income, because the bank's intermediation function is not achieved properly. (Agustina & Wijaya, 2013).

Income is one aspect that becomes the focus of investors in making decisions, where high income can be positive information for investors, but low income levels are bad information for investors.

H5: Loan to Deposit Ratio has a positive effect on Financial Distress

Based on the theoretical basis, previous research and the relationship between the dependent and independent variables consisting of Financial Distress, CAR, NPL, BOPO, ROA and LDR. Figure 1 is the arrangement of the theoretical framework of this research.

METHODS

In this study, Financial Distress as the dependent variable was measured using a dummy with Earning Per Share (EPS) as

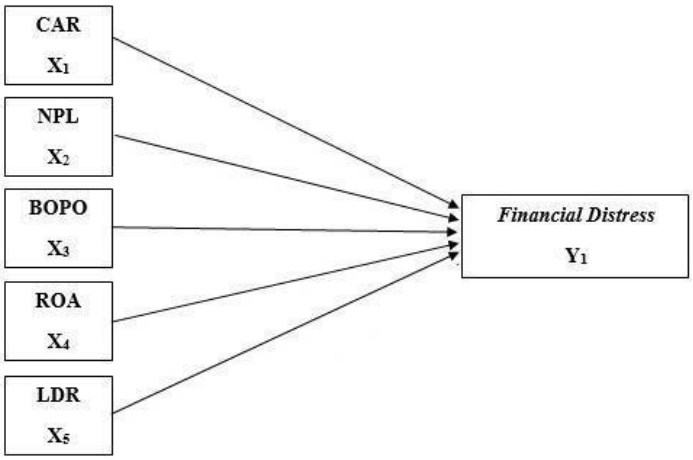

Figure 1.
Theoretical framework

Table 1.
Results of descriptive statistical analysis of dependent variables

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Non-Distressed	150	82.4	82.4	82.4
	Distressed	32	17.6	17.6	100.0
	Total	182	100.0	100.0	

Source: Secondary data processed, 2021

the basis for classifying categories of problematic and non-performing banks and Capital Adequacy Ratio (CAR), Non-Performing Loans (NPL), Operating Costs to Operating Income (BOPO).), Return on Assets (ROA), Loans to Deposits Ratio (LDR) as independent variables.

Sampling

The population used in this study is Conventional Commercial Banks in Indonesia for the 2016-2020 period. The population used is 48 general banking companies listed on the Indonesia Stock Exchange. The sampling technique used purposive sampling method by using several criteria such as being listed on the Indonesian stock exchange during 2016-2020, conventional general banking, never removed or removed from the Indonesia Stock Exchange during 2016-2020. The number of samples obtained is 40 banks. The data is obtained from the annual reports of each bank and bloomberg.

Analysis method

The research methods used in this study are descriptive statistical analysis, statistical data analysis (test overall model, regression model feasibility test, coefficient of determination, classification matrix), hypothesis testing (omnibus test and wald test). The regression model used is logistic regression and can be formulated with the following regression equation:

$$Ln\frac{\rho}{1-\rho} = b0 + b1X1 + b2X2 + b3X3 + b4X4 + b5X5$$

Description:
ρ = Financial distress
*b*0 = Constant
b1...b6 = Regression Coefficient
X1 = *CAR*
X2 = *NPL*
X3 = BOPO
X4 = *ROA*
X5 = *LDR*

RESULTS AND DISCUSSION

Description of research sample

Based on the predetermined criteria, there are 40 banks that meet the criteria. Observations were made for 5 years, namely the 2016-2020 period, from this data, the number of research samples was 200 (40 banks x 5 years). The table 1 and table 2 show the results of descriptive statistic analysis of research variables.

In the results of descriptive statistical analysis tables 1 and 2 the research samples used were 182, this is because 18

Table 2.
Results of descriptive statistical analysis of independent variables

N		Minimum	Maximum	Mean	Std. Deviation
CAR	182	6.00	55.03	22.5963	7.72579
NPL	182	.00	10.16	3.2291	1.90190
BOPO	182	21.30	164.90	90.8529	18.85205
ROA	182	-5.21	3.28	.7031	1.41109
LDR	182	39.33	140.20	86.6302	17.30940
Valid N (listwise)	182				

Source: Secondary data processed, 2021

samples were infected with outlier data. The outlier data itself is determined using Z-Score analysis with the standard used is -2.58 to 2.58, so data that is outside the standard is categorized as outlier and excluded from the study.

Statistical analysis

Statistical analysis of the data was used to ensure the accuracy of the model. In this study, statistical analysis of the data used includes the overall model test, the feasibility test of the regression model, the coefficient of determination, the classification matrix. The results of the statistical analysis of the data carried out stated that the model used was fit with the data and was appropriate.

Omnibus test

Omnibus test is a statistical test simultaneously (f test). The Omnibus test is used to test whether the independent variables simultaneously affect the dependent variable. This study will test whether the independent variables simultaneously affect the dependent variable (Ghozali, 2018). In the Omnius Test there are 2 hypotheses, namely as follows:

H0: The independent variable simultaneously does not affect the dependent variable

H1: The independent variable simultaneously affects the dependent variable

The significance level that we choose to decide whether H1 is accepter or not %. If the Sig value of the Model Coefficients on the Omnibus Test < a, then H0 is rejected and H1 is accepted, meaning that the independent variable simultaneously affects the dependent variable. However, if the Sig value of the Model Coefficients on the Omnibus Test > a, then H0 is accepted and H1 is rejected, meaning that the independent variable simultaneously does not affect the dependent variable.

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Based on table 3, it can be seen that the significance value is 0.000. Where this means that the Sig value in the Model Coefficients < 0.05 or 5% which means it is in accordance with the first criteria used in the Omnibus Test where H0 is rejected and H1 is accepted. Therefore, it can be concluded that the independent variable simultaneously has a significant effect on the dependent variable because the omnibus test significance value is 0.000 or less than 0.05.

Wald test

According to Ghozali (2018), the Wald (t) test basically shows how far the influence of the independent variable is partially in explaining the dependent variable. To find out the value of the Wald test (t test), in the Wald test there are 2 hypotheses, namely as follows.

Table 3.
The result of the omnibus test

Chi-square			df	Sig.
Step 1	Step	76.456	6	.000
	Block	76.456	6	.000
	Model	76.456	6	.000

Source: Secondary data processed, 2021

H0: One of the independent variables does not partially affect the dependent variable

H1: One of the independent variables partially affects the dependent variable

We choose 5% as the level of significance value, that we applied in this study, If the value of Sig on the results of the Wald Test < a, then H0 is rejected and H1 is accepted, meaning that one of the independent variables partially affects the dependent variable. On the other hand, the value of Sig on the results of the Wald test > a, then H0 is accepted and H1 is rejected, meaning that one of the independent variables does not partially affect the dependent variable.

Based on table 4 below, it can be seen the value of the constant and the value of the regression coefficient of each independent variable. Where the constant is -0.982, CAR is 0.038, NPL is 0.174, BOPO is -0.1, ROA is -1.678, and LDR is -0.17. Meanwhile, the significance level of each independent variable is CAR of 0.291, NPL of 0.273, BOPO of 0.701, ROA of 0.001, and LDR of 0.27. These values can be entered into the logistic regression equation so that it becomes:

$$Ln\left(\frac{Financial\ Distress}{1-Financial\ Distress}\right) = -0{,}982 + 0{,}038(CAR) + 0{,}174(NPL) - 0{,}010(BOPO) - 1{,}678(ROA) - 0{,}017(LDR)$$

Based on the results of Exp (B), it shows several findings. First, the higher the CAR variable, the higher the probability of experiencing financial distress, which is 1.038 times higher than the one with a low CAR value because the value is >1. Second, the higher the NPL variable, the higher the probability of experiencing financial distress, which is 1.190 times higher than the lower NPL value because the value >1. Third, the higher the BOPO variable, the less likely it is to experience financial distress, which is 0.990 times compared to the lower BOPO value because the value is <1. Fourth, the higher the ROA variable, the lower the probability of experiencing financial distress, which is 0.187 times compared to the lower LDR value because the value is <1. Fifth, the higher the LDR variable, the less likely it is to experience financial distress, which is 0.983 times compared to the lower LDR value because the value is <1.

Furthermore, based on the results of the significance above, the following findings can be drawn. First, CAR has no significant effect on Financial Distress because its significance value is 0.291 or greater than 0.05. Second, NPL has no significant effect on Financial Distress because its significance value is 0.273 or greater than 0.05. Third, BOPO has no significant effect on Financial Distress because its significance value is 0.701 or greater than 0.05. Fourth, ROA has a significant negative effect on Financial Distress because the B value is -1.678 and the significance is 0.001 or less than 0.05. Fifth, LDR has no significant effect on Financial Distress because the significance value is 0.27 or greater than 0.05

Table 4.
The result of wald test

							95% C.I.for EXP(B)	
	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1a	*CAR*	.038	.036	1.113	1	.291	1.038	.968	1.114
	NPL	.174	.159	1.201	1	.273	1.190	.872	1.626
	BOPO	-.010	.026	.147	1	.701	.990	.942	1.041
	ROA	-1.678	.485	11.971	1	.001	.187	.072	.483
	LDR	-.017	.015	1.216	1	.270	.983	.954	1.013
	Constant	-.982	3.035	.105	1	.746	.374		

Source: Secondary data processed, 2021

Effect of CAR on financial distress

CAR as a proxy for capital in the CAMEL ratio has a value of 0.038 which indicates a positive value. CAR also has a significance level of 0.291 which is more than 0.05. This shows that CAR does not have a significant effect on Financial Distress. Based on these results, it can be stated that hypothesis 1 which states that CAR has a negative effect on Financial Distress is rejected. The results of the study are in line with the results of research from Theodorus & Latini (2018) and Mahariyani et al. (2020) which states that CAR does not have a significant effect on Financial Distress.

This shows that CAR and Financial Distress have a positive but not significant relationship, which means that the higher the CAR value will not be followed by an increase in Financial Distress. Therefore, it can be concluded that the higher the level of cash reserves owned by banks will not affect Financial Distress. The CAR value for general banking in Indonesia in Indonesia is relatively high, which touches the <20%, while the minimum limit stipulated in Bank Indonesia Regulation No. 13/1/PBI/2011 is 8%. This is what causes CAR to have no significant effect, because its value is far above the minimum limit.

Effect of NPL on financial distress

NPL as a proxy for Assets in CAMEL has a value of 0.174 which indicates a positive value. NPL also has a significance level of 0.273 which is more than 0.05. This shows that NPL does not have a significant effect on Financial Distress. The results of this study are in line with the results of research from Kuncoro & Agustina (2017) and Betz et al. (2014) which states that NPL does not have a significant effect on Financial Distress. Based on these results, it can be stated that hypothesis 2 which states that NPL has a positive effect on Financial Distress is rejected. This shows that NPL and Financial Distress have a positive but not significant relationship, which means that an increase in NPL value will not be followed by an increase in Financial Distress. It can be concluded that the ratio of the level of bad and non-performing loans to the total credit owned by banks does not affect Financial Distress.

This is because the average NPL of conventional commercial banks in Indonesia has a low NPL value and is quite healthy, where the value is in the range of 3-4%, while the limit set in Bank Indonesia Regulation no. 13/1/PBI/2011 is <6% to indicate the bank is in a healthy condition.

Effect of BOPO on financial distress

BOPO as a proxy for Management at CAMEL has a value of -0.1 which indicates a negative value. BOPO also has a significance level of 0.701 which is more than 0.05. This shows that BOPO does not have a significant effect on Financial Distress. The results of this study are in line with the results of research from Eng et al. (2013) and Betz et al. (2014) which states that BOPO does not have a significant effect on Financial Distress. Based on these results, it can be stated that hypothesis 3 which states that BOPO has a positive effect on Financial Distress is rejected. This shows that BOPO and Financial Distress have a negative but not significant relationship, which means that a decrease in BOPO value will not be followed by a decrease in Financial Distress. It can be concluded that the level of the ratio of operating expenses and operating income of the company will not affect Financial Distress.

This is due to the BOPO value in conventional commercial banking in Indonesia which is still below the maximum limit stipulated in Bank Indonesia Regulation No. 13/1/PBI/2011, where the limit is 90%-95%, while the value is >90%. Therefore, general banking in Indonesia is not too dependent on this relatively small operating income, so that in increasing the value and soundness of the bank, operating income is not a significant factor.

Effect of ROA on financial distress

ROA as a proxy for Equity in CAMEL has a value of -1,678 which indicates a negative value. ROA also has a significance level of 0.001 which is less than 0.05. This shows that ROA has a significant effect on Financial Distress. The results of this study are in line with the results of research from Sofiasani and Gautama (2016) and Nukmaningtyas & Worokinarsih (2018) which state that ROA has a significant negative effect on Financial Distress. Based on these results, it can be stated that hypothesis 4 which states that ROA has a

negative effect on Financial Distress is accepted. This shows that ROA and Financial Distress have an inverse relationship, where an increase in ROA value will always be followed by a decrease in Financial Distress. This is because ROA is one of the strengths of banks in generating profits by utilizing existing assets, the higher the level of profit generated by banking companies, the smaller the Financial Distress.

Effect of LDR on financial distress

LDR as a proxy for Liquidity in CAMEL has a value of -0.17 which indicates a negative value. LDR also has a significance level of 0.27 which is more than 0.05. This shows that LDR does not have a significant effect on Financial Distress. The results of this study are in line with the results of research from Sjahril et al. (2014) and Theodorus & Lathini (2016) which state that LDR does not have a significant effect on Financial Distress. Based on these results, it can be stated that hypothesis 5 which states that LDR has a positive effect on Financial Distress is rejected. This shows that LDR and Financial Distress have an inverse but not significant relationship, which means that the higher the LDR value will not affect Financial Distress. It can be concluded that the level of credit extended by banks will not affect Financial Distress.

This is because the average LDR value for conventional commercial banks in Indonesia is still in the range of 80%-90%, which according to Bank Indonesia Standards is still quite healthy, because the limit set in Bank Indonesia Regulation No. 13/1/PBI/2011 for a bank that is classified as having financial problems is if the bank's LDR reaches 100%.

CONCLUSION

Based on the discussion of data analysis and literature review that has been carried out in this study, it can be concluded that CAR, NPL, BOPO, ROA, and LDR simultaneously affect Financial Distress. CAR, NPL, BOPO and LDR have no significant effect on the Financial Distress of conventional commercial banking companies listed on the IDX in the period 2016 to 2020. ROA has a significant negative effect on the Financial Distress of conventional commercial banking companies listed on the IDX in the period 2016 to 2020. There are some limitations in this study, namely first, based on the Coefficient of Determination test, there is a Negelkerke R Square value of 56.7%. From these results it can be concluded that there are still 43.3% of outside influences that can explain and influence Financial Distress From these results it can be concluded that there are still 43.3% of outside influences that can explain and influence Financial Distress such as Net Asset Value, Return On Equity, Current Ratio and Return On Investment, and others. Second, the population used in this study is 48 banking companies listed on the Indonesia Stock Exchange in the period 2016 to 2020, but the data sample used in this study is only 40 conventional general banking companies, because some companies do not meet the sample criteria.

Based on the discussion in this study, it has been proven that ROA has a significant negative effect on Financial Distress. Therefore, the researchers provide some suggestions, namely as follows.

It is recommended for the company's management to be able to continue to improve financial performance and overall management performance, both from increasing the use of all company assets owned. In particular, it can pay attention to the ROA aspect, because according to the results of the research above, the two ratios have a significant influence on Financial Distress, so the company must be able to maximize the value of the two ratios.

For regulators or the government, especially Bank Indonesia, as policy makers and regulators of banking standards in Indonesia. It is recommended to be able to maintain the ROA level of banks in Indonesia (especially conventional general) in order to meet the minimum standard of bank soundness by maintaining interest rates and supporting programs and products produced by banks in Indonesia to the public, because both ratios have been proven in research. this has an effect on Financial Distress.

For further researchers, first, they can conduct research using other research objects such as Islamic banking companies or more broadly covering all general and Islamic banking listed on the Indonesia Stock Exchange. affect Financial Distress as in the research conducted by Balasubramanian et al., (2019), namely Net

Asset Value, Return On Equity, Current Ratio and Return On Investment. Third, conducting research using other external factors that have the possibility of influencing Financial Distress as in the research conducted by Ningsih et al., (2021), namely interest rates and inflation rates.

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