Determinants of Financial Distress Rural Bank in Indonesia: A Logit Approach

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Abstract

This study aims to investigate determinants of financial distress rural banks in Indonesia using logit approach. The method used in this study uses logit. The data used are secondary data obtained from Bank publication reports during period 2014 - 2018. The population used in this study is rural banks in Indonesia and sample selection based on purposive sampling evidence East Java. The results showed that capital, profitability and productivity have significant influence to financial distress bank. Rural banks should maintain adequate capital, increase profits and maintain credit growth in order to avoid financial distress. This study is useful to determine the determinants of rural bank financial distress in Indonesia by using the logit approach, adopting the Altman variable and adding the credit risk variable.

Keywords: risk, financial distress, rural banks.

Introduction

Rural Banks are defined as banks that carry out business activities conventionally and or based on sharia principles, which activities include raising funds, channeling funds, and providing other bank services. The role of rural bank in the Indonesian economy cannot be separated from their contribution to the empowerment and development of MSMEs (Micro, Small and Medium Enterprises), which is one of the determinants of the government's strategy in national economic recovery. Rural bank is one of the financial institutions in its establishment to provide services in the banking sector to people in rural and suburban areas, including to MSME communities. Data for the last ten years from 2008 to 2018 shows that the existence or number of rural bank has decreased. From 2006 to 2018, there were 90 rural bank that were taken over by the Deposit Insurance Corporation (LPS) for further liquidation. In 2008 there were 1,772 rural bank recorded, but at the end of December 2018 there were 1.597 rural bank. At this stage, the early identification of factors which form a competitive strategy becomes crucial (Puspitasariet et al., 2019). This shows that rural bank governance is still not govern yet, so there is much that needs to be improved. Of course, the role of rural bank in providing banking services that serve the community as well as micro and small businesses will be disrupted if the bank experiences financial distress.

The failure of the rural bank can create a wider saving-investment gap and the development of micro and small businesses in obtaining loan funds is getting lower so that it has an impact on the economic growth of an area towards improving the quality of life of the small and medium society. Conditions indicate that the rural bank in carrying out its operations is not in accordance with its capacity which causes the rural bank to be inefficient. The low level of efficiency both in cost and income causes a low level of profit maximization that endangers the survival of the bank (Fiordelisi & Mare, 2013; Fillippaki & Mamatzakis, 2009). High non-performing loans force rural banks to have high CAR to cover poor credit quality. Adequate capital buffer, high loss absorption capacity and reducing moral hazard need full attention to overcome the probability of bank default. Discriminant analysis, Neural network, Logit Analysis, and Trait Recognition are some of the tools that are suitable and practical in determining the failure of a bank business today. In this study, investigating the determinants of risk financial distress in rural bank using a logit approach.

Literature Review

Few research on financial distress has been done in conventional banks, including those conducted by Distinguin (2011), Nufus (2015), Gandhi et al. (2018), Aldophus (2014), Gartner (2016), Samuel (2014), Marlinda (2020), Karugu (2018), Zhang (2006), Shidiq and Wibowo (2017), Polyzoset et al. (2018), Meher and Getaneh (2019). Research on bank financial distress at BPR in Indonesia has been conducted by Puspitasariet et al. (2020) using the Altman approach which found that solvency, profitability, productivity and liquidity have a significant effect on bank failure. Financial distress is a stage of decreasing financial condition that occurs in a company prior to bankruptcy.

A study conducted by Distinguin (2011) found that the capital adequacy ratio (CAR) and non-performing loans (NPL) had a positive effect on financial distress. This shows that the higher the CAR ratio in Islamic commercial banks, the better the bank will be in carrying out its operational activities. These findings are not in line with the results of research by Gandhi et al. (2018) which found that the CAR and LDR variables had a positive and significant effect, for the ROA variable had a negative and significant effect on financial distress. Capital adequacy is very important for the Bank so that the bank must improve its ability to face risks.

Nufus' research (2015) found that the NPL had a negative and significant effect on financial distress. Meanwhile, LDR has no significant effect on financial distress. These findings are not in line with the results of research by Aldophus (2014) which found that the NPL and LDR had a significant negative effect on financial distress. Gartner (2016) in his research found that the ROA variable has a positive and significant effect on financial distress. This finding is in line with Marlinda (2020) and Karugu (2018). In Shidiq and Wibowo (2017) state that the CAR and LDR have a positive and significant effect on financial distress. Meanwhile, NPL has a negative and significant effect on financial distress, but it is different from the ROA which does not have a significant effect on financial distress.

There are many factors that affect financial stress, including credit risk or NPL as a proxy. Zhang (2006) analyzes the factors that affect financial distress. The results of his research indicate that non-performing loans have a positive and significant effect on financial distress. This study is in line with the results of Samuel's (2014) study. In the research results of Polyzos, et al. (2018) stated that the LDR variable has a positive and significant effect on financial distress. Meanwhile, NPL has a negative and significant effect on financial distress. This finding is in line with the results of research by Meher and Getaneh (2019). NPL is an indication that asset quality is not good so that the bank will face financial problems which if it continues there will be financial distress. Previous studies have shown research gap. The model in this study is a variant of previous research to investigating the determinants of risk financial distress in Rural Banks using a logit approach. This paper fills gaps in previous research by determining these factors. The regressors used are LDR, ROA, Credit Growth, CAR and NPL. In this study, a descriptive analysis was carried out to describe the relationship between the variables contained in the study, such as the average (mean), standard deviation, maximum, and minimum values. Dependent variable is financial distress bank using dummy variable (equal one for a distress bank, zero otherwise).

Methodology

In this study, the data used are secondary data, namely the annual financial statements of Rural Bank during the 2014-2018 period. The sampling technique used in this study was

purposive sampling. Purposive sampling is a technique of taking samples not based on random, regional or strata, but based on considerations that focus on specific objectives (Arikunto, 2006). The sampling criteria used in this study were Rural Bank in East Java, which published their complete financial reports for the period 2014 to 2018 as many as 319 banks considering that the largest number of BPR in Indonesia is in East Java.

The independent variable in this study is financial ratios, including Capital Adequacy Ratio, Return on Assets, Non Performance Loans and, Loan to Deposit Ratio, while the dependent variable in this study is the prediction of bankruptcy (financial distress) at Rural Bank. The first hypothesis testing compares between bank financial distress and not bank financial distress. The second hypothesis testing using logistic regression, investigates whether the financial ratios in this study can be used to predict bank financial distress. The analysis method used a logistic regression model. The dependent variable is a dummy variable, where category 0 is a group of non-financial distress bank and category 1 is a group of financial distress bank using. This study applies bankruptcy analysis by Altman. The independent variables used are liquidity, profitability, productivity, solvency and asset quality. The formulation of Logistic Regression is as follows:

$$Ln \frac{P}{(1-P)} = \beta 0 + \beta 1CAR + \beta 2NPL + \beta 3ROA + \beta 4LDR + \beta 5CRGROWTH + \epsilon$$
(1)

Results and Discussion

From the results of data processing of the five variables (CAR, NPL, ROA, LDR, and Credit Growth) using the Normal Distribution Test, it was found that the data was not normal, therefore using Mann Whitney test. The table below shows the results of the Mann Whitney test and CAR, NPL, ROA, and credit growth with a difference of sig. 5% while LDR there is no difference between bank distress and bank not financial distress as shown in Table 1. Therefore, this research excludes LDR in the equation. Then, first hypothesis in this study is accepted.

	Y	N	Mean	Sum	Z
CAR	Financial Distress	1418	849.78	1204994.5	9 670***
CAK	Not Financial Distress	204	545.38	111258.8	-8.0/9
NDI	Financial Distress	1418	768.7	1090011	0.704***
INFL	Not Financial Distress	204	1109.03	226242	-9.704
POA	Financial Distress	1418	881.41	1249839.5	0.991***
KUA	Not Financial Distress	204	325.56	66413.5	-0.881
	Financial Distress	1418	815.04	1155720	0.801
LDK	Not Financial Distress	204	786.93	160533	-0.801
Credit	Financial Distress	1418	861.73	1157017.5	-
Growth (CG)	Not Financial Distress	204	780.57	159235.5	11.999***

TADIE I. DESCRIPTION ANALYSIS	Table	1.	Descrip	ption	Anal	vsis
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***) Significant at the 1percent level, **) Significant at the 5 percent level, *) Significant at the 10 percent level.

Before testing the second hypothesis, it is necessary to test the feasibility of the Logistic Regression model using the Omnibus Tests of Model Coefficients Test. The results of testing show chi-square value 2309,543 at sig 1%. Thus, it can be concluded that the logistic regression model is feasible as show in Table 2.

		-2 Log likelihood	Chi-square	df	Sig.
Step 1	Step	1262.154	357.809	4	.000
	Block	1223.608	357.809	4	.000
	Model	1222.948	357.809	4	.000

Table 2. Omnibus Tests of Model Coefficients

To test the difference between predictions and observations, test results in Table 3 show the similarity of the logistic regression model predictions with its observation. It shown by R-square value of 0.374 with a significant value of 0.323. This means that the model is valid to predict its observations or the model is accepted because the model is in accordance with its observations.

Table 3. Classification Tab	ole
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			Bank S		
		Observed	Financial	Not Financial	Percentage
			Distress	Distress	Correct (%)
Step 1	Bank	Financial Distress	1385	33	97.7
	Soundness	Not Financial Distress	143	60	29.6
	Overall Percentage				89.1

a. The cut value is 0,50

The results of the overall classification for logistic regression were quite good, namely 82.3%. The percentage of correct classification for companies with Not Financial Distress is 29.6 where there are errors in the 6 observations of the Financial Distress category, and 143 observations that can be predicted correctly in the Not Financial Distress category are included in the Financial Distress prediction. The percentage of truth for companies experiencing financial distress is 97.7%, i.e. 1385 observations predicted correctly and 33 observations predicted the opposite. The logit regression test was partially carried out on the independent variables with a significant level of 5% and 10%. The complete logit regression test results are presented in the following table.

	В	S.E.	Wald	df	Sig.	Exp (B)
CAR	-0.018	0.003	39.007	1	.000	0.982
NPL	0.057	0.008	51.56	1	.000	1.059
ROA	-0.053	0.012	18.955	1	.000	0.949
Credit Growth	-0.3	0.037	65.02	1	.000	0.741
Constant	-1.222	0.167	53.549	1	.000	0.295
	CAR NPL ROA Credit Growth Constant	B CAR -0.018 NPL 0.057 ROA -0.053 Credit Growth -0.3 Constant -1.222	BS.E.CAR-0.0180.003NPL0.0570.008ROA-0.0530.012Credit Growth-0.30.037Constant-1.2220.167	BS.E.WaldCAR-0.0180.00339.007NPL0.0570.00851.56ROA-0.0530.01218.955Credit Growth-0.30.03765.02Constant-1.2220.16753.549	BS.E.WalddfCAR-0.0180.00339.0071NPL0.0570.00851.561ROA-0.0530.01218.9551Credit Growth-0.30.03765.021Constant-1.2220.16753.5491	BS.E.WalddfSig.CAR-0.0180.00339.0071.000NPL0.0570.00851.561.000ROA-0.0530.01218.9551.000Credit Growth-0.30.03765.021.000Constant-1.2220.16753.5491.000

Table 4. Variables in the Equation

a. Variable(s) entered on step 1: CAR, NPL, ROA, Credit Growth.

$$Ln \frac{P}{(1-P)} = \beta 0 + \beta 1CAR + \beta 2NPL + \beta 3ROA + \beta 4LDR + \beta 5CRGROWTH + \epsilon$$
(2)

Based on the output, CAR, ROA and Credit Growth have a significant and negative effect on the dependent variable. However, the NPL has a positive effect on the dependent variable. The results of Exp (B) shows CAR has a result of 0.982, meaning that CAR has a negative effect on the dependent variable. It means, the higher the CAR, the lower the possibility of financial distress. The NPL has a result of 1.059, and NPL has a positive effect on the dependent variable. So, it means, the higher the NPL, the higher the possibility of financial distress. The results of the NPL variable on bankruptcy predictions show that NPL has a

positive effect on bankruptcy predictions. The results of this study are in accordance with the findings of Puspitasari et al. (2020), Nufus (2015), Zhang (2006) and Samuel (2014). Furthermore, the ROA has a result of 0.949, meaning that this variable has a negative effect of 94.9% on the dependent variable and finally the Credit Growth variable has a result of 0.741, and this variable has a negative effect on the dependent variable. Which means that the higher the ROA and Credit Growth, the lower the possibility of financial distress. This finding is in line with Gandhi et al. (2018) and Gartner (2016) which showed that CAR and ROA negatively affect bankruptcy predictions and this strengthens the findings of Marlinda (2020) and Karugu (2018). The findings of this study are NPL, CAR, ROA and Credit Growth are determinants of financial distress in rural banks, which are sorted from the biggest influence.

Conclusion

Based on the findings of this study, solvency, profitability and productivity are determinants of financial distress in rural banks subjects. Interestingly, liquidity is not a determinant of financial distress. This was due to the fact that rural banks were able to maintain their liquidity in accordance with the threshold set by the authority. Rural bank must maintain sufficient capital to be able to absorb risk. Proper lending accompanied by good credit quality will increase revenue for the bank. This of course will support bank growth and show good bank performance. In the end, banks can avoid financial distress. For further research, it can be enriched by using variables and other methodologies not examined in this study.

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