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Article

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Financial Distress of Local Government: A Study on Local Government Characteristics, Infrastructure, and Financial Condition

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ABSTRACT

This study aims to obtain empirical evidence related to the effect of the variables such as local government characteristics, infrastructure, and local government financial condition to the financial distress of local governments in Indonesia. Population of this study is all local government that issue the financial statements audited by the Supreme Audit Agency (Badan Pemeriksa Keuangan Republik Indonesia-BPK RI) in the period 2007 to 2009. The method of sampling is purposive sampling method producing 152 observations. Method of analysis is binary logistic regression. The results show that size (SZ), total program cost for assets (RPCTA), carrying value (CV), ratio of cash quickly (CQR), performance of government wealth (PERF), return on equity (ROE), profit margin (PM), and current liabilities (CL) significantly associate with probability of financial distress of local government. It implies that information presented in the financial statements of local governments in Indonesia has a predictive value, and, therefore is relevant to be used in decision making.

Keywords: local government financial report, financial distress, characteristic, infrastructure, and financial condition

I . INTRODUCTION

The prediction of financial distress has been widely used for various screening and monitoring purposes, such as going concern by auditor, appraisal for lending by creditors, and appraisal for company's well-being by credit rating agencies and regulators (Jones and Walker, 2007). The modeling for distress is dominantly focused on private companies, especially for publicly traded companies. Due to the financial and market data for these companies it is available

and easily accessible. In this context, 'distress' has been widely interpreted as an event which is according to creditors takes place as a result of administrative problems (bankruptcy), default of credit payment, failure to pay dividend for preferred stocks (or even the decrease in the payment of dividend for common stocks), the problem of preferred dividend to fulfil the deficiencies of working capital, financial reorganization where debts were converted to be equity, and payments to pay listing cost (Bahson & Bartley, 1992; Foster, 1986; Jones & Hensher, 2004; Lau, 1987; Ward, 1994).

Research on financial distress on non-profit organizations is very limited in number compared to the research of the same theme on private sectors. For example, in the governmental sector, the analysis

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on fiscal and financial crisis such as the research on the crisis faced by New York and Cleveland during 1970 has been conducted before (Wallace, 1985). Langabeer (2005) conducted a financial analysis on the hospital in the United States of America. Further evidence shows that financial report assigns relevant information of financial distress (Brusca, Rossi, & Aversano, 2015; Cohen, Doumpos, Neofytou, & Zopounidis, 2012; Kloha, Weissert, & Kleine, 2005; Plummer, Hutchison, & Patton, 2007; Ritonga, Clark, & Wickremasinghe, 2012).

Jones and Walker (2007) developed a statistical method to identify the factors that have the biggest influence on the local government in Australia. The main purpose is to develop a pragmatic and meaningful measure about the local government distress which can be easily operationalized for statistical model motive. The results of their research show that the variable of characteristics and infrastructure has a strong statistical effect on the model of local government distress. However, local government level and most of financial variables have no significant relationship on distress.

Research on financial distress in governmental sector in Indonesia has been conducted by Sutaryo, Sutopo, and Setiawan (2010) by empirically testing whether the information presented in local government financial report has an effect on the probability of financial distress in local government in Indonesia. The results of their research show that the information presented in local government financial reports has a predictive ability for financial distress condition of local government in Indonesia. Sutaryo, Sutopo, and Rahmawati (2012) studied the relevant value of local government financial reports in Indonesia to identify the ability of its financial ratios which was prepared in cash modified basis in predicting local government financial distress status. The results of their study show that the financial ratio of financial report has an ability to predict the local government financial distress status.

The objective of the study is to investigate the effect of local government characteristics, infrastructure and financial condition to predict financial distress

at local government in Indonesia. This study follows Jones and Walker (2007) to explore financial distress in local governance. Jones and Walker (2007) develops a model in predicting financial distress in the size of service delivery framework, whereas this study uses relevant value of information presented in government financial reports' framework in predicting financial condition of government such as Plummer et al. (2007) and Pridgen and Wilder (2012) study. This study is relevant to be conducted because the obligation to prepare financial report for local government is still relatively new for the local government in Indonesia. This regulation is set to be effective from 2006. It is important to analyze the early periods of accrual accounting adoption using Indonesian context. Further, based on the result of audit performed by the Audit Agency Board of the Republic of Indonesia (Badan Pemeriksa Keuangan Republik Indonesia-BPK RI) in 2009-2010, several local governments in Indonesia were indicated with bankruptcy. Therefore, the study investigate of local government characteristics, infrastructure and financial condition to predict financial distress at local government in Indonesia during 2007-2009 observation.

II. LITERATURE REVIEW AND HYPOTHESES

A. Definition and Prediction of Financial Distress

Jones and Walker (2007) define financial distress as government's inability to provide public services according to service quality standard determined. The reason that caused government's inability is due to the government has no available funds to be invested in infrastructure needed to provide public services. The condition indicates that government faces financial difficulties.

According to Foster (1986) there are several indicators or the sources of information that can be used to predict the financial distress condition, among

others: information from cash flow analysis, information from company's strategy analysis, information from financial report analysis compared with other entity's financial report, and information from the analysis of external factors such as stocks return and bond rating.

There are two models of approach that can be used to predict the financial distress condition, that is: univariate model of distress prediction and multivariate model of distress prediction (Foster, 1986). Univariate model of distress prediction makes an assumption based on two key assumptions: variables for entity that faces financial distress which is systematically different with variables for entity that does not face financial distress and these variables that are systematically different can be developed for financial distress condition prediction motive. Multivariate model of distress prediction uses dependent variables in the form of groups such as bankrupt group and non-bankrupt group or the group which has the possibility to face bankruptcy. Financial ratios are usually used in the testing of this model.

B. Financial Report Information and Financial Distress Prediction

Previous studies were aimed to connect the use of financial report in predicting financial distress, both in private sectors and public sectors. Previous study such as Barth, Cram, and Nelson (2001), Chi and Tang (2006), Gordon and Jordan (1989), Kahya (1997), Moore (1990) and Tinoco and Wilson (2013) on private sector shows that generally the information from financial report has an ability to predict financial distress. Plummer et al. (2007) investigate use the government financial report provides relevant information to assess the risk of government failure. Ingram, Raman, and Wilson (1989) link government financial report and its ability to provide information for bond market and observing market reaction when financial report is released. The result shows that the local government financial report does not provide significant information for the investor who invests

on bonds in the time of issuance of financial report. Kamnikar, Kamnikar, and Deal (2006) argue that ratio analysis and industry standard used in private sectors also have been used in public sectors. Further, Groves, Godsey, and Shulman (1981) argue that there are seven indicators for government financial assessment such as revenues, expenditure, operating position, debt structure and unfunded liabilities, and condition of capital plant Jones and Walker (2007) investigated local government distress uses three predictor variables: council characteristic, local service delivery, infrastructure, and financial variables. These results show that local government financial report have information content to predict future condition.

C. Hypothesis

1. *The Effect of Local Government Characteristic on Financial Distress*

Local government characteristic in this study refers to the research conducted by Jones and Walker (2007) which includes population, size, population density, and local government status. Population shows overall inhabitants who live in an area of a local government. Local government always makes serious efforts to provide good public services for their people. A large number of populations in a certain area will increase the demand to the government to provide better public services. Cohen (2008) obtains evidence that the number of population has an effect on the financial performance of local government. The larger the number of population is, the higher the demand for good public services is. Jones and Walker (2007) test the effect of population on financial distress and acquire a significant result. If the number of population in an area is larger than the other area, then the local government's burden is heavier and is more susceptible to face financial distress. Pridgen and Wilder (2012) provide evidence that population have positive effect on default risk municipal government.

Size represents how wide the area of local government coverage is. Local government that covers

wider area (size) needs to provide more services than local government that covers narrower area. The wider the area coverage of local government, the heavier the cost of infrastructure and maintenance cost that become burden for local government, thus the local government is more susceptible to face financial distress. Jones and Walker (2007) find a significant effect of size of local government on financial distress.

Local government status represents whether the local government is the regency or city government. The view that local government status affects financial performance is due to the differences on population characteristic and the structure of local government income among the local governments. These differences can result in different social control (Abdullah & Asmara, 2006) The lower the social control owned by the local government, then the government is more susceptible to face financial distress. Jones and Walker (2007) find a significant effect of local government status on local government financial distress.

- H_{1a}: Population (POP) has a positive effect on financial distress of local government in Indonesia.
- H_{1b}: Size (SZ) has a positive effect on financial distress of local government in Indonesia.
- H_{1c}: Population density (PD) has a positive effect on financial distress of local government in Indonesia.
- H_{1d}: Local government status (LGS) has a positive effect on financial distress of local government in Indonesia.

2. *The Effect of Infrastructure on Financial Distress*

Local government expenditure mostly consists of expenditure to provide and maintain the infrastructures owned by the local government. Jones and Walker (2007) assess the variable of infrastructure with road program cost to total assets ratio and carrying value. Road program cost to total assets ratio shows the ratio between the cost needed to provide and repair the road with total assets. This ratio provides a description of how much cost of development/repairment

of the road as an infrastructure is allocated by local government compared to its total assets. Groves Groves et al. (1981) describe this ratio with maintenance effort that is the comparison between the expenditure for roads repair and maintenance with local government total assets. The high ratio of maintenance effort indicates that local government bears a high expenditure for each period, thus, the local government can be considered as inefficient or less efficient. The high proportion of expenditure for repairmen and maintenance of assets can disturb the expenditure for local development, thus increasing the probability of facing financial distress. Jones and Walker (2007) find a relationship between the expenditure for road program and total assets on financial distress of local government.

Carrying value of total infrastructure is the value attached to total infrastructure. The infrastructure consists of fixed assets in the form of building, road, irrigation, and bridge. This value represents local government's attention on public services. According to Stevens and McGowan (1983) the higher local government expenditure indicates the high growth of development, thus, there is government's efforts to fulfil infrastructure in providing public services for the community. Jones and Walker (2007) find a significant relationship between carrying value in total infrastructure on financial distress of local government. The higher the number of infrastructure allocated by local government indicates that the local government faces difficulty in financing their public services, thus, the local government tends to be more susceptible to face financial distress.

- H_{2a}: Road program cost to total assets ratio (RPCTA) has a positive effect of financial distress in local government in Indonesia.
- H_{2b}: Carrying value (CV) has a positive effect on financial distress of local government in Indonesia.

3. *The Effect of Liquidity Ratio on Financial Distress*

Liquidity ratio represents the availability of current assets which will be used to cover the responsibilities that need to be finished or current liabilities. Liquidity

ratio covers current ratio, cash ratio, quick ratio, and working capital ratio on assets. If local government has a good financial liquidity it indicates that the local government has enough current assets to finance the government activities in providing services, thus decreasing the probability to face financial distress. Kamnikar et al. (2006) assess financial condition of local government and states in the United States of America by using financial ratios which are usually used to assess financial condition in private companies. Three main indicators used are cash quick ratio, debt to assets ratio, and continuing service ratio. These three ratios reflect liquidity, debts on assets, and public services. The main indicator for liquidity is cash quick ratio. Further, Jones and Walker (2007) also use working capital to assets ratio as a proxy for liquidity in local government financial ration. The study expect that both variables cash quick ratio and working capital to assets ratio have negative effect on financial distress of local government.

H_{3a}: Cash quick ratio (CQR) has a negative effect on financial distress of local government in Indonesia.

H_{3b}: Working capital to assets ratio (WCTA) has a negative effect on financial distress of local government in Indonesia.

4. The Effect of Financial Performance Ratios on Financial Distress

Financial performance of local government represents the difference between income and expenditure. The report of the difference between income and expenditure of local government is stated in the form of surplus or deficit. Previous studies that test the relationship between failure risk and financial performance provide mixed results. Stevens and McGowan (1983) in their study asses financial performance employing financial indicator as variables that is external reliance measure ratio. The results from other studies show a negative relationship, while other studies find no relationship (Ingram et al., 1989). Plummer et al. (2007) in their study employ performance government wealth ratio or a ratio for

performance from the budget and ratio of government performance from equity (performance fund ratio). Cohen (2008) in his study employs return on equity (ROE), return on asset (ROA), and profit margin to assess performance. Jones and Walker (2007) assess government performance ratio using ROA and net income (surplus). This study employs performance government wealth ratio (Plummer et al., 2007), ROA, and profit margin (Cohen, 2008) to assess local government performance. Cohen et al. (2012) also provide evidence that financial performance is important indicators on the financial distress of local government.

H_{4a}: Performance government wealth (PERGW) has a negative effect on financial distress of local government in Indonesia.

H_{4b}: Return on equity (ROE) has a negative effect on financial distress of local government in Indonesia.

H_{4c}: Return on asset (ROA) has a negative effect on financial distress of local government in Indonesia.

H_{4d}: Profit margin (PM) has a negative effect on financial distress of local government in Indonesia.

5. The Effect of Financial Position on Financial Distress

The amount of net assets represents the comparison of financial report components to asses government financial position through government financial report. The amount of total net assets generally provides a broad description of cumulative revenue of a government which surpasses its cumulative cost. There are two measurement used by Plummer et al. (2007) and Pridgen and Wilder (2012) to prepare net assets that is position of government's wealth and fund's position. A high value of net asset shows a strong financial position; local government has a high number of funds so that is able to fund government activities in providing services, thus, decreasing the possibility to face the financial distress.

H_{5a}: Position fund ratio (POSF) has a negative effect on financial distress of local

government in Indonesia.

H_{5b}: Position government wealth ratio (POSGW) has a negative effect on financial distress of local government in Indonesia.

6. *The Effect of Debt Ratio on Financial Distress*

Debt ratio describes the number of assets used to fund the liabilities (Cohen et al., 2012). Local government needs both current assets and capital assets to provide services to their community. If the number of budget needed by the government is not sufficient, then debt is an alternative funding for the government. The higher the number of government debts, the higher the risk for the government to face financial distress. Plummer et al. (2007) and Pridgen and Wilder (2012) employ debt ratios to predict the risk of financial distress, the ratios are: UNA, RNA_DEBT, RNA_OTHER, CLGW, and CLF. The results of their study show that CLGW and RNA_DEBT have no effect on financial distress of government. Groves et al. (1981)) employs debt structure and unfunded liabilities to assess government abilities to repay their debts. Cohen (2008) employs current ratio, debt to equity ratio, and long term liabilities to total assets to predict local government performance.

H_{6a}: Current liabilities government wealth (CLGW) has a positive effect on financial distress of local government in Indonesia.

H_{6b}: Current liabilities fund (CLF) has a positive effect on financial distress of local government in Indonesia.

H_{6c}: Current liabilities (CL) has a positive effect on financial distress of local government in Indonesia.

H_{6d}: Long term debt to total asset (LTDTA) has a positive effect on financial distress of local government in Indonesia.

H_{6e}: Debt to revenue (DTR) has a positive effect on financial distress of local government in Indonesia.

III. RESEARCH METHOD

A. Sample

The population in this study is all local governments in the level of district and city in Indonesia. This study employs the purposive sampling technique to choose the samples. The criteria for the samples are: (1) district/city government publishes the government financial report from 2007 up to 2009, (2) the report has been audited by BPK and was granted unqualified opinion, unqualified opinion with explanation language, or qualified opinion, and (3) government financial report disclosed all data and information needed in the assessment of variables and data analysis to test the study hypothesis. The study choose 2007 - 2009 as observation periods because it is the early periods of accrual accounting adoption in local government in Indonesia.

B. Operational Definition of Variables

1. *Dependent Variable*

The dependent variable in this study is financial distress. Financial distress is government inability to provide public services according to a predetermined service quality (Jones & Walker, 2007). This study based its assumption of financial distress on the Government Regulation No. 54/2005 about Local Government Debts as used by Sutaryo et al. (2010). Consistent with the regulation, local government can make debts if they have minimum Debt Service Coverage Ratio (DSCR) value of 2.5%. Local governments that are not able to fulfil the criteria are considered as facing financial distress and are coded with 1. However, for the government that is able to fulfil the criteria is considered in non-financial distress and is coded with 2. To calculate DSCR the researcher uses following formula:

$$DSCR = \frac{(PAD + BD + DAU) - BW}{P + B + BL}$$

Notes:

Table 1. Independent Variables

VARIABLES	CODE	REFERENCE	FORMULA
Population	POP	Jones and Walker (2007), Pridgen and Wilder (2012)	Number of inhabitants who live in local government coverage
Size	SZ	Jones and Walker (2007)	Local government coverage area
Population Density	PD	Esteve, Boyne, Sierra, and Ysa (2012), Jones and Walker (2007), De Janvry, Finan, and Sadoulet (2012)	Number of inhabitants per unit area
Local Government Status	LGS	Esteve et al. (2012), Jones and Walker (2007)	District or city government
Road program cost to total assets ratio	RPCTA	Jones and Walker (2007)	$\frac{\text{Road Program Cost}}{\text{Total Assets}}$
Carrying Value	CV	Jones and Walker (2007)	Carrying Value in Total Infrastructure
Cash quick ratio	CQR	Kamnikar et al. (2006)	$\frac{\text{Cash Quick Assets}}{\text{Current Liabilities}}$
Working capital to assets ratio	WCTA	Kamnikar et al. (2006)	$\frac{\text{Current Assets} - \text{Current Liabilities}}{\text{Total Asset}}$
Performance government wealth	PERF	Plummer et al. (2007)	$\frac{\text{Total Revenue} - \text{Total Expenditure}}{\text{Total Revenue}}$
Return on equity	ROE	Cohen (2008)	$\frac{\text{Net Surplus (Deficit)}}{\text{Total Equity}}$
Return on asset	ROA	Cohen (2008)	$\frac{\text{Net Surplus (deficit)}}{\text{Total Assets}}$
Profit margin	PM	Cohen (2008)	$\frac{\text{Net Surplus (deficit)}}{\text{Net Operating Revenues}}$
Position fund ratio	POSF	Plummer et al. (2007)	$\frac{\text{Total Fund balances}}{\text{Total Fund Revenues}}$ $\frac{\text{Total Fund Balance}}{\text{Total Fund Revenues}}$
Position government wealth ratio	POSGW	Plummer et al. (2007)	$\frac{\text{Total Net Assets}}{\text{Total Revenues}}$
Current liabilities government wealth	CLGW	Plummer et al. (2007)	$\frac{\text{Current Liabilities not The Current of Long Term Liabilities}}{\text{Total Revenues}}$
Current liabilities fund	CLF	Plummer et al. (2007)	$\frac{\text{Fund Liabilities}}{\text{Total Fund Revenues}}$
Current liabilities	CL	Groves et al. (1981)	$\frac{\text{Current Liabilities}}{\text{Net Operating Revenues}}$
Long term debt to total asset	LDTA	Groves et al. (1981)	$\frac{\text{Net Long Debt}}{\text{Assets Valuation}}$
Debt to revenue	DTR	Stevens and McGowan (1983), Turley, Robbins, and McNena (2015)	$\frac{\text{Total Debt}}{\text{Total Revenues}}$

The model of the binary logistic regression formula in this study is as follows:

$$\text{Ln} \left(\frac{P}{P-1} \right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_5 \dots + \beta_n X_n$$

Notes: $\text{Ln} \left(\frac{P}{P-1} \right)$ = probability for local government to face the financial distress and non-financial distress.

X_1, \dots, X_n = the variable of characteristic, infrastructure, and financial condition of local government presented in budget realization, balance sheet, cash flow, and notes for financial report.

$\beta_0 \dots \beta_n$ = regression coefficient.

- DSCR = Debt Service Coverage Ratio.
- PA = Local Indigenous Revenue.
- BD = Proportion of Property Tax, Tax from Property Acquisition, Income from Natural Resources, and Other proportion for Local Government such as Personal Income Tax.
- DAU = General Allocation Funds.
- BW = Required Expenditure, expenditure that must be performed/cannot be avoided in the fiscal year, such as employees salary.
- P = Instalment payment for the principal which matures in the fiscal year.
- B = Loan interest which matures in the fiscal year.
- BL = Other Expenses (commitment cost, bank cost, etc.).

2. Independent Variables

The independent variables in this study are characteristic, infrastructure, and financial condition of the local government. Local characteristics represent specific characteristics that consist of population, size, population density, and local government status (Jones & Walker, 2007). Local infrastructures consist of the carrying value of an infrastructure and cost allocated for development and repairment of road (*road program cost to total asset ratio*) (Groves et al., 1981; Jones & Walker, 2007). Financial condition of local government consists of liquidity ratio, performance, financial position, and debts (Groves et al., 1981; Jones & Walker, 2007; Kamnikar et al., 2006; Plummer et al., 2007; Stevens & McGowan, 1983). The independent variables consist of absolute numbers and ratio that is presented in local government financial reports such as budget realization report, cash flow report, balance sheet, and notes to financial report. The ratios chosen to

be calculated in this study are adapted with the data and information that is available in local government financial report. The ratios used as an independent variable are presented in Table 1.

C. Research Model

The model of formula developed in this study describes that financial distress is a function of independent variables which consists of characteristics, infrastructure, and financial ratios of local government. Because the data of financial distress is a nominal data (dummy variable), thus, the hypothesis testing in this study uses linier probability model or commonly known as binary logistic regression model (Gujarati, 2004)).

IV. RESULTS AND DISCUSSION

A. Sample of the study

Table 1 shows that local government financial reports in 2007-2009 collected through formal demand to Audit Board of the Republic of Indonesia are 1.482. From this number 485 reports are taken out from the samples because they acquired adverse opinion and disclaimer opinion from BPK. Besides that, 845 reports also taken out from samples because they do not disclose data and information needed in this study. Thus, there are 152 local government financial reports usable as samples. The result of sampling is presented in the following table.

Table 2. Research Samples

Local government financial reports from 2007-2009.	1.482
Local government financial reports from 2007-2009 with adverse opinion and disclaimer opinion from BPK.	(485)
Local government financial reports from 2007-2009 which present incomplete data and information.	(845)
Total observation for research.	152

Source: BPK RI

B. Descriptive Statistic

Table 3 shows descriptive statistic of local government data from 2007-2009 with a total of 152

reports, consisting of 121 from non-financial distress government and 32 from local government categorized as financially distressed. The data comparison in the table shows the difference of average value and ratios

Table 3. Statistic Descriptive Data of Distress and Non Distress Local Government 2007-2009

Var	NON FINANCIAL DISTRESS (1), (N = 121)				FINANCIAL DISTRESS (0), (N = 31)			
	Min	Max	Mean	St. Dev	Min	Max	Mean	St.Dev
1. Characteristic								
POP	104,28	2.162,64	706,00	476.646,84	57,120	1.504,15	670,00	453.777,30
SZ	25,24	9.482,73	1.5571	1.711,31	46,01	18.359,04	2.708,10	3.392,64
PD	21,38	3.5799,70	1.637,74	3.673,26	37,04	11.480,16	896,36	2.081,94
LGS	0	1	0,77	0,42	0	1	0,87	0,34
2. Infrastructure								
RPCTA	0,01	0,48	0,05	0,07	0,003	0,15	0,05	0,34
CV	7,00	10.000,00	1.890,00	1.386,00	400,00	6.000,00	1.630,00	1.234,00
3. Financial								
a. Liquidity Ratio								
CQ	0,63	1.410,77	124,95	239,38	260,07	4728,11	250,30	933,17
WCTA	-0,01	8,76	0,12	0,79	-0,08	0,17	0,04	0,06
b. Performance Ratio								
PERFGW	-18,77	1,30	-1,46	2,88	-3,40	0,59	5,07	0,99
ROE	-0,06	4,55	0,002	0,02	-0,02	0,11	0,02	0,032
ROA	-0,06	0,08	0,002	0,02	-0,02	0,13	0,02	0,03
PM	-4,61	4,55	0,12	1,02	-17,15	12,82	0,78	4,26
c. Financial Position Ratio								
POSF	-392,12	18,56	-34,02	49,22	-758,50	1,77	-5,60	132,22
POSGW	0,22	19,80	3,07	2,69	0,82	8,46	2,58	1,54
d. Debt Ratio								
CLGW	.000059	.131462	.01159471	.019	-0,0002	0,24	0,04	0,05
CLF	0,00	1,83	0,11	0,27	0,0004	14,98	0,63	2,67
CL	0,00	1,59	0,12	0,24	-0,04	5,52	0,70	1,25
LTDTA	0,00	0,99	0,39	0,31	0,0004	1,23	0,31	0,35
DTR	0,00	0,20	0,02	0,03	0,00006	0,24	0,05	0,06
FD	2	2	2	0,00	1	1	1	0,00
Valid N (listwise)	121	121	121	121	31	31	31	31

Notes:

POP = Population
 SZ = Size
 PD = Population Densities
 LGS = Local Government Status
 RPCTA = Road Program Cost to Total Asset
 CV = Carrying Value
 CQ = Cash Quick
 WCTA = Working Capital to Total Asset
 PERFGW = Performance Government Wealth
 ROE = Return on Asset

ROA = Return on Asset
 PM = Profit Margin
 POSF = Position Fund
 POSGW = Position Government Wealth
 CLGW = Current Liabilities Government Wealth
 CLF = Current Liabilities Fund
 LC = Current Liabilities
 LTDTA = Long Term Debt to Total Asset
 DTR = Debt to Revenue
 FD = Financial Distress

between the local government categorized as non-financial distress and financial distress. These descriptive data also provide an illustration that both groups have different profile, thus it is useful in testing the prediction of probability to face financial distress (Foster, 1986).

C. Data Analysis

The statistical testing obtains a value of -2Log

Likelihood without a variable or only constant of 153.771, after a new variable is entered then the value of -2 Log Likelihood decreased to 100.723 or there is a decrease of 53.048. The decrease is higher than table value of 2.571, thus, it can be said that the difference in the decrease of -2Log Likelihood is significant. It means that the addition of independent variables into the model can improve the model fit. Model fit also can be tested using Hosmer and Lemeshow's. Goodness of fit which test null hypothesis that empirical data is suitable or in accordance with

Table 4. The Results of Binary Logistic Regression Testing of Characteristic, Infrastructure, and Financial Condition of Local Government on Financial Distress

Variable	Exp. Sign	B	S.E	Wald	Sig.
Constant		-4,318	0,856	25,429	0,000
1. Characteristic					
Population (POP)	+	0,000	0,000	0,681	0,409
Size (SZ)	+	0,000	0,000	5,068	0,024**
Population Densities (PD)	+	0,000	0,000	1,552	0,213
Local Governmen Status (LGS)	+	-0,232	1,550	0,041	0,840
2. Infrastructure					
Road Program Cost to Total Asset Ratio (RPCTA)	+	13,323	6,884	3,746	0,053***
Carrying Value (CV)	+	0,000	0,000	4,135	0,042**
3. Financial					
a. Liquidity Ratio					
Cash Quick (CQ)	-	0,001	0,000	7,051	0,008*
Working Capital to Total Asset (WCTA)	-	0,278	1,445	0,037	0,847
b. Performance Ratio					
Performance Government Wealth (PERFGW)	-	0,394	0,199	3,908	0,048**
Retur on Equity (ROE)	-	58,600	15,206	14,852	0,000*
Return on Asset (ROA)	-	-145,977	150,451	0,941	0,332
Profit Margin (PM)	-	-0,362	0,201	3,249	0,071***
c. Financial Position Ratio					
Position Fund (POSF)	-	0,003	0,009	0,093	0,760
Position Government Wealth (POSGW)	-	0,075	0,305	0,060	0,806
d. Debt Ratio					
Current Liabilities Government Wealth (CLGW)	+	7.347	29.531	0,062	0,804
Current Liabilities Fund (CLF)	+	0,203	0,601	0,114	0,735
Current Liabilities (CL)	+	2,297	0,726	9,997	0,002*
Long Term Debt to Total Asset (LTDTA)	+	-0,876	1,020	0,736	0,391
Debt to Revenue (DTR)	+	15,368	10,706	2,061	0,151

* significant on $\alpha= 1\%$,** significant on $\alpha=5\%$, *** significant on $\alpha= 10\%$

the model. The results of show that the value of Hosmer-Lemeshow is 8.609 and significant at 0.369, this value is higher than 0.05, thus the model is considered as fit and is acceptable.

The value of Cox and Snell's R is 0.295 and the value of Nagelkerke R2 is 0.463 which means that independent variables can cause 46.63% variability of dependent variables, while the rest 53.37% can be explained by another variables. The value of binary Logistic Regression parameter is presented in Table 4.

Table 4 shows that the variable of SZ, RPCTA, CV, CQR, PERF, ROE, PM, and CL has a lower probability value from significance level (alpha) that is 0.001, 0.05 and 0.1. The probability value for CL is 0.002, ROE is 0.000, and probability value for CQR is 0.008. Probability value for three variables above is below $\alpha = 0.01$, thus it can be said that CL, ROE, and CQR is the predictor of the probability for local government in Indonesia to face financial distress. For SZ, CV, and PERF has a probability of 0.024, 0.042, and 0.048 which is lower than $\alpha = 0.05$, thus CQR, CV, and PERF are also predictors of the probability for local government in Indonesia to face financial distress. The probability value for RPCTA is 0.053 and the probability value for PM is 0.071. The probability value for these two variables is below $\alpha = 0.1$, thus it can be said that RPCTA and PM are predictors of the probability for local government in Indonesia to face financial distress.

The above table also shows that for the variables of POP, PD, LGS, WCTAR, ROA, POSF, POSGW, CLGW, CLF, LQTA, and DTR have the probability value that is higher than the level of significance of 0.01, 0.05, and 0.1. These results indicate that the variables cannot be used to predict the financial distress condition of local government in Indonesia in the period of one year after the publication of financial report.

The results of binary logistic regression testing, presented in tabel above, can be used as a basis to prepare a research model. Binary logistic regression model in this study is as follows.

$$\begin{aligned} \text{Ln} \frac{FD}{1-FD} = & -4,318 + 0,000 (POP) + 0,000 (SZ) \\ & + 0,000 (PD) - 0,232 (LGS) + 13,323 (RPCTA) \\ & + 0,000 (CV) + 0,001 (CQR) + 0,278 (WCTAR) \\ & + 0,394 (PERFGW) + 58,600 (ROE) - 145,977 (ROA) \\ & - 0,362 (PM) + 0,003 (POSF) + 0,075 (POSGW) \\ & + 7,347 (CLGW) + 0.203 (CLF) + 2,297 (CL) \\ & - 0,876 (LTDTA) + 15,368 (DTR) \end{aligned}$$

D. Discussion

This study results provide evidence that characteristics that include population, population density, and local government status are not significant, which means that the variable cannot be used to predict financial distress condition of local government in Indonesia. However, the testing results for sub-variable of characteristic, size (area coverage), is in accordance with the hypothesis that size can be used to predict financial distress condition of local government in Indonesia. The argument to support the results above is that by the presence of budget limitation owned by local government, thus, the only area size that still relates with programs and activities that need capital expenditures. Local government that covers a wide range of areas (size) needs to provide more services and needs bigger capital expenditures, thus the government is more susceptible to face financial distress. This result is in line with the study conducted by Jones and Walker (2007) who state that size has an effect on distress.

The testing result for road program to total asset (RPCTA) and carrying value (CV) shows that both variables have a significant probability value, thus both variables are predictors of the probability to face financial distress for local government in Indonesia. This result is in line with the study conducted by Groves et al. (1981) who state that the high road program cost to total aset ratio indicates that local government bears a high expenditure for each period, thus the local government can be categorized as inefficient states. The high number of expenditure for repairmen and maintenance of

assets can disturb the funding for local development, thus makes the probability for the local government to face financial distress is higher. Jones and Walker (2007) also find a statistically significant and strong relationship between road program cost to total asset on financial distress of local government. The result of testing on carrying value is in line with the study conducted by Jones and Walker (2007) who find a significant relationship between carrying value in total infrastructure on financial distress of local government. The higher the number of infrastructure allocated by local government give an indication that the local government has a quite heavy burden and will face difficulties in funding public services for its people. Thus, the local government is more susceptible to face financial distress.

The results of analysis for financial variables show that profit margin (PM) and return on equity (ROE) is significant, thus, it can be said that ROE and PM are predictors for the probability to face financial distress for local government in Indonesia. The results of this study indicate that local government that has a high surplus also has a high PM and ROE, as well as having high probability to face the financial distress. This is based on the assesment system for government budget which uses the concept of value for money (VFM). The performance of budget is assessed based on efficiency, effectivity, and economic side, thus, if government report a budget surplus, the government has to fulfil the performance economically, but not necessarily has a good budget performance assessed from the aspect of effectivity and efficiency. The result of this study is in line with the study conducted by Cohen (2008) and Jones and Walker (2007). Previous study such as Cohen et al. (2012) provide evidence that financial performance is important factor to predict financial distress. Thus this study confirms Cohen et al. (2012).

The testing results show position government wealth ratio (POSGW) and position fund (POSF) have no significant effect on the financial distress. Thus, both variable have no ability to predict financial distress of local government in the future. This result is not consistent with Pridgen and Wilder (2012)

who find positive effect. Pridgen and Wilder (2012) argue that financial position have significant effect to predict the financial distress.

The testing on debt resulted in the coefficient regression for the ratio of government debt measured with current liabilities government wealth (CLGW), current liabilities fund (CLF), current liabilities (CL), and debt to total revenue (DTR) has a positive sign. This positive signed regression coefficient is in accordance with the logical theory in the hypothesis development that the higher the debt owned by local government then the higher the probability to face financial distress. The result of review on local government financial reports shows that local government debts to the third parties (banking and other creditors) are relatively small in number, however most of local government debts were obtained from the central government (Sutaryo et al., 2010). The consequence of this composition is that the payment of interest and principal becomes more flexible. If the debts to the central government are higher, then the risk to face financial distress of local government is lower. This result is consistent with the study conducted by Jones and Walker (2007) who state that government debt ratio has a value that is relevant to predict financial distress of local government.

V. CONCLUSION

The results of this study show that the variable characteristic, infrastructure, and financial condition of local government have an ability to predict a financial distress condition of local government in Indonesia. Specifically, the study shows that the variable size (SZ), road program cost to total asset (RPCTA), carrying value (CV), cash quick ratio (CQR), performance growth wealth (PERF), return on equity (ROE), profit margin (PM), and current liability (CL) are the predictors for the probability of financial distress of local government in Indonesia.

This study has several limitations. The number

of financial reports that meet the criteria to be analyzed is relatively small in number compared to the total number of financial report published by local government in the three years of the research period. The independent variables used in this study are only 19 variables presented in local government financial reports which consist of characteristic, infrastructure, and financial variable which are classified into performance ratio, financial position ratio, and debt ratio. The number of variable characteristic and infrastructure used in this study is limited to only four and two variables. Further, this study does not classify the local government based on its region or more specific criteria such as location on Java and outside Java.

The results have also served the recommendation for local government, central government, and next researchers in this field. For local government, this study provides recommendations, especially, in the utilization of financial report in providing empirical evidence for the variables that is relevant to predict the financial distress. The variables are SZ, RPCTA, CV, CQR, PERFGW, ROE, PM, and CL. Thus, it can become a base in decision making in preparing budget, programs, and activities, thus, can avoid the local government from distress. The management of local government also gets recommendation on expenditure budget, whether it is from creditors, of using other alternative funding, such as cooperation with the third party.

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