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## ***Financial Distress in BUMN in Indonesia and Factors Affecting Financial Performance and Health Levels in BUMN Companies***

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### **ABSTRAK**

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*Financial Ratios;, BUMN Health Level; PMN; Financial Distress.*

### **ABSTRACT**

*This research aims to determine whether there is Financial Distress in BUMN in Indonesia and State Equity Participation. The population in this study were state-owned and non-problematic infrastructure companies registered on the BUMN court website for the period 2016 to 2020. The sampling technique used was the purposive sampling method to obtain a sample of 12 companies. Data analysis techniques using panel data regression analysis method. The results of the study results show that Return On Equity (ROE) and Capital Expenditure is significant for financial distress. BUMN receive assistance from small and insignificant State Equity Participation (PMN) and based on they are paid to pay off large debts based on the assignment Participation (PMN), Soundness Level of BUMN, Liquidity, and Leverage do not affect solving BUMN financial problems.*

## **INTRODUCTION**

The economy in Indonesia is driven by state-owned companies, private companies, national, and foreign companies, and BUMN. State-owned companies have enormous assets of almost 8 thousand trillion and the gross domestic product in the Indonesian economy amounts to around 16,000 trillion rupiahs. Several BUMN in Indonesia has a very large role, for example, banking BUMN ([www.bumn.go.id](http://www.bumn.go.id) . 2022).

BUMN was established to drive the Indonesian economy at a time when large private companies had not played much of a role in all important economic sectors. State-Owned Enterprise (BUMN) is one of the state-owned corporations and is defined as a business entity whose entire or most of its capital is owned by the state through direct investment originating from separated state assets (based on Law No. 19, 2003). The government established BUMN at the beginning of independence by nationalizing foreign companies such as Dutch companies, for example, the government nationalized Dutch companies which became the beginning of the establishment of Bank Rakyat Indonesia (BRI). This also happened to other companies, such as in the field of Natural Resources, for example, companies that produce Alumina (Press Release Number PR-57/S.MBU. /8/2020 About Collaboration for Indonesian BUMN).

At first, Alumina was produced by a Japanese company which later changed to PT. Inalum. Companies that have been nationalized under the BUMN Law are divided into 3 types, namely, firstly, BUMN companies whose shares are 100% owned by the government, for example, PT. Pertamina is engaged in the energy sector. Second, BUMN companies that are allowed to go public by the DPR RI, for example, BUMN companies with majority ownership of 51%, for example, companies that go public include PT. Krakatau Steel (Persero) Tbk, and the three state-owned companies whose shares are owned by the government but not in the form of a limited liability company but in the form of a service or general company, for example, a Jawatan company such as PT. Kereta Api Indonesia (KAI) which was originally a service company became PT Persero (historical website of the Ministry of BUMN. 2022). With the form of a business entity as a limited liability company, the BUMN is expected to generate profits that are used as dividends as a source of funds for part of the APBN financing funding. In the development of the economy, the Indonesian government has experienced difficulties in funding the state budget. This condition gave birth to the 2013 APBN Law.

One of the implicit intentions of the BUMN Law is that the government has the option of implementing a restructuring program. One of the programs is that BUMN is allowed to go public. This program allows the government to get additional capital from selling shares, and the potential for increasing dividends from the participation of funds and human resources from foreign nationals. In addition, if the BUMN is not

healthy, the BUMN assets will be sold and revalued. The proceeds from the sale of the company's assets are used as a source of state revenue. Basically, in its development, the government gives assignments to certain BUMN to carry out government programs, such as the government's desire to build toll roads in various places in Indonesia, build airports, seaports, and other developments.

These assignments are often followed in the form of providing an injection of funds in the form of State Capital Participation (PMN) to increase the investment capacity needed by BUMN to carry out assignments from the government. In its development there are BUMN that have difficulty in obtaining profits, then the government injects funds in the form of State Capital Participation (PMN). Support for state financial policies in Article 1 (paragraph 2), that State Equity Participation (PMN) is the separation of state assets from the State Revenue and Expenditure Budget or the determination of company reserves or other sources to serve as capital for BUMN and other limited liability companies, and managed corporately. The provision of PMN to BUMN shows the Government's commitment to budget efficiency while increasing production spending (www.djkn.kemenkeu.go.id. 2020).

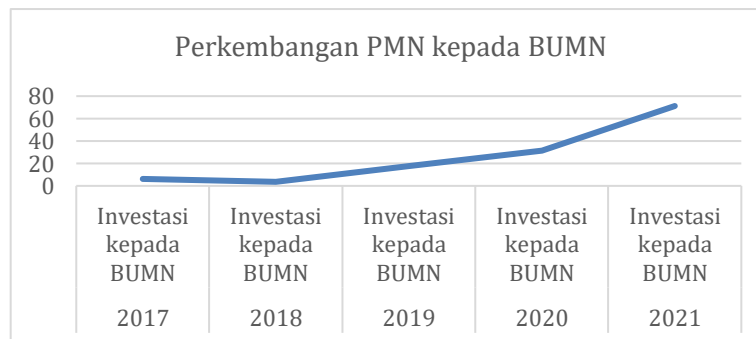


Figure 1 Development of PMN Investment in Indonesian BUMN

Source: Buku II Nota keuangan APBN. 2022

It can be seen that the development of investment (*Capital Expenditure*) of State Equity Participation (PMN) to Indonesian BUMN can be seen in Figure 1 based on Book II of the 2020 State Budget Financial Note that there was an increase in government assignments in the form of State Capital Participation (PMN) from 2017 the funding was at 6.4 trillion rupiahs and then in 2018 the budget for capital injections to BUMN was again lowered to 3.6 trillion rupiahs then in 2018 in 2019 experienced an increase of 17.8 trillion rupiahs. In 2020 it increased again to 31.3 trillion rupiahs and in 2021 PMN spent quite a lot of funding to BUMN amounting to 71.2 trillion

rupiahs. Based on the data on the aid in the form of State Equity Participation (PMN) from the government, state-owned companies are increasingly receiving it every year. PMN received causes a continuous decline in the financial performance of BUMN companies. This is in line with the government's policy of allocating investment to BUMN which are development agents that can play an active role in supporting national priority programs.

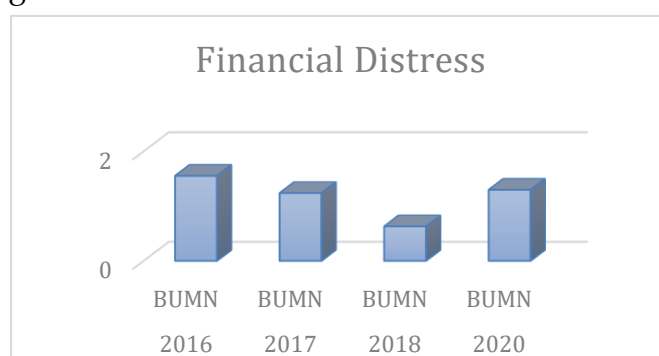


Figure 2 *Financial Distress* pada BUMN Indonesia

Source: Olah data. 2022

It can be seen in Figure 2 regarding Financial Distress in state-owned enterprises in Indonesia from 2016 to 2018 experienced a decrease in financial difficulties and experiencing a significant increase in 2020 due to one of the impacts of covid 19 and bankruptcy which caused the company to have financial difficulties and had to be in debt, even though it has been assisted by injections of funds through state capital participation. Financial Distress in a company is defined as the condition of a company that has a lot of debt compared to the ability of company size, profitability, and sustainable asset composition and financial distress can be measured using the Z-Score (Smuck, 2012). Nely Novianti (2020), namely the ratio of profitability, and liquidity show a significant negative result on financial distress. Financial Distress is said to be a phenomenon that shows a decrease in the financial performance of a company. The history of financial crises shows that financial distress is a cyclical phenomenon and has clear and almost unchanged characteristics (Peter Radke 2018:4).

## LITERATURE REVIEW

### Financial Distress Theory

Financial distress can see a condition in which the company's finances occur, perhaps the management is wrong, the lack of capital for the company, or the wrong

use of funds will be the beginning of the cause of bankruptcy (Baldwin, C. and Scott, 1983). Through financial distress, you can see a company's financial condition that is happening, maybe it is mismanaged, lack of capital funding for the company, or misuse of funds that will be the beginning of the cause of bankruptcy. Financial distress often occurs because many companies are experiencing financial difficulties as a result of poor management, company performance that is still unable to pay obligations, or in other words debt is greater than a company's assets (Whitaker, 1999).

### **Altman Z-Score**

The Altman Z-Score formula is built based on the regression equation of the industry sample in Norway based on research (Aasen, 2011). The method of calculating Altman's Z-Score analysis uses several financial ratios. This model was revised in 1983 and modified in 1993. The original Z-score model (1968) was used for manufacturing companies that have gone public, and the revised Z-Score model (1983) and the modified Z = Score model (1993) were used. for non-manufacturing companies.

The formula for the 1968 Altman Z-Score Method is:

Information:

X1 = Net Working Capital/Total Assets

X2 = Retained Earning/Total Assets

X3 = Earning Before Interest and Tax / Total Assets

X4 = Market Value of Equity to Book Value of Total Debt

$$Z \text{ Score} = 1,2 (X1) + 1,4 (X2) + 3,3 (X3) + 0,6 (X4)$$

In this analysis model, there are 3 categories of corporate bankruptcy, namely:

- a. If the Z value < 1.81, the company is declared as an unhealthy company and has the potential to experience a fairly high risk of bankruptcy.
- b. If  $1.81 < Z < 2.99$  then the company is declared as a company prone to bankruptcy.
- c. If  $Z > 2.99$  then the company is declared as a healthy company.

### **State Equity Participation (PMN)**

State Equity Participation is the process of separating state assets into the capital in companies, whether BUMN, BUMS, foreign companies, or companies owned by international institutions. State Equity Participation (PMN) is also said to separate state assets from the State Revenue and Expenditure Budget (APBN) or determine company reserves or other sources to be used as capital for State-Owned Enterprises (BUMN) or other limited liability companies and managed corporately.

The objectives of State Equity Participation (PMN) are to first realize the general welfare of the community, save the national economy, improve capital structure and increase the business capacity of BUMN and Limited Liability Companies (PT). The forms of State Equity Participation (PMN) are cash, namely, the government gives some money to BUMN, the conversion of government debt means that the government converts BUMN debt and share or asset grants, namely, the government gets a share or asset grant from another party to establish a new BUMN.

### **Theory of State-Owned Enterprises (BUMN)**

BUMN is a State-Owned Enterprise in the form of a Limited Liability Company (PERSERO) as referred to in Government Regulation Number 12 of 1998 and a Public Company (PERUM) as referred to in Government Regulation Number 13 of 1998. State Owned Enterprises (BUMN) are one of the perpetrators of this activity. An important economy in the national economy, which together with other economic actors, namely the private sector and cooperatives, is the embodiment of the form of economic democracy that we will continue to develop gradually and sustainably. BUMN is a business entity whose entire or most of its capital is owned by the state through direct participation originating from separated state assets. Persero is a BUMN in the form of a limited liability company whose capital is divided into shares that are wholly or at least 51% (fifty-one percent) of the shares owned by the Republic of Indonesia whose main purpose is to pursue profit. A Public Company (PERUM) is a BUMN whose capital is entirely owned by the state and is not divided into shares, which aims for public benefit in the form of providing high-quality goods and or services and at the same time pursuing profits based on company management principles.

## **BUMN Health Level**

Analysis of the company's health level and the company's financial condition can be a managerial tool for making decisions and can be used to evaluate the decisions that have been taken by management. In Article 4 (1) the Soundness Level is determined based on the performance assessment for the relevant financial year which includes the assessment of the Financial Aspects, Operational Aspects, and Administrative Aspects, with Indicators and Rating Weights for each BUMN Financial Services in the Insurance and Guarantee Services Business Sector.

The BUMN Health Level is determined based on an assessment of the company's performance for the relevant financial year which includes an evaluation of the Financial Aspects, Operational aspects, and Administrative aspects. The procedure for assessing the health level of BUMN of Non-Financial Services is viewed based on the Financial aspect seen by the Total weight. The total weight of the Infrastructure BUMN (Infra) is 50 and the Non-Infrastructure BUMN (Non-Infra) is 70. The indicators are assessed and their respective weights. In this financial aspect assessment, the indicators assessed and their respective weights are shown in Table 2.1 below. Health Level Assessment In Article 3 (1) BUMN Health Level Assessment is classified into:

**Table 2 Category of BUMN Health Level**

BUNN HEALTH LEVEL		
Kategori	Predikat	Nilai (Skor)
Sehat	AAA	>95
Sehat	AA	80 < TS ≤ 95
Sehat	A	65 < TS ≤ 80
Kurang Sehat	BBB	50 < TS ≤ 65
Kurang Sehat	BB	40 < TS ≤ 50
Kurang Sehat	B	30 < TS ≤ 40
Tidak Sehat	CCC	20 < TS ≤ 30
Tidak Sehat	CC	10 < TS ≤ 20
Tidak Sehat	C	TS ≤ 10

Source: Decree of the Minister of BUMN No: Kep-100/MBU/2002, 2022

The procedure for calculating the health level of BUMN in detail based on the Decree of the Minister of BUMN No: Kep-100/MBU/2002 is presented in Appendix 1



of this thesis proposal. The assessment of the BUMN Health Level according to this decision is only applied to BUMN if the results of the accountant's examination of the company's annual financial calculations are declared with "Unqualified" qualifications or "Reasonable With Exceptions" qualifications from public accountants or the Financial and Development Supervisory Agency. The BUMN Health Level Assessment is determined annually in the ratification of the annual report by the General Meeting of Shareholders or the Minister of BUMN for Public Companies.

### **Kinds of Financial Ratios**

Profitability is said to be a profitability analysis, for shareholders will see the profits to be received in the form of dividends (Sartono, 2016). This is indicated by the profit generated from sales and investment income. How to measure profitability ratios, which reflect the net result of financial policy and operational decisions.

The indicators used are:

1. ROE (Return On Equity)

Return On Equity (ROE) as a result of the return on equity or Return On Equity or profitability of own capital is a ratio to measure net profit after tax with Kasmir's capital (2019: 206). Defining This ratio shows the efficiency of the use of own capital. The higher the value of this ratio, the better. This means that the position of the owner of the company is getting stronger, and vice versa.

2. ROA (Return On Assets)

ROA is one of the profitability ratios used to measure the effectiveness of the company in generating profits by utilizing its total assets (Pontooring, 2017). ROA is also a multiplication between the net income margin factor and asset turnover by the company, while asset turnover shows how far the company can create sales from its assets. If one of these factors increases or both, the ROA will also increase.

Liquidity, With The decision to use the Liquidity ratio, the company already knows that it must have a high level of liquidity indicating the company has several current assets that are ready to pay off its short-term debt. Thus, the



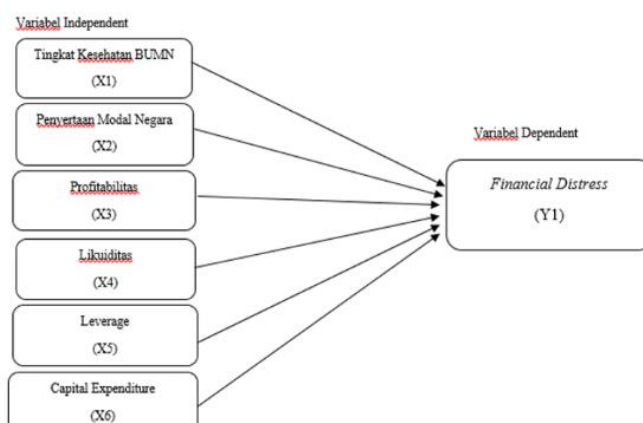
company can avoid financial distress. Periansya (2015) explains that the liquidity ratio is the ratio used to meet short-term financial obligations. So it can be said that the liquidity ratio is the company's ability to meet the company's short-term obligations. The cash Ratio is a ratio that reflects the position of the company's cash and cash equivalents to cover current liabilities or short-term debt. The calculation of the cash ratio is cash divided by total current liabilities.

The leverage, the ratio is a comparison between the amount of debt in the company with total assets. The leverage ratio is the ability of a company to meet its debt obligations with the number of assets it has. A company has a high leverage value if the total assets owned by the company are less than the total assets of its creditors. Therefore, the use of the leverage ratio will be able to see if the company is healthy or not. The higher the leverage ratio, the higher the risk of default to creditors.

Capital Expenditure (Investment Growth), Investment is an activity to invest in the hope of getting a profit or return in the future. This investment can also be said as an activity of placing funds or other valuable assets in certain instruments within a certain period of Tim.

### Frame of Thought

From theoretical studies and previous studies as well as published journals, researchers are interested in exploring the variables of BUMN soundness, State Equity Participation, Profitability, Liquidity, Leverage, and Capital Expenditure as independent variables and financial distress variables as dependent variables. The following is the framework of thinking of this research:



## METHODS

The population of this study were 12 state-owned companies with financial problems, while the number of state-owned companies was 72 after restructuring, from 108 companies before restructuring. Restructuring, for example, companies carrying out privatization, mergers, acquisitions, liquidations, and holdings (www.bumn.go.id. 2022). In this study, the analytical method used was panel data analysis using Eviews 10 software, and to determine the significance level of each regression coefficient between the independent variables and the dependent variable.

Sample Company BUMN

NO	NAMA PERUSAHAAN BUMN YANG TERBUKA MASALAH KEUANGAN
1	PT. BIOFARMA
2	PT.HUTAMA KARYA
3	PT. ASDP FERRY
4	AIRNAV INDONESIA
5	PT.PLN
6	PT.KAI
7	PT.PELINDO III
8	PT.GARUDA INDONESIA
9	PT.WASKITA KARYA
10	PT.PNM
11	PT. POS INDONESIA
12	PT.ANGKASA PURA

## Variable Operational Definitions

No	Variabel	Pengukuran	Skala
1	<i>Financial Distress</i> (Y1)	Model <i>Altman Z-Score</i> $Z = 1,2 (X1) + 1,4 (X2) + 3,3 (X3) + 0,6 (X4)$ Dimana: $X1 = \text{working capital} / \text{total assets}$ $X2 = \text{retained earnings} / \text{total assets}$ $X3 = \text{earning before interest and taxes} / \text{total asset}$ $X4 = \text{market value of equity} / \text{book value of total debt}$	Ratio
2	Tingkat Kesehatan BUMN (X1)	a. Sehat, Yang terdiri dari: AAA apabila total (TS) > 95 AA apabila $80 < TS \leq 95$ A apabila $65 < TS \leq 80$ b. Kurang Sehat, yang terdiri dari: BBB apabila $50 < TS \leq 65$ BB apabila $40 < TS \leq 50$ B apabila $30 < TS \leq 40$ c. Tidak Sehat, yang terdiri dari: CCC apabila $20 < TS \leq 30$ CC apabila $10 < TS \leq 20$ C apabila $TS \leq 10$	Skala Likert

3	Penyertaan Modal Negara (PMN) (X2)	$PMN = \frac{\text{Total Common Stockholder Equity}}{\text{Total Asset}}$	Triliun Rupiah
4	Rasio Profitabilitas (X3)	$Return\ on\ Equity$ $ROE = \frac{\text{Laba Bersih Setelah Pajak}}{\text{Ekuitas Pemegang saham}}$ $Return\ on\ Assets$ $ROA = \frac{\text{Pendapatan Bersih}}{\text{Total Asset}}$	Ratio
5	Rasio Likuiditas (X4)	$Cash\ Ratio$ $CR = \frac{\text{Total Kas dan Setara Kas}}{\text{Total Kewajiban Lancar}}$	Ratio
6	Ratio Leverage (X5)	$Debt\ to\ Equity\ Ratio$ $DER = \frac{\text{Total Hutang}}{\text{Modal}}$ $Debt\ to\ Assets\ Ratio$ $DAR = \frac{\text{Total Hutang}}{\text{Aset}}$	Ratio
7	Capital Expenditure (X6)	$Capex = \text{Aset tetap}$	Ratio

## RESULTS

### Descriptive Statistical Analysis

Descriptive statistics is a statistical test where this test aims to see the distribution of data from the variables used in research (Samuel, 2016).

Table 1 Descriptive Analysis

	ZSCORE	Kes. BUMN	PMN	ROA	ROE	CASH RATIO	DER	DAR	Capex
Mean	3.470897	87.95000	0.685000	-536.0892	-833.7867	-9.474833	-6.844500	27.54333	179.1973
Median	1.270775	86.22000	0.000000	2.255000	5.635000	54.08500	17.70000	14.01000	15.60500
Maximum	60.08295	317.0000	11.00000	10.82000	41.08000	510.0000	667.1100	145.8200	936.8600
Minimum	0.022400	25.00000	0.000000	-8990.000	-17061.00	-5832.000	-4000.000	0.000000	0.000000
Observations	60	60	60	60	60	60	60	60	60

Source: Data diolah dengan *Eviews*. (2020)

Based on table 1 above, it can be seen the descriptive statistical analysis with an explanation of each variable, namely the Z-Score, the Mean Z-Score value is 3.470 or 3.47%, it can be explained that if  $Z > 2.99$ , then it is included in the category of companies that are classified as Healthy, this condition is different from those in the background which is concerned about the condition of BUMN companies which may not be financially healthy, the BUMN Health Level variable (X1) The result of the BUMN Health Level is 87, it is said "Healthy" is included in the "AA" category " which

is  $80 < TS < 95$ . So the results are said not to affect financial distress. This is based on the Decree of the Minister of BUMN No: Kep-100/MBU/2002 and according to financial analysis from the ministry of finance, it is determined based on an assessment of the company's performance which includes an assessment of Financial Aspects, Operational Aspects, and Administrative Aspects. This shows that this condition is not the same as the estimate that state-owned companies that receive assignments from the government are in an unhealthy condition, even for the 2016-2020 analysis period. State Equity Participation (X2), for the Mean State Equity Participation of 0.68 trillion per year, the amount of PMN is relatively small compared to the needs expected to be assisted by the government through the APBN. This shows that PMN is one of the government's ways to nourish a BUMN or other business entity. Even though the amount of PMN provided is quite large, of course, the ratio change is not only caused by PMN activities alone but there are other activities of the companies involved, in the Profitability variable (ROA and ROE) the mean value of ROA is 536.09% which is a condition where it is said that the company State-owned companies suffer losses. When linked to the Z-Score and Soundness Level of BUMN, the losses suffered by BUMN based on ROA make the Z-Score calculation and the ratio of BUMN Soundness unable to capture financial problems based on the calculation of the company's financial performance. This average ROA figure has the potential to be a criticism of the calculation of the Z-Score ratio and the BUMN Soundness ratio, which seem to neglect the company's financial performance.

The mean value of the ROE ratio is 833.79%, which means that state-owned companies, on average, experience very large losses compared to their capital. Both the negative ROA and ROE ratios indicate that the existence of a government assignment is very disproportionate to the State Equity Participation provided and this condition causes company losses based on the company's financial performance using the ROA and ROE indicators, but the financial performance measurement was covered by the Zscore measurement assessment and the company's soundness ratio so that the use of the Zscore measurement and the ratio of BUMN soundness level is not in line with the measurement of financial performance which is based on financial management in general, the mean Cash Ratio value shows a figure of -9.48% which means that the government assignment to BUMN companies has caused problems that

seriously with the increasingly difficult cash owned by the average state-owned companies. This shows that BUMN that receives assignments from the government is then negatively affected by the presence of illiquid company cash, then the Leverage variable (DER and DAR) Debt to Equity Ratio (DER) at a mean value of -6.844500% means that the average company BUMN have become too much in debt compared to the ownership of their assets. Based on the mean value of the DAR ratio of 27.54333%, it shows that in general BUMN companies receive support in the form of funding from external debt which can still make it work and can pay for long-term solvency properly, even though earlier from the DER ratio it experienced financial problems, p. it is feared that there will be BUMN dependence on sources of debt from foreign parties, finally the Capital Expenditure (Capex) variable. At a mean CAPEX value of 179.1973 trillion, it shows that the average BUMN capital expenditure is relatively large, namely 179.1773 trillion per year after the BUMN had received an assignment from the government. By looking at the average data above, it shows that in the short term SOEs experience liquidity and leverage problems, even though long-term debt matters using the DAR indicator have not shown an alarming problem of debt repayment ability. SOEs have the potential to be increasingly sold to foreign parties.

Therefore, limiting the ownership of BUMN shares is an important issue to be maintained so that BUMN in Indonesia does not experience the sale of shares which will be sold more and more to other countries.

## Regression Analysis Panel Data

### 1. Common effect Model (CEM)

Table 3 Result Common Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.260283	3.326239	0.679531	0.4999
KESEHATAN_BUMN	0.003811	0.030858	0.123506	0.9022
PMN	-0.245428	0.479437	-0.511908	0.6109
ROA	0.000116	0.000833	0.139741	0.8894
ROE	-0.001026	0.000442	-2.320752	0.0243
CASH_RATIO	0.000207	0.001576	0.131008	0.8963
DER	-0.001763	0.002303	-0.765206	0.4477
DAR	0.034353	0.029219	1.175697	0.2452
CAPEX	-0.003940	0.003964	-0.994043	0.3249
R-squared	0.232563	Mean dependent var		3.470897
Adjusted R-squared	0.112181	S.D. dependent var		8.523637
S.E. of regression	8.031326	Akaike info criterion		7.142057
Sum squared resid	3289.612	Schwarz criterion		7.456209
Log likelihood	-205.2617	Hannan-Quinn criter.		7.264939
F-statistic	1.931871	Durbin-Watson stat		2.337696
Prob(F-statistic)	0.075139			

Source: *e-views* 10 (2022)

Based on the table above, the results above show that only the ROE variable is significant at the 5% significance level, while the other variables are not proven variables in influencing the financial distress variable. The results on the F test show that the Common Effect Model is not generally influenced by the independent variables and the model's ability to explain the influence of the independent variables on the dependent is very low as shown by the Coefficient Adjusted R Square which is 11.22%, therefore the Common Effect Model of the financial distress this is not selected as a model of financial distress. *Fixed effect Model* (FEM).

2. *Fixed Effect Model*

Table 4 Result *Fixed effect Model*

Dependent Variable: ZSCORE  
 Method: Panel Least Squares  
 Date: 11/27/22 Time: 21:52  
 Sample: 2016 2020  
 Periods included: 5  
 Cross-sections included: 12  
 Total panel (balanced) observations: 60

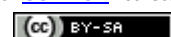
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.785699	4.012827	0.694199	0.4916
KESEHATAN_BUMN	0.006462	0.037181	0.173799	0.8629
PMN	0.548323	0.657360	0.834128	0.4092
ROA	0.000944	0.000850	1.110947	0.2732
ROE	-0.000939	0.000453	-2.072049	0.0448
CASH_RATIO	-0.001313	0.001622	-0.809483	0.4230
DER	0.002911	0.002352	1.238005	0.2229
DAR	0.060631	0.048019	1.262641	0.2140
CAPEX	-0.012267	0.004669	-2.627468	0.0121

Effects Specification

Cross-section fixed (dummy variables)			
R-squared	0.502112	Mean dependent var	3.470897
Adjusted R-squared	0.265615	S.D. dependent var	8.523637
S.E. of regression	7.304441	Akaike info criterion	7.076044
Sum squared resid	2134.194	Schwarz criterion	7.774159
Log likelihood	-192.2813	Hannan-Quinn criter.	7.349115
F-statistic	2.123120	Durbin-Watson stat	2.382127
Prob(F-statistic)	0.022404		

Source: *e-views* 10 (2022)

Based on the table above, the results above show that only the profitability variable on the ROE indicator is significant at the 5% level of significance, while other variables which are variables are not proven to influence the Z-score variable. The results that show a significant Capex variable is significant at the 5% level of significance. The results of the F test show that the Fixed Effect Model is not generally influenced by the independent variables and the ability of the model to explain the effect of the independent variables on the dependent is very low as shown by the Coefficient Adjusted R Square which is 26.5%, therefore, the Fixed Effect Model is from



the Zscore this is better than the Common Effect Model as a model of financial distress. However, the Chow and Hausman tests are still needed to determine whether the Fixed Effect Model will be better than the Random Effect Model.

### 3. Random Effect Model (REM)

Table 5 Result *Random effect Model*

Dependent Variable: ZSCORE  
 Method: Panel EGLS (Cross-section random effects)  
 Date: 11/27/22 Time: 22:01  
 Sample: 2016 2020  
 Periods included: 5  
 Cross-sections included: 12  
 Total panel (balanced) observations: 60  
 Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.260283	3.025194	0.747153	0.4584
KESEHATAN_BUMN	0.003811	0.028065	0.135796	0.8925
PMN	-0.245428	0.436045	-0.562850	0.5760
ROA	0.000116	0.000757	0.153647	0.8785
ROE	-0.001026	0.000402	-2.551697	0.0138
CASH_RATIO	0.000207	0.001434	0.144045	0.8860
DER	-0.001763	0.002095	-0.841354	0.4041
DAR	0.034353	0.026575	1.292694	0.2019
CAPEX	-0.003940	0.003605	-1.092963	0.2795

Effects Specification		S.D.	Rho
Cross-section random		0.000000	0.0000
Idiosyncratic random		7.304441	1.0000

Weighted Statistics			
R-squared	0.232563	Mean dependent var	3.470897
Adjusted R-squared	0.112181	S.D. dependent var	8.523637
S.E. of regression	8.031326	Sum squared resid	3289.612
F-statistic	1.931871	Durbin-Watson stat	2.337696
Prob(F-statistic)	0.075139		

Unweighted Statistics			
R-squared	0.232563	Mean dependent var	3.470897
Sum squared resid	3289.612	Durbin-Watson stat	2.337696

Source: *e-views* 10 (2022)

Based on the table above, the results above show that only the Profitability variable on the ROE indicator is significant at a significant level of 5% while other variables which are variables are not proven to influence the Z-score variable. The results of the F test show that the Random Effect Model is generally influenced by independent variables and the model's ability to explain the influence of independent variables is very low, as shown by the Coefficient Adjusted R Square which is 11.21% based on weighted statistics and based on unweighted statistics of 23.26 %. Therefore the Random Effect Model from Zscore is less able to explain better than the Fixed Effect Model.



Furthermore, testing was carried out between the common effect model (CEM), the fixed effect model (FEM), and the random effect model (REM) to find out the most appropriate model to use.

### Panel Data Regression Model Selection

In selecting a data processing model to be used in a study, it is necessary to be based on various considerations such as:

#### Chow Test

Table 6 Result Chow Test

Redundant Fixed Effects Tests  
 Equation: Untitled  
 Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.968668	(11,40)	<b>0.0587</b>
Cross-section Chi-square	25.960828	11	<b>0.0066</b>

In Table 6 above, the probability value of cross-section F is 0.0000 <0.05 (not significant) then H0 is rejected, meaning that the fixed effect model is selected. Therefore, it is still necessary to proceed to the Hausman test to determine the best model between the common effect or random effect models.

#### Hausman Test

Table 7 Result Test Hausman

Correlated Random Effects - Hausman Test  
 Equation: Untitled  
 Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	21.389222	8	<b>0.0062</b>

Source: EvIEWS 10 (2022)

Based on the Hausman test above, the selected model is the Fixed Effect Model compared to the Random Effect Model. In table 4.7 above, the results of the Hausman test were obtained with a random cross-section probability value of 0.0000 <0.05, so H0 was rejected, meaning that the fixed effect model was chosen in this study. Therefore, do not continue in the Lagrange multiplier test because it has been determined with the same results in the Chow test and the Hausman test.

## Classic Assumption

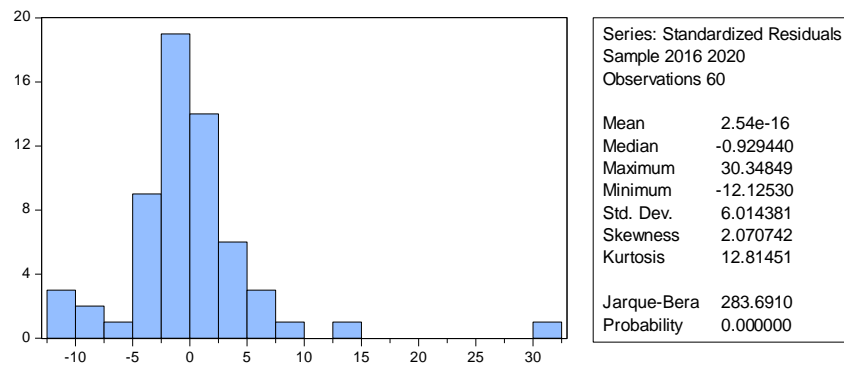


Figure 1 Normality Test

Based on Figure 1, the results of the Jarque Bera test show that the data distribution of the residual Zscore is not normally distributed. This means that the classical regression assumption test for normality is not fulfilled.

## Multicollinearity Test

Table 8 Result Multicollinearity Test

	KESEHATAN_BUMN	PMN	ROA	ROE	CASH_RATIO	DER	DAR	CAPEX
KESEHATAN_BUMN	1.000000	0.024610	0.253953	0.117432	0.061728	-0.035424	-0.113797	-0.092585
PMN	0.024610	1.000000	0.007327	0.088497	0.019251	0.058321	-0.097778	-0.123613
ROA	0.253953	0.007327	1.000000	0.320106	0.409556	0.156924	0.028086	-0.342228
ROE	0.117432	0.088497	0.320106	1.000000	-0.019912	0.514174	-0.024402	0.004029
CASH_RATIO	0.061728	0.019251	0.409556	-0.019912	1.000000	-0.002740	0.060011	0.071057
DER	-0.035424	0.058321	0.156924	0.514174	-0.002740	1.000000	-0.061399	0.043213
DAR	-0.113797	-0.097778	0.028086	-0.024402	0.060011	-0.061399	1.000000	-0.006779
CAPEX	-0.092585	-0.123613	-0.342228	0.004029	0.071057	0.043213	-0.006779	1.000000

Based on the multicollinearity test, all residual values of the VIF variable are less than 10, meaning that the model does not experience multicollinearity disturbances.

## Heteroscedasticity Test

Table 9 Result Heteroscedasticity

Dependent Variable: RESABS  
 Method: Panel Least Squares  
 Date: 11/27/22 Time: 22:28  
 Sample: 2016 2020  
 Periods included: 5  
 Cross-sections included: 12  
 Total panel (balanced) observations: 60

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.872503	1.648217	1.136078	0.2612
KESEHATAN_BUMN	-0.003944	0.015291	-0.257906	0.7975
PMN	-0.090682	0.237571	-0.381704	0.7043
ROA	-7.78E-06	0.000413	-0.018854	0.9850
ROE	-0.000985	0.000219	-4.493908	0.0000
CASH_RATIO	0.000229	0.000781	0.293300	0.7705
DER	0.003367	0.001141	2.949903	0.0048
DAR	0.027644	0.014479	1.909300	0.0619
CAPEX	0.003456	0.001964	1.759458	0.0845
R-squared	0.396012	Mean dependent var		3.644320
Adjusted R-squared	0.301269	S.D. dependent var		4.760947
S.E. of regression	3.979681	Akaike info criterion		5.737761
Sum squared resid	807.7308	Schwarz criterion		6.051913
Log likelihood	-163.1328	Hannan-Quinn criter.		5.860643
F-statistic	4.179853	Durbin-Watson stat		1.846066
Prob(F-statistic)	0.000669			

Source: Eviews 10.2022

The results of the Heteroscedasticity Test show that the ROE Variable has Heteroscedasticity disturbances, therefore the use of panel data analysis methods is not suitable for carrying out this polling so modeling needs to be continued using VAR analysis or other analyses.

## Model feasibility test

### Uji F

Table 10 Result Uji Statistik F

R-squared	0.502112	Mean dependent var	3.470897
Adjusted R-squared	0.265615	S.D. dependent var	8.523637
S.E. of regression	7.304441	Akaike info criterion	7.076044
Sum squared resid	2134.194	Schwarz criterion	7.774159
Log likelihood	-192.2813	Hannan-Quinn criter.	7.349115
F-statistic	2.123120	Durbin-Watson stat	2.382127
Prob(F-statistic)	0.022404		

Source: e-views 10 (2022)

Based on table 10 above, it can be obtained the F-statistic or F-count value of 2.123120 with a significance value of Prob (F-statistic) of 0.022404. So it can be concluded that the Prob value (F-Statistic) of 0.022404 is smaller than the significance value of 0.05 ( $0.022404 < 0.05$ ), so  $H_0$  is rejected and  $H_1$  is accepted. This shows that simultaneously or together that all the independent variables have a significant effect on the dependent variable.

### Coefficient of Determination ( $R^2$ )

Table 11 Result Coefficient Of Determination ( $R^2$ )

R-squared	0.502112	Mean dependent var	3.470897
Adjusted R-squared	0.265615	S.D. dependent var	8.523637
S.E. of regression	7.304441	Akaike info criterion	7.076044
Sum squared resid	2134.194	Schwarz criterion	7.774159
Log likelihood	-192.2813	Hannan-Quinn criter.	7.349115
F-statistic	2.123120	Durbin-Watson stat	2.382127
Prob(F-statistic)	0.022404		

Source: e-views 10 (2022)

Based on the calculation results in table 4.11 using the fixed effect model data, it shows that the Adjusted R-squared value is 0.265615. This means that the adjusted coefficient of determination in the Adjusted R-squared value is 0.265615 or 26.5615%. This means that as much as 26.5615% of the financial distress variable can be explained by the variable BUMN Health Level, State Equity Participation, Profitability, Liquidity, Leverage, and Capital Expenditure, while around 46.0585% ( $100\% - 26.5615\% = 73.4385\%$ ) explained by other variables not examined in this study.

### Hypothesis

Uji t

Table 12 Result Uji t

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.785699	4.012827	0.694199	0.4916
KESEHATAN_BUMN	0.006462	0.037181	0.173799	0.8629
PMN	0.548323	0.657360	0.834128	0.4092
ROA	0.000944	0.000850	1.110947	0.2732
ROE	-0.000939	0.000453	-2.072049	0.0448
CASH_RATIO	-0.001313	0.001622	-0.809483	0.4230
DER	0.002911	0.002352	1.238005	0.2229
DAR	0.060631	0.048019	1.262641	0.2140
CAPEX	-0.012267	0.004669	-2.627468	0.0121

Source: e-views 10 (2022)

#### a. The Influence of BUMN Soundness Level

Based on the table above, the BUMN Health coefficient is 0.006462 where the coefficient moves positively with a t-statistic value of 0.173799 and a probability value of  $0.8629 > 0.05$ . These results state that the soundness level of BUMN has no significant effect on financial distress, thus the hypothesis proposed by researchers which states that the soundness level of BUMN does not affect financial distress is proven.

#### b. Effect of State Equity Participation

Based on the table above, the coefficient value for State Equity Participation (PMN) is 0.548323 where the coefficient moves positively with a t-statistic value of 0.834128 and a probability value of  $0.4092 > 0.05$ . These results state that State Equity Participation (PMN) has no positive and significant influence on financial distress, thus the hypothesis put forward by researchers stating that State Equity Participation (PMN) does not affect financial distress is not proven.

#### c. Profitability effect on financial distress

Based on the table above, the coefficient value on the ROA indicator is 0.000944 where the coefficient moves positively with a t-statistic value of 1.110947 and a probability value of  $0.2732 > 0.05$ . These results state that the ROA indicator does not affect financial distress, thus the hypothesis put forward by researchers stating that ROA does not affect financial distress is not proven.

Then on the ROE indicator, a coefficient value of -0.000939 is obtained where the coefficient moves negatively with a t-statistic value of -2.072049 and a probability value of  $0.0448 < 0.05$ . These results state that the ROE indicator affects financial distress, thus the hypothesis put forward by researchers stating that ROE affects financial distress is proven.

#### d. Effect of Liquidity on financial distress

Based on the table above, the cash ratio coefficient is -0.001313 where the coefficient moves negatively with a t-statistic value of -0.809483 and a probability value of  $0.4230 > 0.05$ . These results state that the cash ratio does not affect financial

distress, thus the hypothesis put forward by researchers stating that the cash ratio does not affect financial distress is not proven.

#### e. Leverage effect on financial distress

Based on the table above, the coefficient value on the DER indicator is 0.002911 where the coefficient moves positively with a t-statistic value of 1.238005 and a probability value of  $0.2229 > 0.05$ . These results state that the DER indicator does not affect financial distress, thus the hypothesis put forward by researchers stating that DER does not affect financial distress is not proven.

Then on the DAR indicator, a coefficient value of 0.060631 is obtained where the coefficient moves positively with a t-statistic value of 1.262641 and a probability value of  $0.2140 > 0.05$ . These results state that the DAR indicator does not affect financial distress, thus the hypothesis put forward by researchers stating that DAR does not affect financial distress is proven. 0.0121

#### f. Effect of Capital Expenditure on financial distress

Based on the table above, it is obtained that the Capital Expenditure coefficient is -0.012267 where the coefficient moves negatively with a t-statistic value of -2.627468 and a probability value of  $0.0121 > 0.05$ . These results state that Capital Expenditure influences financial distress, thus the hypothesis put forward by researchers states that Capital Expenditure influences financial

## CONCLUSION AND SUGGESTION

1. Variable Return On Equity (ROE) which is significant at the 5% significance level (Prob  $< 0.05$ )
2. The Capital Expenditure variable has a significant effect on the 5% significance level (Prob  $< 0.05$ )
3. The model that deserves to be chosen is the Fixed Effect Model

Based on the results and discussion of the research obtained, it is hoped that further research can be developed even better by following the existing suggestions, namely:

It is recommended that further research be able to add to the research prediction model used and the addition of financial variable ratios which may further strengthen the results of financial distress research.

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