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Financial distress and earnings management before and during the Covid-19 pandemic

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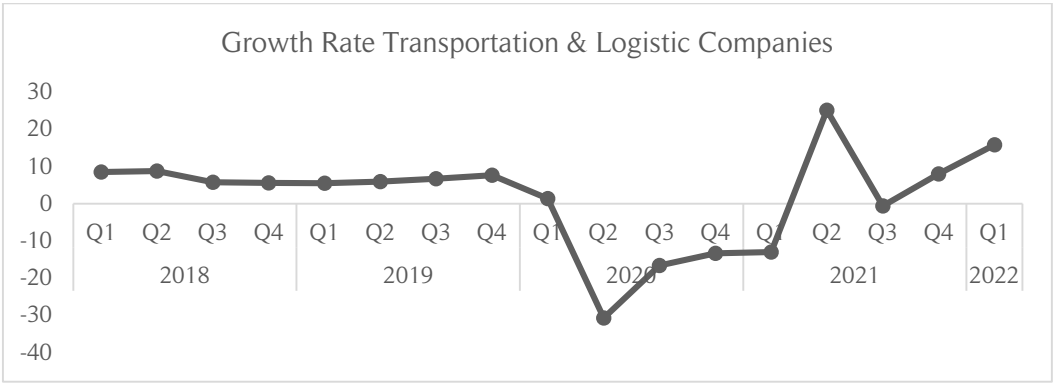
ABSTRACT

This study aims to investigate the influence of financial distress on accrual earnings management and real earnings management before and during the COVID-19 pandemic. Using a purposive sampling method, the study analyzed the sectors most impacted by the pandemic lockdown, including energy, transportation, and logistics companies, between 2018 and 2021. The total sample of 236 firm-year observation data points was analyzed in this study using regression analysis. The study finds that financially distressed firms tend to engage less in real earnings management before and during the COVID-19 pandemic. However, the study did not find a similar significant difference for accrual earnings management. This research contributes to the discussion of financial distress and earnings management by looking more closely to the company most affected by the pandemic. Real earnings management is more costly than accrual earnings management, and companies with financial distress may not have enough resources, especially during the pandemic, to maneuver their real business operations.

Introduction

The COVID-19 pandemic began on December 30, 2019, spread throughout the world, and impacted the world's economy, disrupting economic activity and people's lives. To break the spread of the virus, authorities across the world had to assess their existing conditions and implement policies such as lockdowns and social distancing to respond to the COVID-19 outbreak (Jang et al., 2021). These policies negatively affected the economy by reducing general activities (Ozili & Arun, 2020). Based on PwC's Global Crisis Survey 2021, 73% of businesses experienced a negative impact caused by the COVID-19 crisis (PwC, 2021). Transportation and logistics companies are one of the sectors most affected by the COVID-19 pandemic. The following figure shows the growth rate of transportation and logistics companies in Indonesia.



Source: (BPS, 2022)

Figure 1 Growth Rate Transportation & Logistic Companies

Based on Figure 1, transportation and logistics companies experienced a significant negative growth rate in 2020. Restrictions on mobility caused it as a precaution against the spread of COVID-19 (BPS, 2022). These restrictions impact the government's policy of large-scale social restriction (PSBB), which caused a significant decrease in the number of passengers (Audy & Irfan, 2021). The COVID-19 pandemic also affected energy companies. The following figure shows the growth rate of energy companies.

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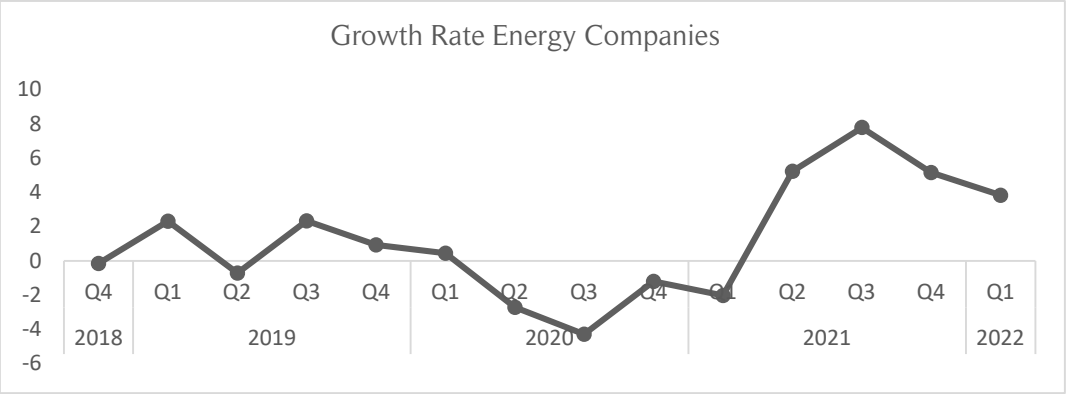

Source: (BPS, 2022)

Figure 2. Growth Rate Energy Companies

Figure 2 shows that from 2020 to the first quarter of 2021, energy companies experienced negative growth. The COVID-19 pandemic worldwide has caused many countries to implement policies, both lockdowns and large-scale social restrictions (PSBB), to prevent the spread of the virus. In contrast, this policy caused a decrease in energy consumption, such as fuel oil, so world crude oil prices fell as a consequence of oversupply (Hartono et al., 2021).

From the description above, it can be concluded that the COVID-19 pandemic affected the financial crisis experienced by Indonesia. The financial crisis can be seen by increasing environmental uncertainty, and decreasing demand is predicted to impact the company's financial condition, which will cause the company to experience financial distress at last (Yazdanfar & Ohman, 2020). Financial distress is a company's failure to meet its financial obligations, which includes a liquidity crisis and insufficient equity and debt repayment failure (Singh & Rastogi, 2022). Financial distress can trigger a company to go bankrupt or liquidate (Younas et al., 2021). The COVID-19 pandemic has impacted financial markets and performance (Estrada et al., 2020). During economic turbulence and financial downturns, companies have a tendency to engage more in earnings management practices to reduce the adverse impact of the crisis on their financial performance, convey a positive image of the company and respond to the current adverse market environment (Choi et al., 2011; Ozili & Arun, 2020).

Previous studies on earnings management in relation to the COVID-19 pandemic have shown different results. Some researchers have founds that companies tend to engage more in earnings management during the COVID-19 pandemic because companies intend to reduce the adverse impact of the crisis on their financial performance and respond to the current negative market environment (Ozili & Arun, 2020; Rahman et al., 2022; Ryu & Chae, 2022; Xiao & Xi, 2021). In contrast, some researchers find that during crises such as the COVID-19 pandemic, companies tend to engage less in earnings management because of lower-level management's incentive to engage in earnings management, higher acceptance of firms' poorer performance from markets, and increased oversight by governmental agencies, auditors, and exchange boards during crises (Ali et al., 2022; Liu & Sun, 2022; Türegün, 2019).

A previous study conducted by Viana et al. (2022) shows that more distressed firms tend to engage more in EM. This result aligns with a study by Jacoby et al. (2019), which explains that companies experiencing financial distress tend to use more aggressive earnings management to reduce the potential adverse effects of financial distress. Meanwhile, another study shows that managers practice earnings management when the firm is not in distress but otherwise in distress (Ghazali et al., 2015; Li et al., 2020).

This research aims to explore the relationship between financial distress and earnings management (AEM and REM) in energy, transportation and logistics companies listed on the Indonesian Stock Exchange for the 2018-2021 period. We expect that companies with more financial distress will engage in more earnings management activities during the pandemic. The results show that financial distress did not affect AEM before and during the COVID-19 pandemic. In contrast, financially distressed firms tend to engage less in REM before and during the COVID-19 pandemic. Then, this study investigated the differences in financial distress, accrual earnings management, and real earnings management in energy, transportation and logistics companies listed in IDX before and during the COVID-19 pandemic. The results show significant differences in FD, AEM, and REM in transportation and logistics companies before and during the COVID-19 pandemic. In contrast, energy companies have significant differences in financial distress, but there are no significant differences in AEM and REM before and during the COVID-19 pandemic. The results show that energy, transportation and logistics companies have significant differences in AEM, but there are no significant differences in REM and financial distress before and during the COVID-19 pandemic.

This research makes several contributions to the EM literature. First, this research fills the literature gap about FD and EM. Previous research has focused on the relationship between FD and EM in the normal situation

on SMEs and public and private firms in developing or developed countries. Thus, the pandemic situation provides an interesting phenomenon. Some papers provide evidence that FD and EM have increased during the pandemic because the COVID-19 pandemic has affected the financial crisis around the world. However, our research focuses on specific sectors in a developing country setting and explores the relationship between FD and EM before and during the COVID-19 pandemic.

This research makes several contributions to business practices. First, the research provides useful information for investors, lenders and regulators who observe the quality of financial reporting during the pandemic. Second, while pandemics may increase the financial distress of companies, real earnings management is a more complex and delicate issue that may discourage companies from becoming involved in such practices.

The organization of this paper is as follows. First, this paper explains the background of the research. Second, this paper summarizes the relevant literature on the relationship between FD and EM. Third, the research methods section describes the sample, variables and models used in this study. Fourth, this paper explains the empirical results and discussion. Then, the last section concludes and points out the limitations.

Literature Review

Agency Theory

The link between management and business owners is referred to as an agency relationship in agency theory. Agency theory explains that agency conflict occurs when managers act for their own benefit rather than optimizing firm value from the shareholder's point of view. Then, agency theory also explains that information asymmetry occurs when managers have access to more information than owners and information presented by managers to principals does not match the real circumstances (Jensen & Meckling, 1976; Watts & Zimmerman, 1986). Information asymmetry between management and shareholders provides an opportunity for managers to practice earnings management while considering achieving goals (Scott, 2009).

Financial Distress and Accrual Earnings Management

Management's responsibility is to provide financial information for external parties. Thus, stakeholders can use that information to assess the company's current condition (Jensen & Meckling, 1976). When a listed company has trouble with financial conditions and the profits do not meet investor expectations, it will cause a decrease in stock prices and firm value (Li et al., 2020). Financially distressed firms face serious agency problems between managers and shareholders related to information asymmetry (Jacoby et al., 2019; Jensen & Meckling, 1976). Based on agency theory, information asymmetry between managers and shareholders can encourage companies to practice earnings management to minimize the negative impact of financial distress (Jacoby et al., 2019).

Accrual earnings management occurs when managers manipulate the accrual component of earnings (Xiao & Xi, 2021). Accrual earnings management is cheaper but easier to detect because accrual earnings management is subject to greater scrutiny from auditors and regulators (Kim et al., 2018). A previous study shows that firms experiencing higher financial distress engage in lower accrual earnings management (Agrawal & Chatterjee, 2015; Rakshit et al., 2021). In contrast, another study shows that firms experiencing higher financial distress engage more in accrual earnings management (Li et al., 2020; Viana et al., 2022). In higher levels of distress, companies will switch from REM to AEM because their capacity to control REM is hampered, and competitive financial advantages are lost until they do not deviate from their best business operations (Muljono & Suk, 2018; Zang, 2012). Based on the description, the following hypotheses can be formulated:

H_{1a}: The higher (lower) the level of financial distress, the higher (lower) the accrual earnings management before the COVID-19 pandemic.

H_{1b}: The higher (lower) the level of financial distress, the higher (lower) the accrual earnings management during the COVID-19 pandemic.

Financial Distress and Real Earnings Management

The information in financial statements can be used by stakeholders to assess the company's current condition (Jensen & Meckling, 1976). Financially distressed firms face serious agency problems between managers and shareholders related to information asymmetry (Jacoby et al., 2019; Jensen & Meckling, 1976). Based on agency theory, information asymmetry between managers and shareholders, and managers' motivation to avoid backruptcy and debt violation can encourage companies to practice earnings management to minimize the negative impact of financial distress (Li et al., 2020; Xiao & Xi, 2021).

Real earnings management occurs when managers manipulate real activities that directly affect the company's cash flow (Xiao & Xi, 2021). Although REM is considered more expensive because it imposes higher costs in the long term, REM is less detectable than AEM because AEM tends to attract auditors' and regulators' oversight compared to real earnings management activities regarding prices or production (Kim et al., 2018).

Previous research shows that healthier companies engage more in REM because their financial condition enables them to deviate from optimal business operations (Muljono & Suk, 2018). Meanwhile, with higher levels of financial distress, firms tend to engage less REM because it requires high costs to adjust their business strategy. Companies experiencing financial distress do not have the resources to perform REM (Li et al., 2020). Based on the description, the following hypotheses can be formulated:

H_{2a}: The higher (lower) the level of financial distress, the lower (higher) the real earnings management before the COVID-19 pandemic.

H_{2b}: The higher (lower) the level of financial distress, the lower (higher) the real earnings management before the COVID-19 pandemic.

Research Method

Data Samples

The population in this study is energy, transportation and logistics companies listed on the Indonesian Stock Exchange for the 2018-2021 period. This study used a purposive sampling method based on three criteria, as shown in Table 1. The data were obtained from the company's financial statement in the Indonesian Stock Exchange and the companies' website. The reason for choosing energy, transportation and logistics companies is that these companies are mostly affected by the COVID-19 pandemic due to the large-scale social restrictions (PSBB) policy set by the government.

Table 1. Selection of Samples Based on Purposive Sampling

Information	Amount
Companies in energy, transportation and logistics listed on the Indonesia Stock Exchange for the 2018-2021 period	102
Energy, transportation and logistics companies that conducted Initial Public Offerings before 2018	17
Energy, transportation and logistics companies who had incomplete research data for the 2018-2021 period	26
Number of samples that meet the criteria	59
Firms-year observation (59 x 4)	236

Variables Description

Dependent variables

The study employs earnings management as the dependent variable. Earnings management in this study is measured by accrual earnings management and real earnings management. Accrual earnings management is carried out through the use of judgment in financial statements with the aim of compiling company transactions to obtain the desired results (Healy & Wahlen, 1999). Following Agrawal & Chatterjee (2015), and Li et al. (2020), this study uses discretionary accruals as a proxy of accrual earnings management. Discretionary accruals used the modified Jones model develop by Dechow et al. (1996):

$$NDA_{it} = \frac{TAC_{it}}{A_{it-1}} \quad (1)$$

$$\frac{TAC_{it}}{A_{it-1}} = \propto_1 \left(\frac{1}{A_{it-1}}\right) + \propto_2 \left(\frac{\Delta REV_{it} - \Delta AR_{it}}{A_{it-1}}\right) + \propto_3 \left(\frac{PPE_{it}}{A_{it-1}}\right) + \varepsilon_{it} \quad (2)$$

$$DA_{it} = \frac{TAC_{it}}{A_{it-1}} - NDA_{it} \quad (3)$$

where NDA_{it} is nondiscretionary accruals; DA_{it} is discretionary accruals; TAC_{it} is total accruals of firm i in year t (net income- cash flow from operations); A_{it-1} is total assets of firm i in year t-1; ΔREV_{it} is change in revenue of firm i from year t-1 to year t; ΔAR_{it} is change in account receivable of firm i from year t-1 to year t; PPE_{it} is property, plant & equipment of firm i in year t; ε_{it} is residual value. This research uses absolute value of discretionary accruals because earnings management can involve income increasing accruals or income decreasing accruals to meet profit targets. A higher value means a greater level of earnings management (Li et al., 2020). Real earnings management is a departure from normal operational practices, and it is driven by managers' motivation to deceive some stakeholders into thinking that specific financial reporting objectives have been satisfied through normal business operations, such as avoiding debt covenant violations or avoiding government intervention (Roychowdhury, 2006).

Real earnings management in this study was measured by models initiated by Roychowdhury (2006). There are abnormal cash flows from operations (AbCFO), abnormal production costs (AbPROD) and abnormal discretionary expenditures (AbDISEXP) (Cohen et al., 2008; Li et al., 2020; Roychowdhury, 2006).

The following equation is expressed to estimate normal cash flow from operations:

$$\frac{CFO_{it}}{A_{it-1}} = \propto_0 + \propto_1 \frac{1}{A_{t-1}} + \propto_2 \frac{REV}{A_{t-1}} + \propto_3 \frac{\Delta REV}{A_{t-1}} + \varepsilon_{it} \quad (4)$$

where CFO_{it} is the normal CFO of firm i year t; A_{it-1} is the total assets of firm i in year t-1; REV is the revenue of firm i in year t; ΔREV_{it} is the change in revenue of firm i from year t-1 to year t; and ε_{it} is the residual value. Following (Li et al., 2020), the residual value is multiplied by -1 such that higher values reflect higher amounts of CFO reduced by corporations to boost profit.

The following equation is expressed to estimate the normal production cost:

$$\frac{PROD_{it}}{A_{t-1}} = \propto_0 + \propto_1 \frac{1}{A_{t-1}} + \propto_2 \frac{REV\ it}{A_{t-1}} + \propto_3 \frac{\Delta REV\ it}{A_{t-1}} + \propto_3 \frac{\Delta REV_{t-1}}{A_{t-1}} + \varepsilon_{it}. \quad (5)$$

where $PROD_{it}$ is the production cost of firm i in year t (cost of goods sold+change in inventory); A_{it-1} is the total assets of firm i in year t-1; REV_{it} is the revenue of firm i in year t; ΔREV_{it} is the change in revenue of firm i from year t-1 to year t; ΔREV_{it-} is the change in revenue of firm i from year t-1 to year t; and ε_{it} is the residual value.

The following equation is expressed to estimate normal discretionary expenses:

$$\frac{DISEXP_{it}}{A_{t-1}} = \propto_0 + \propto_1 \frac{1}{A_{t-1}} + \propto_2 \frac{REV\ it}{A_{t-1}} + \varepsilon_{it} \quad (6)$$

where $DISEXP_{it}$ is the selling, general and administrative expenses of firm i in year t; A_{it-1} is the total assets of firm i in year t-1; REV_{it} is the revenue of firm i in year t; and ε_{it} is the residual value. Following (Li et al., 2020), the residual value is multiplied by -1 such that higher values reflect higher amounts of discretionary expenses reduced by corporations to boost profit

To estimate REM, this study uses the following equation(Li et al., 2020):

$$REM = AbCFO + AbPROD + AbDISEXP \quad (7)$$

where REM = sum of three proxy real earnings management; AbCFO= abnormal cash flow from operations; APROD= abnormal production costs; AbDISEXP= abnormal discretionary expenses. This research uses the absolute value of REM. A higher value means a greater level of earnings management (Li et al., 2020)

Independent variables

The study employs financial distress as an independent variable. Financial distress is a condition in which a company experiences failure to fulfill creditor commitments and its business operations almost stop. Financial distress in this study measured by Altman Z Score. This modified Z score model can be used for public and private companies as well as in manufacturing and nonmanufacturing companies (Altman & Hotchkiss, 2006)

The following equation is expressed to estimate financial distress:

$$Z'' = 6{,}56X_1 + 3{,}267X_2 + 6{,}72X_3 + 1{,}05X_{4\ldots} \quad (8)$$

where Z'' = Overall index; X_1 = Working capital/Total assets; X_2 = Retained earnings/Total assets; X_3 = Earnings before interest and taxes/Total assets; X_4 = Market value of equity/Book value of total liabilities.

Control Variables

This study used Size and leverage as control variables. Size is measured by the natural logarithm of total assets. Smaller firms have greater flexibility in managing accruals because they are not under as much pressure to reveal information as larger firms. Meanwhile, larger firms have fewer incentives to engage REM because they already benefit from economies of scale (Muljono & Suk, 2018).

Then, firms with high leverage tend to be more involved in AEM and REM because they have an intention to show good performance to avoid debt covenant violations or to reduce the cost of debt, lowering loan interest rates after lowering the investing risk in the companies. Then, Leverage is measured by total debt/total assets (Bisogno & De Luca, 2015; Vakilifard & Mortazavi, 2016).

Methods

This paper aims to investigate the effect of financial distress on earnings management that is measured by accrual earnings management and real earnings management. Therefore, we use the regression method by the following equation:

Model 1: Before the COVID-19 pandemic
$AEM_{it} = \beta_0 + \beta_1 FD_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \varepsilon$
$REM_{it} = \beta_0 + \beta_1 FD_{it} + \beta_2 SIZE_{it} + \beta_3 LEV + \varepsilon$

Model 2: During the COVID-19 pandemic
$AEM_{it} = \beta_0 + \beta_1 FD_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \varepsilon$
$REM_{it} = \beta_0 + \beta_1 FD_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \varepsilon$

where AEM_{it}= accrual earnings management; REM_{it}= real earnings management; β_0= intercept; FD_{it}= financial distress; $SIZE_{it}$= firm size; LEV_{it}=leverage; ε= error.

Additionally, this paper compares any difference between two periods, namely, before and during the COVID-19 pandemic. Thus, paired samples t test are performed to examine whether the means of earnings management and financial distress are statistically significantly different.

Results and Discussion

This study aims to determine the effect of financial distress on the earnings management of companies listed on IDX in the energy, transportation and logistics sectors before and during COVID-19 pandemic.

Descriptive Statistics

Table 2. Descriptive Statistics and Paired Test Energy, Transportation and Logistics Companies Before and During Covid-19 Pandemic

	N	Before Pandemic		During Pandemic		Paired Test	
		Mean	Std Deviation	Mean	Std Deviation	Sig	Decision
AEM	118	0,081067	0,08316133	0,145031	0,17454748	0,000	Difference
REM	118	0,1627564	0,16048698	0,1570051	0,20774947	0,777	No Difference
FD	118	1,4376	5,19222	1,6517	7,51148	0,638	No Difference

Source: Results of Data Processing (2022)

Table 3. Descriptive Statistics and Paired Test Energy Companies Before and During the COVID-19 Pandemic

	N	Before Pandemic		During Pandemic		Paired Test	
		Mean	Std Deviation	Mean	Std Deviation	Sig	Decision
AEM	92	0,070124	0,0593829	0,082293	0,05879898	0,157	No Difference
REM	92	0,146021	0,13676758	0,16542	0,22531501	0,405	No Difference
FD	92	2,2115	4,30854	3,4572	4,64768	0,004	Difference

Source: Results of Data Processing (2022)

Table 4. Descriptive Statistics and Paired Test Transportation and Logistics Companies Before and During the COVID-19 Pandemic

	N	Before Pandemic		During Pandemic		Paired Test	
		Mean	Std Deviation	Mean			Mean
AEM	26	0,11979	0,13240098	0,367026	0,25350073	0,000	Difference
REM	26	0,221974	0,21857099	0,12723	0,12654682	0,017	Difference
FD	26	-1,3008	6,971	-4,737	11,44482	0,008	Difference

Source: Results of Data Processing (2022)

Based on Table 1, there are 118 observations where the total average AEM during the COVID-19 pandemic has increased by 78.90%, with an average value of 0,1450310. Meanwhile, REM declined by 3.53% during the COVID-19 pandemic, with an average value of 0,1570051. Table 2 shows that energy companies have increased 17,35% in AEM and increased 64.74% in REM. Meanwhile, Table 3 shows that transportation and logistics companies have increased 206,39% in AEM and declined -42,68% in REM.

Table 1 shows that the AEM of energy, transportation and logistics have significant differences in AEM but no significant difference in REM. Meanwhile, in table 3, transportation and logistics companies have significant differences in AEM and REM before and during the COVID-19 pandemic. However, in energy companies, there was no significant difference in AEM and REM before and during the COVID-19 pandemic. Nevertheless, this condition means that during the COVID-19 pandemic, firms engage in manipulated earnings by using AEM instead of REM because managers must manipulate operational, financial, and investment activities throughout the fiscal

year to comply with REM. In addition, the COVID-19 pandemic has negatively impacted the economy, making it more difficult, expensive, and obvious to manipulate cash flows through operational, financial, and investment activities, so managers tend to use AEM instead of REM (Xiao & Xi, 2021).

Based on Table 1, there was no significant difference between financial distress before and during COVID-19 pandemic. This condition explained by the average value of the Z score before and during the COVID-19 pandemic are 1,4376 and 1,6517 respectively, indicating that energy, transportation and logistics companies experienced a gray area of financial distress before and during the COVID-19 pandemic because 1,1 < Z < 2,6. The gray zone indicates uncertainty resulting from whether the company is healthy or bankrupt (Turk & Kurklu, 2017).

Based on Table 2, the mean Z score in energy companies has increased 56.33% with an average value of 3,4572 during the COVID-19 pandemic. Then, because sig <0,05, there were significant differences between the financial distress of energy companies before and during the pandemic. A higher Z score indicates that firms have lower levels of financial distress. The mean of Z score value before the COVID-19 pandemic is 2,2115, which is located in the gray area (1 < Z < 2,6), while during the COVID-19 pandemic, energy companies are located in the safe zone because the mean Z score is 3,4572 (Z > 2,6). This means that energy companies did not have a tendency toward financial distress during the COVID-19 crisis. Despite the price of crude oil being negative in 2020 due to oversupply conditions, the prices started to rebound and grow in 2021. Brent oil increased 50.12% in 2021, and WTI increased 55% during the year. Recovery trend of crude oil prices supported by sentiment and the dynamics of demand and supply in the market due to relaxation of mobility rules (Andrianto, 2022).

Table 3 shows that the mean financial distress in transportation and logistics companies worsened by 264.16% during the COVID-19 pandemic. Then, because sig <0,05, there were significant differences between the financial distress of transportation and logistics companies before and during the pandemic. A lower Z score indicates that firms have higher levels of financial distress. This means that transportation and logistics companies have a greater tendency to experience financial distress than before the COVID-19 pandemic. COVID-19 may push firms toward distress because declining macroeconomics have impacted firms' operational and financial performance (Singh & Rastogi, 2022). Transportation and logistics companies experienced a contraction due to restrictions on mobility as a result of large-scale social restrictions (PSBB) policies, which led to a potential decrease in the number of passengers (Audy & Irfan, 2021).

Classical Assumption Test

Classical assumption tests (normality, multicollinearity, heteroscedasticity, and autocorrelation) were tested first before performing regression for each model. Both models were free from the problems of classical assumptions.

Hypothesis Test

Table 5. Regression Results of Accrual Earnings Management

Variable	Before Pandemic		During Pandemic	
	Coefficient	Sig	Coefficient	Sig
(Constant)	0,616	0,008	0,416	0,009
FD	0,009	0,770	-0,020	0,511
SIZE	-0,016	0,086	-0,002	0,648
LEV	0,130	0,274	-0,043	0,719
Dependent Variable: AEM				
R- Squared	0,016		0,010	
Adjusted R-Squared	0,000		-0,024	

Source: Results of data processing (2022)

Table 6. Regression Results of Real Earnings Management

Variable	Before Pandemic		During Pandemic	
	Coefficient	Sig	Coefficient	Sig
(Constant)	0,568	0,065	-0,222	0,706
FD	0,179	0,002	0,119	0,006
SIZE	-0,033	0,043	0,041	0,739
LEV	0,497	0,028	0,521	0,018
Dependent Variable: REM				
R- Squared	0,139		0,158	
Adjusted R-Squared	0,102		0,116	

Source: Results of data processing (2022)

The effect of financial distress on accrual earnings management (AEM) has a significant value of 0,770 > 0,05 and 0,511>0,5. This finding indicated that firms with financial distress do not necessarily engage in accrual earnings management. The results of the H_{1a} and H_{1b} tests were consistent with a study conducted by (Sylvia & Khalik, 2022) that explains that when a company is in a difficult state, its management requires immediate actions. The company's management focuses more on the financial problems experienced by the company and prefers to take actions that have tangible results so that financial difficulties can be resolved and do not lead to company bankruptcy. Then, companies experiencing financial difficulties do not practice accrual earnings management either in the short or long term but prefer to do real earnings management because it provides more tangible results, and is more difficult for auditors to detect (Chamberlain et al., 2014).

The effect of financial distress on real earnings management (REM) before and during the pandemic has a significant value of 0,002 < 0,05 and 0,006 <0,05. Then, the coefficient has a positive value at 0,179 and 0,119. This finding supports H_{2a} and H_{2b}. This means that firms with higher Z scores or low-distressed firms are more involved in real earnings management and vice versa. This study is consistent with a study conducted by (Ghazali et al., 2015) that explains that managers practice earnings management when the firm is not in distress, but otherwise in distress. Healthier companies engage more in REM because their financial condition enables them to deviate from optimal business operations (Muljono & Suk, 2018). Companies that experience financial distress perform lower real earnings management because it requires high costs to make adjustments in their business strategy, and companies experiencing financial distress do not have the resources to perform real earnings management (Li et al., 2020).

In control variables, Size has a negative coefficient for AEM, and the values are insignificant. The negative coefficient aligned with the study by (Bisogno & De Luca, 2015; Li et al., 2020; Muljono & Suk, 2018), which explains that smaller firms have greater flexibility in managing accruals because they are not under as much pressure to reveal information as larger firms; thus, they take advantage of higher degrees of information asymmetry. Then, Size has a significant negative sign for REM before the pandemic. This means that larger firms have fewer incentives to engage REM because they already benefit from economies of scale (Muljono & Suk, 2018). Meanwhile, Size has a significant positive sign for REM during the pandemic. The findings are consistent with agency theory, which contends that information asymmetry and agency conflict increase with firm size. The larger firms are, the more likely management is to manipulate earnings since they are under much pressure to meet financial analysts' expectations (Nalarreason et al., 2019).

Leverage has a significant value > 0,05. This result means that highly leveraged firms do not necessarily practice AEM (Anagnostopoulou & Tsekrekos, 2016). However, leverage has significant positive signs for REM. This means that firms with high leverage tend to be more involved in REM because they have an intention to show good performance to avoid debt covenant violations or to reduce the cost of debt, lowering loan interest rates after lowering the investing risk in the companies (Vakilifard & Mortazavi, 2016).

Conclusion

This study aims to determine the effect of financial distress on accrual earnings management and real earnings management in energy, transportation and logistics companies listed on the Indonesia Stock Exchange for the 2018-2021 period. By using data from 236 firm-year observations, this study reveals that financial distress did not affect AEM before and during the COVID-19 pandemic. In contrast, financially distressed firms tend to engage less in REM before and during the COVID-19 pandemic.

The paired sample T test results show significant differences in financial distress, AEM, and REM in transportation and logistics companies before and during the COVID-19 pandemic. In contrast, energy companies have significant differences in financial distress, but there are no significant differences in AEM and REM before and during the COVID-19 pandemic. The results show that energy, transportation and logistics companies have significant differences in AEM, but there are no significant differences in REM and financial distress before and during the COVID-19 pandemic.

This study has several implications for business practices. First, the study fills the literature gap about the relationship between FD and EM before and during COVID-19 pandemic. Second, valuable information for investors, lenders, and regulators who observe the quality of financial reporting. Third, the study suggests that lenders and investors should have more caution and profound insight for determining a firm's creditworthiness since distressed firms tend to engage in earnings management. Fourth, this research adds insights into firms' behavior in responding to the COVID-19 pandemic. This research has a limitation in the number of samples only used, affected mainly by the COVID-19 pandemic. Future researchers may investigate the link between financial distress and earnings management by expanding the sample using other sectors or cross country data to provide more insight.

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