

# Financial Distress and Earnings Management: Evidence from Malaysia Before and During the COVID-19 Pandemic

Norhayati Zamri, Farah Husna Mohd Fatzel, Wan Razazila  
Wan Abdullah, Norliana Omar

Faculty of Accountancy, Universiti Teknologi MARA, Perak Branch, Tapah Campus, 35400,  
Tapah Road, Perak, Malaysia  
Email: norha266@uitm.edu.my

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## Abstract

The main objective of this study is to determine the choice of earnings management approach among financially distressed firms in the period before and during the COVID-19 pandemic. The manager may choose either Accrual Earnings Management (AEM) or Real Earnings Management (REM). This study uses the modified Jones, 1991, model for AEM. Whereby for REM is the Abnormal Cash Flow from Operation (AbCFO), Abnormal Production Cost (AbPROD), and Abnormal Discretionary Expenses (AbDISEXP) model by Roychowdhury, 2006. Using a final sample of 672 firms year observation consisting of Malaysian public listed companies for the period of 2018 to 2021, this study reveals that financially distressed firms do manipulate earnings using the REM approach both before and during the pandemic. Further analysis discovers that those firms specifically practice AbCFO and AbDISEXP in managing earnings. This study also finds a significant negative relationship between financial distress and the AEM approach. In addition, some other control variables such as leverage, firm size, ROA and liquidity also have a significant effect on EM. This study contributes to the earnings management literature, notably how managers choose to manipulate earnings at the different levels of financial health, which then can influence the accounting earnings quality.

**Keywords:** Earnings Management, Accrual Manipulation, Real Activity Manipulation, Financial Distress, and COVID-19.

## Introduction

COVID-19 began to spread over the nation in 2020. The World Health Organization (WHO) declared the COVID-19 pandemic a public health emergency of worldwide concern because of the disease's potential for spreading (Spina et al., 2020). Several industries have been harmed by this situation, and to make matters worse, some of them have been severely impacted and were forced to shut down. However, some are still surviving and creating

chances for themselves to manage the firm's earnings to remain competitive in the sector. While the firms are required to prepare a financial report at the end of the fiscal year, some managers intend to report a good performance of their firms despite the company being in difficult conditions (Azizah, 2017)

Financial reporting acts as a means for communication between firms that report both quantitative and qualitative information to both internal and external users for decision-making purposes and provides a measurement of a company's performance (Healy & Wahlen, 1999). However, in certain cases, such as in the cases of Sime Darby Berhad and Transmile Group Berhad, financial reporting is used to portray the better performance of the firm even if in reality, it does not perform as well as indicated in the financial report (Hamid et al., 2012). This is known as an accrual-based earnings management practice. It is defined by Healy and Wahlen (1999) as an action in which managers use financial reporting and transaction reports to deceive financial statements to 1) manipulate some stakeholders about the firm's operating financial performance, or 2) affect contractual outcomes that rely on reported financial statements.

On the other hand, real earnings management, as opposed to accrual-based earnings management, modifies the firm's fundamental operations. Roychowdhury (2006) discovered evidence of managers changing actual operations to manage earnings. According to Roychowdhury (2006); Cohen and Zarowin (2010), firms that manage earnings upward are likely to have one or all of these accounting effects: (i) incredibly low operating cash flow as a result of expanding discounts or lenient credit conditions to push up sales for the immediate future, (ii) incredibly low discretionary spending as a result of the drastic cuts made to research & development, advertising, and selling, general and administrative costs to boost profitability for the current period, and (iii) incredibly high manufacturing costs to lower Cost of Goods Sold (COGS), which in turn raises operating margin for the current period.

Some factors have motivated managers to engage in earnings management. Previous research has listed some motivations such as altruistic motivation - which concerns the interest of other parties; speculative motivation - which concerns self-interest; and pressure from affiliated parties (Chen & Tsai, 2010). One of the altruistic motivations has been caused by financial difficulties. Li et al (2020); Campa and Miriano (2015) found that financially distressed firms have significant effects on earnings management. Asquith et al (1994) highlighted those key circumstances such as poor industry performance, poor firm performance, and high leverage can all lead to a company's financial distress.

There are three contributions that the current study adds. First, the prior study that used the Malaysian sample (Karina & Soenarno, 2022; Ghazali et al., 2015) only examined the AEM in financially distressed firms. Therefore, even though this study similarly uses AEM, it aims to fill in this gap by extending prior studies in examining the impact of financial distress on REM activities. Second, in the Malaysian context, there are still limited researches done on financially distressed firms and earning management during the pandemic COVID-19. Thus, this study aims to fill the gap by including the period before and during the pandemic. Third, this study contributes to the earnings management literature, notably how managers choose to manipulate earnings at the different levels of financial health, which then can influence the accounting earnings quality.

Thus, the objectives of this study are:

- to examine the relationship between financial distress and accrual earnings management before the COVID-19 pandemic

- to examine the relationship between financial distress and accrual earnings management during the COVID-19 pandemic
- to examine the relationship between financial distress and real earnings management before the COVID-19 pandemic
- to examine the relationship between financial distress and real earnings management during the COVID-19 pandemic

The remainder of this paper is organized as follows. Section 2 provides evidence from prior studies on financial distress with AEM, REM and the period before and during the pandemic. From the literature then, the Section also provides the development of the hypotheses. Section 3 presents the data, sample selection and research methodology. Section 4 provides the analysis of the results. Finally, the conclusion and suggestions for further research are presented in section 5.

### **Literature Review**

Firms in financial distress have strong incentives to manipulate their earnings to accomplish a certain goal and subsequently mislead stakeholders concerning their financial performance (Campa & Miriano, 2015; Zang, 2012). There are two main methods of earnings management (EM) available to managers to manipulate earnings in the accounting literature, which consist of accrual and real activities. Previous studies have widely documented the impact of financial distress on accrual earnings management (AEM) (Bisogno & De Luca, 2015; Agrawal & Chatterjee, 2015) and real earnings management (REM) (Zang, 2012; Campa & Miriano, 2015). According to Dechow and Skinner (2000, p .240), accrual earnings management comprises accounting choices within Generally Accepted Accounting Principles (GAAP), that intend to “obscure” or “mask” true economic performance. These choices consist of fair value measurement, depreciation, deferred tax, goodwill impairments and others. In contrast to this, real earnings management arises when managers modify the timing or structuring of transactions, investments and allocation of resources to amend accounting earnings within a current period (Dechow & Skinner, 2000). This current research is concentrated on comparing the impact of financial distress on accrual earnings management and real earnings management.

### **Financial Distress and Accrual Earnings Management (AEM)**

The accrual earning management technique has received considerable attention in the literature. As documented by a few researchers, financial distress has significant effects on income-decreasing accrual earnings management. Habib et al (2013) find that managers of distressed firms engage more in income-decreasing accrual earnings management practices. This argument is supported by Agrawal and Chatterjee (2015) who find that a higher level of financial distress causes firms to adopt income-decreasing accrual earnings management instead, as managers are forced to engage in conservative earnings behavior by auditors. Furthermore, with more conservative earnings, new managers can blame weak performance on former managers and portray better future performance on themselves. With unsatisfactory performance than normal, managers may be likely to use income-decreasing accruals techniques as the poor results are unavoidable, allowing for managers to take advantage during periods of crises by reporting greater than necessary losses (Kjærland et al., 2020). In contrast to this, Bisogno and De Luca (2015) find that financial distress occurs in Italian small and private companies, and has a significant positive relationship with income-

increasing accrual earnings management, with the mission to cover actual performance and retain debt financing from banks. Due to the pressure, this condition has triggered managers to conduct income-increasing accrual earnings management to prevent debt covenant violations, avoid probable bankruptcy, avoid turnover, or increase management compensations (Charitou et al., 2007).

Other than that, Joosten (2012); Nagar and Sen (2016) directly compare the behavior of financially distressed firms on accrual earnings management which indicate that accrual earnings management is more prevalent in companies that experience distress and higher industry competition. Indirectly it means that the lower the financial health of the company, the bigger the magnitude of accrual earnings management that is conducted through managing the discretionary component of accruals (Muljono & Suk, 2018). Haga et al. (2018) also demonstrate that accrual earnings management is still adopted by firms with riskier financial status. Using a sample of all publicly traded firms in China, Li et al (2020) similarly claimed that the worse the financial condition of a firm, the more accrual earnings management behaviors are conducted by the firm. Financially distressed firms normally reveal a tendency to perform more accrual earnings manipulation and less real earnings manipulation after trading off the relative cost and risk. Zang (2012) further claimed that companies will switch from real earnings management to accrual earnings management when the distress level gets higher since companies' capacity to perform real earnings management is impaired. Thus, it can be concluded here firms with poor financial health and not financially well-off are more likely to resort to accrual earnings management which is a proxy by discretionary accruals.

From a different point of view, Rusci et al (2021) pointed out financial distress has a significant negative effect on accrual earnings management. The more financially distressed a firm is, the less likely they engage in accrual earnings management. Demirkan and Platt (2009) depict that the most distressed and unhealthy companies have the weakest relationship with discretionary accruals and the managers of firms would practice earning management only when the company is in a healthy condition (Ghazali et al., 2015). Agustia et al (2020) similarly found that financially healthy firms or when the profit of the company is high will engage in high levels of earnings management. Specifically, a study done by Agrawal and Chatterjee (2015) exposed that higher performing firms will engage in higher earnings management, while distressed firms will engage in lower earnings management and tend to reveal their true condition.

Empirical findings on earnings management during pandemic periods are very limited. Following the COVID-19 pandemic, Ljubisavljevic and Jakobsson (2022) showed that managers in Sweeden were incentivized to utilize income-decreasing accrual-based earnings management, indicating the use of "big bath" accounting to present boosted earnings in the future period. Another study done by Xiao and Xi (2021) showed an increase in accrual earnings management in the financial statements of Chinese listed firms during the pandemic crisis in comparison to preceding years. The financial difficulties during the pandemic have a long-term negative effect on the reliability of financial statements thus, encouraging managers to engage in accrual earnings management to enhance the presentation of their financial reality to their investors. On the contrary, Ali et al (2022) recently reported in their study that the overall amount of discretionary accruals reported in the financial statements of listed firms in G-12 countries decreased during the pandemic, suggesting that the economic effects of the pandemic may be comparable to those of the financial crisis in 2008.

As a result of the inconclusive evidence on the relationship between financial distress and accrual earnings management strategies, we develop the following hypotheses

**H1:** *There is a significant relationship between financial distress and accrual earnings management before the COVID-19 pandemic.*

**H2:** *There is a significant relationship between financial distress and accrual earnings management during the COVID-19 pandemic.*

### **Financial Distress and Real Earnings Management (REM)**

The effect of financial distress on real earnings management has inconsistent outcomes in the earlier studies. A few researchers have found that during higher levels of financial distress, companies perform higher levels of income increasing real earnings management. Research by Campa (2019) documents that in the presence of severe financial problems, non-financial companies operating in France demonstrate income-increasing earnings manipulation carried out through real activities rather than discretionary accruals. Kim et al (2011) describe that managers perform higher levels of income-increasing real earnings management especially when the borrowers experience higher bankruptcy risk. When the firms are being closed to face bankruptcy procedure, this condition will give a significant level of pressure on the managers and extensive upward real activity earnings management is preferable. Campa and Miriano (2015) consistently reveal that Spanish unlisted firms with higher levels of financial distress manipulate earnings upwards using real activity manipulation, but not through discretionary accruals. In the presence of difficult financial situations, managers disguise firms' financial difficulties using the less detectable earnings management strategy, rather than focusing on the cost of earnings management tools.

However, other researchers discover different findings. For instance, Zang (2012) specifically reveals that at the initial stages of distress, public companies conduct real earnings management more extensively than accruals earnings management, as their financial health and competitiveness in the industry enable them to deviate from optimal business operations. These arguments are supported by Joosten (2012), in which European companies conduct real earnings management to reach earnings targets when distress is low instead, because the companies' capacities enable them to alleviate the negative economic consequences of real earnings management. Nagar and Sen (2016) highlighted that companies engage in real earnings management through a reduction in discretionary expenses during initial stages of distress to enhance liquidity and profitability, while companies engage in higher levels of accruals earnings management at higher stages of distress to achieve the desired earnings target.

On the other hand, it is reported that companies that are under severe distress are going to shift from real earnings management and perform accruals earnings management more extensively instead to meet the desired targets. The existence of higher levels of financial distress has led companies to restrict the use of real activity earnings management while continuing to adopt accrual manipulation. Haga et al (2018) provide support for this argument among UK entities and find that the tendency of firms in difficult financial positions to transform real activity manipulation with accrual earnings management is stronger for listed entities than unlisted firms. According to Zang (2012), real earnings management is risky due to its long-term economic consequences. Besides that, real earnings management is costlier than accrual earnings management since this approach requires changes to the firm's operations such as manipulating cash flows through operational, investment and financial

activities throughout the year. Real activity manipulation will be considered too expensive for the entities in poor financial conditions since the marginal cost of deviating from optimal business plans would be too severe under these conditions. For that reason, He and Jianqun (2021) reported real earnings management is more difficult to conduct than accruals earnings management in the most severely affected regions during the COVID-19 pandemic crisis period as this phenomenon has produced huge impacts on the financial market and firm financial performance (Ruiz et al., 2020).

Previous researches have revealed conflicting results regarding the effects of financial distress and real earnings management. Based on the previous discussion, the following hypotheses is developed:

**H3.** *There is a significant relationship between financial distress and real earnings management before the COVID-19 pandemic.*

**H4.** *There is a significant relationship between financial distress and real earnings management during the COVID-19 pandemic.*

## Research Methodology

### Sample Selection

The initial sample includes all industry firms in Refinitiv Eikon Data Stream, excluding financial and insurance firms listed on Bursa Malaysia from 2018 to 2021. Finally, any missing values and outliers found in the sample firms were eliminated. The final sample of 672 firms year observation classified as financially distressed firms using modified Z-score is used to test the hypothesis developed in this study.

### Measurement of Dependent Variables

The earnings management approach among firms experiencing financial problems is either AEM or REM. The models used to measure the EM proxies included in this study will be discussed in more detail in the following section.

#### *Accrual Earnings Management*

The proxy of AEM in this study is discretionary accruals. This study measures AEM by using the Modified Jones Model (Jones, 1991) which is consistent with many studies of EM, such as (Agustia et al., 2020; Li et al., 2020; Zang, 2012). Discretionary accruals are the difference between actual accruals and the normal level of accruals. The following is the Modified Jones Model.

$$NDA_{it}/A_{i,t-1} = \alpha_0 + \alpha_1 (1/A_{i,t-1}) + \alpha_2[\Delta AR_{it}/A_{i,t-1}] + \alpha_3[PPE_{it}/A_{i,t-1}] + \varepsilon_{it} \quad (1)$$

Where,

$NDA_{it}$  Non-discretionary accruals of firm  $i$  in year  $t$ ;

$A_{i,t-1}$  Total assets of firm  $i$  in year  $t-1$ ;

$\Delta AR_{it}$  Change in account receivables of firm  $i$  between year  $t-1$  and  $t$ ;

$PPE_{it}$  Gross property plant and equipment of firm  $i$  in year  $t$ .

$\varepsilon_{it}$  A residual term that captures the level of abnormal cash flow of firm  $i$  in year

$t$ .

*Real Earnings Management*

Following Roychowdhury (2006), this study defines REM as when managers act with distinct practices from what normal businesses should do. Consistent with prior research (Campa, 2019; Campa & Miriano, 2015), this study employs the sum of three proxies to examine REM, namely abnormal cash flow from operating activities (AbCFO), abnormal production costs (AbPROD) and abnormal discretionary expenses (AbDISEXP). The study estimates AbCFO, AbPROD and AbDISEXP as the residual from the following models, respectively.

*Model for AbCFO*

$$CFO_{it}/A_{it-1} = \beta_1 [1/A_{it-1}] + \beta_2 [Sales_{it}/A_{it-1}] + \beta_3 [\Delta Sales_{it}/A_{it-1}] + \varepsilon_{it} \quad (2)$$

Where,

$CFO_{it}$  Cash flow from operation of firm i in period t;

$Sales_{it}$  Sales of firm i in year t ;

$\Delta Sales_{it}$  Change in sales of firm i between year t-1 and t.

*Model for AbPROD*

$$PROD_{it}/A_{it-1} = \beta_1 [1/A_{it-1}] + \beta_2 [Sales_{it}/A_{it-1}] + \beta_3 [\Delta Sales_{it}/A_{it-1}] + \beta_4 [\Delta Sales_{it-1}/A_{it-1}] + \varepsilon_{it} \quad (3)$$

Where,

$PROD_{it}$  The sum of cost of goods sold and change in inventory of firm i in year t;

$\Delta Sales_{it-1}$  Change in sales of firm i from year t-1 to t; and all other variables are as previously defined.

*Model for AbDISEXP*

$$DISEXP_{it}/A_{it-1} = \beta_1 [1/A_{it-1}] + \beta_2 [Sales_{it-1}/A_{it-1}] + \varepsilon_{it} \quad (4)$$

Where,

$DISEXP_{it}$  The sum of Research and Development (R&D) expenses and Selling, General & Administrative (SG&A) expenses of firm i in year t ; and all other variables are as previously defined.

*Model for REM*

Following Li et al (2020), the three real activity manipulation measures are then added together to form a single proxy, REM, which will be used to test the hypothesis:

$$REM_{it} = AbCFO_{it} + AbPROD_{it} + AbDISEXP_{it} \quad (5)$$

Where,

$REM_{it}$  The sum of REM of firm i in year t, and all other variables are as previously defined

### Measurement of Independent Variable

Following Li et al (2020); Zhang (2012), this paper employs the modified Z-score as the proxy for firms' financial health. The higher the Z-score portrays better financial health for the company. A company that scored smaller than 1.81 in z-score will be classified as a financial distress company while the other companies may be classified as gray area, where they can be determined as neither healthy nor financially distressed firms if their score is greater than 1.81 but less than 2.99. The companies are considered financially healthy if the Z-score is greater than 2.99. The Z-score is expressed by the following equation:

$$ZSCORE_{it} = 0.3x_1 + 1.0x_2 + 1.4x_3 + 1.2x_4 + 0.6x_5 \quad (6)$$

Where,

- x1 the ratio of net profit to total assets
- x2 the ratio of sales to total assets
- x3 the ratio of retained earnings to total assets
- x4 the ratio of working capital to total assets
- x5 the ratio of market value of equity to total liabilities

### Measurement of Control Variables

This study includes some of the control variables since they provide a monitoring mechanism with EM. This study uses leverage (LEVERAGE) as a proxy for debt ratio following the study by (Campa, 2019; Ghazali et al., 2015). The firm size (SIZE); Return on Assets (ROA) and liquidity (LIQUIDITY) also have a significant effect on EM (Lidsa and Julisar, 2022 & Rakshit & Paul, 2020). The control variables are measured as follows:

- LEVERAGE the ratio of total liabilities to total assets
- SIZE the log of total assets
- ROA the ratio of EBIT to net assets
- LIQUIDITY the ratio of current assets to current liabilities

### Data Analysis

Data were analyzed using SPSS (Statistical Package for Social Science) software. A descriptive statistic is conducted to compare the mean, median and standard deviations between variables. The multiple regression analysis is used to test the hypotheses and the regression models are as follows:

$$AEM_{it} = \alpha_0 + \alpha_1 DISTRESS_{it} + \alpha_2 LEV_{it} + \alpha_3 SIZE_{it} + \alpha_4 ROA_{it} + \alpha_5 LIQUIDITY_{it} + \varepsilon_{it} \quad (7)$$

$$REM_{it} = \beta_0 + \beta_1 DISTRESS_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \beta_4 ROA_{it} + \beta_5 LIQUIDITY_{it} + \varepsilon_{it} \quad (8)$$

Both models will be used to determine which earnings management approach financially distressed firms to choose during the observation period. To test H1 and H2,  $\alpha_1$  in Model (7) is used to explain the relationship between financial distress and accrual earnings management. Whereas to test H3 and H4,  $\beta_1$  in Model (8) is used to explain the relationship between financial distress and real earnings management.

## Result and Discussion

### Descriptive Analysis

Table 1 provides the descriptive statistics for the full sample of observations comparing firms before and after the pandemic, as shown in Panels A and B. Each of Panels A and B has



336 observations. The mean of the AEM before the pandemic is -0.696 and decreases during the pandemic to -0.745. The negative mean of AEM indicates that Malaysian public listed companies use more income decreasing accruals over the period. The same pattern has been observed in REM when the mean also decrease from 1.022 to 0.944 before and during the pandemic, respectively. The positive mean of REM suggests that such firms use more income-increasing accruals to manage their earnings during the observation period. Both AEM and REM mean values decrease during the pandemic and the One sample T-test results confirm that both figures are significantly different from one another. The decreases in both proxies of EM indicate that firms participate in fewer earnings management activities during the pandemic period, which is consistent with earlier studies, such as Ali et al. (2022) and Azizah (2021), who found that firms restrict their earnings manipulation during difficult times.

In addition, the mean for financial distress before the pandemic is 0.190, indicating that 19% of the companies in the sample are in a financial distress situation. During the pandemic, however, there is a decrease in financial distress to 11.6%. This may be because leverage increases during the pandemic (from 39.6% to 39.8%), suggesting that businesses relied more on leverage to finance their operating and investing activities. Thus, it had a favorable effect on the firm's financial health during the pandemic. The mean for other control variables which are SIZE and ROA decreases during the pandemic, while LIQUIDITY increases if compared to before the pandemic.

Table 1

*Descriptive Statistics*

	Panel A: Descriptive statistics before the pandemic (2018 - 2019)					Panel B: Descriptive statistics during pandemic (2020 - 2021)				
	N	Mea	Min	Max	Std. Dev	N	Mean	Min	Max	Std. Dev
<b>AEM</b>	336	-	-	0.068	0.444	336	-0.745	-	0.109	0.457
<b>REM</b>	336	0.696	2.739	4.885	0.741	336	0.944	2.767	4.070	0.692
<b>FinDistress</b>	336	0.190	0.070	1.220	0.390	336	0.116	0.090	1.160	0.423
<b>LEVERAGE</b>	336	0.396	0.025	0.919	0.192	336	0.398	1.990	0.926	0.199
<b>SIZE</b>	336	6.287	5.002	8.252	0.667	336	6.328	5.033	8.261	0.658
<b>ROA</b>	336	0.078	-	0.595	0.090	336	0.076	-	1.028	0.113
<b>LIQUIDITY</b>	336	2.674	0.188	31.60	3.003	336	2.732	0.219	23.81	2.651
	336			4		336			1	

**Note:**

Table 1 shows the descriptive analysis of the variables. AEM is Accruals Earnings Management proxy by Discretionary Accruals figure; REM is Real Earnings Management for real activities of earnings management, FinDistress is the proxy for firms' financial health measured by a modified Z-score, LEVERAGE is the ratio of total liabilities to total assets, SIZE is the log of total assets, ROA is the ratio of EBIT to net assets and LIQUIDITY is the ratio of current assets to current liabilities.

**Pearson Correlation**

Tables 2 and 3 show the Pearson correlation coefficient. Table 2 displays the correlation for Model (7). Panel A exhibits the period preceding the pandemic, whereas Panel B exhibits the COVID-19 pandemic. In both periods, the relationship between AEM and FinDistress is non-significant. All of the other control variables, except SIZE, had significant associations with AEM. While LEVERAGE has a positive association with AEM before the pandemic, ROA and LIQUIDITY have a negative and positive correlation with AEM during the pandemic, respectively.

Table 2

*Pearson Correlation for Model AEM*

<b>Panel A: Correlation matrix before pandemic (2018 - 2019)</b>						
	<b>AEM</b>	<b>FinDistress</b>	<b>LEVERAGE</b>	<b>SIZE</b>	<b>ROA</b>	<b>LIQUIDITY</b>
<b>AEM</b>	1					
<b>FinDistress</b>	-0.053	1				
<b>LEVERAGE</b>	0.081*	0.316***	1			
<b>SIZE</b>	-0.047	-0.016	0.518***	1		
<b>ROA</b>	-0.009	-0.227***	-0.267***	-0.311***	1	
<b>LIQUIDITY</b>	0.053	-0.283***	-0.703***	-0.346***	0.234***	1
<b>Panel B: Correlation matrix during pandemic (2020 - 2021)</b>						
	<b>AEM</b>	<b>FinDistress</b>	<b>LEVERAGE</b>	<b>SIZE</b>	<b>ROA</b>	<b>LIQUIDITY</b>
<b>AEM</b>	1					
<b>FinDistress</b>	-0.052	1				
<b>LEVERAGE</b>	0.054	0.372***	1			
<b>SIZE</b>	-0.041	-0.068	0.54***	1		
<b>ROA</b>	-0.088*	-0.361***	-0.244***	-0.134***	1	
<b>LIQUIDITY</b>	0.115**	-0.369***	-0.769***	-0.41***	0.267***	1

**Note:**

This table shows the results of correlation analysis for a sample of 336 firm-year observations. AEM is Accruals Earnings Management proxy by Discretionary Accruals figure; FinDistress is the proxy for firms' financial health measured by a modified Z-score; LEVERAGE is the ratio of total liabilities to total assets; SIZE is the log of total assets; ROA is the ratio of EBIT to net assets and LIQUIDITY is the ratio of current assets to current liabilities.

\*, \*\*, \*\*\* significant at the 0.1, 0.05 and 0.01 levels respectively.

Table 3 presents the correlation for Model (8). There is a statistically significant positive correlation between REM and FinDistress at the 1% level before and during the COVID-19 pandemic. Furthermore, for other control variables, only the SIZE and ROA have significant correlations with REM in both the period before and during COVID-19. The correlation coefficients presented in both tables provide preliminary evidence to support the hypotheses. Multiple regression analysis may then be performed to provide statistically valid evidence concerning the proposed hypotheses.

Table 3

*Pearson Correlation for Model REM*

<b>Panel A: Correlation matrix before pandemic (2018 - 2019)</b>						
	REM	FinDistress	LEVERAGE	SIZE	ROA	LIQUIDITY
REM	1					
FinDistress	0.633***	1				
LEVERAGE	-0.061	0.316***	1			
SIZE	-0.233***	-0.016	0.518***	1		
ROA	0.355***	-0.227***	-0.267***	-0.311***	1	
LIQUIDITY	0.019	-0.283***	-0.703***	-0.346***	0.234***	1
<b>Panel B: Correlation matrix during pandemic (2020 - 2021)</b>						
	REM	FinDistress	LEVERAGE	SIZE	ROA	LIQUIDITY
REM	1					
FinDistress	0.612***	1				
LEVERAGE	-0.046	0.372***	1			
SIZE	-0.238***	-0.068	0.54***	1		
ROA	0.232***	-0.361***	-0.244***	-0.134***	1	
LIQUIDITY	0.045	-0.369***	-0.769***	-0.41***	0.267***	1

**Note:**

This table shows the results of correlation analysis for a sample of 336 firm-year observations. REM is Real Earnings Management for real activities of earnings management; FinDistress is the proxy for firms' financial health measured by a modified Z-score; LEVERAGE is the ratio of total liabilities to total assets; SIZE is the log of total assets; ROA is the ratio of EBIT to net assets and LIQUIDITY is the ratio of current assets to current liabilities.

\*\*\* significant at the 0.01 levels.

**Regression Analysis**

All variables are normally distributed and the analysis met all the assumptions of multiple regression analysis. Panel A in Table 4 provides regression results of both AEM and REM with FinDistress and other control variables for the period before the COVID-19 pandemic, while Panel B is for the period during the pandemic. The study regressed the variables separately using each estimation model described in the methodology's section before, where each model represents a different proxy for EM which is AEM and REM. The results are shown in Table 4 below.

The F-statistics show significance at the 1% level for both models that have been used to regress the data before and during the pandemic. The R-squared indicated how much the ratio of variance in the dependent variable can be explained by the independent variable. In the first model (Model 7), AEM, the study shows that FinDistress, LEVERAGE, SIZE, ROA and LIQUIDITY have explained 5.3% and 9.6% of the variance of accrual earnings management respectively before and during the pandemic. The low R square is considered common for this accrual regression, as evidenced by earlier research (Li et al., 2020; Ghazali et al., 2015). First, the regression Model (7) is used to test H1 and H2. From Panel A, the result shows a significant negative association (with a coefficient of -0.113) between FinDistress and AEM at a 10% significance level before the pandemic. While during the pandemic, the same coefficient,  $\alpha_1$ ,

which is -0.144 also shows a negative and significant at the 5% level. Thus, H1 and H2 are accepted. It suggests that the financially distressed firms practiced AEM neither before nor during the pandemic. The findings are inconsistent with Ryu and Chae (2022) and Lassoued and Khanchel (2021) who discover evidence that companies used accrual earnings management more frequently than they had in the years before the pandemic which provides a sign that they were concerned about the unpredictability of future company performance as the pandemic continues. However, there are some studies that cover the non-pandemic period that will support the finding of this study. It is consistent with Rusci et al (2021); Ghazali et al (2015); Demirkan and Platt (2009), who claim that distressed companies do not engage in discretionary accruals because they have used up all of their resources manipulating earnings before distress and may not see the point of doing so. Ghazali et al (2015) further conclude that AEM would only be used by managers in financially sound companies.

Second, using Model (8), REM, R-squared shows that FinDistress, LEVERAGE, SIZE, ROA and LIQUIDITY have explained 69.4% and 67.2% of the variance of real earnings management for the period before and during the COVID-19 pandemic respectively. The higher R square is also found in Campa and Miriano (2015). The large gap of R-squared between these two models may be because other variables could explain the AEM deviation than those being examined in this study. Therefore, a future study may increase the R-squared by including additional variables. The regression Model (8) is used to test H3 and H4. The coefficient  $\beta_1$  is positively associated with REM and both are significant at the 1% level which a coefficient of 0.813 in Panel A and 0.907 in Panel B. This finding implies that the company that is in worse financial status will favour real earnings management both before and during the pandemic. This finding is in contrast with Xiao and Xi's study from 2021, which found that firms adopted an AEM approach during the pandemic rather than a REM approach. Due to the pandemic's significant effects on the economy, real manipulation through operational, financial, and investment activities has become more expensive and challenging. However, the results of this study have been confirmed by evidence from the non-pandemic period, including (Campa, 2019; Campa and Miriano, 2015). Campa (2019) further clarify that businesses do manipulate income-increasing revenues through real activities when they are experiencing severe financial difficulties. It verifies the "opportunistic behaviour" hypothesis in terms of how listed companies manage their earnings, at least when such companies are largely reliant on external debt and the institutional environment does not provide adequate creditor protection.

Table 4

*Regression Result of Accrual and Real Earnings Management*

	<b>Panel A: Regression Result before the pandemic (2018 - 2019)</b>		<b>Panel B: Regression Result during pandemic (2020 - 2021)</b>	
<b>Variables</b>	<b>Accrual Earnings Management (AEM)</b>	<b>Real Earnings Management (REM)</b>	<b>Accrual Earnings Management (AEM)</b>	<b>Real Earnings Management (REM)</b>
<b>(Constant)</b>	-0.357 (-1.31)	0.431* (1.669)	-0.582** (-2.04)	0.447* (1.715)
<b>FinDistress</b>	-0.113* (-1.902)	0.813*** (23.999)	-0.144** (-2.248)	0.907*** (23.505)
<b>LEVERAGE</b>	0.341*** (3.983)	-0.205*** (-4.207)	0.451*** (4.865)	-0.2*** (-3.576)
<b>SIZE</b>	-0.166** (-2.488)	0.041 (1.092)	-0.157** (-2.346)	0.044 (1.087)
<b>ROA</b>	-0.045 (-0.775)	0.497*** (14.969)	-0.154*** (-2.688)	0.486*** (14.048)
<b>LIQUIDITY</b>	0.214* (2.811)	0.003 (0.075)	0.385*** (4.62)	0.115** (2.293)
<b>R2</b>	0.053	0.694	0.096	0.672
<b>Adjusted R2</b>	0.039	0.69	0.082	0.667
<b>F-statistics</b>	3.682***	148.968***	6.975***	134.101***
<b>N</b>	336	336	336	336

**Note:**

This table shows the model summary of each Earnings Management value for a sample of 336 firm-year observations. AEM is Accruals Earnings Management proxy by Discretionary Accruals figure; REM is Real Earnings Management for real activities of earnings management, FinDistress is the proxy for firms' financial health measured by a modified Z-score, LEVERAGE is the ratio of total liabilities to total assets, SIZE is the log of total assets, ROA is the ratio of EBIT to net assets and LIQUIDITY is the ratio of current assets to current liabilities.

\*\*, \*\*\* significant at the 0.05 and 0.01 levels respectively.

In addition, some of the control variables show a significant result with the models as the proxy for EM. First, LEVERAGE (with a coefficient of 0.341 before the pandemic and 0.451 during the pandemic) has a significant positive association with AEM at a 1% significance level. The findings are consistent with the 'debt hypothesis' in Sweeney (1994), who discovered that the probability of a manager using income-increasing accounting procedures increases with the company's debt-to-equity ratio. On the other hand, at a 1% level of significance, LEVERAGE (with a coefficient of -0.205 before the pandemic and -0.2 during the pandemic) exhibits a significant negative association with REM. The findings are consistent with Campa (2019). Prior to this, the "control hypothesis" for debt creation (Jensen, 1986) claimed that debt might be utilised to lower agency costs since managers would then have more discretion over the firm's cash flow. The control role starts when management is required to make

interest and principal payments since failing to do so may force the firm into bankruptcy court. Larger interest payments will prevent managers from using their judgment, hence, reducing the potential of EM.

Second, the result of negative significance at the 5% level between SIZE and AEM (with a coefficient of -0.166 before the pandemic and -0.154 during the pandemic) is in line with (Lidsa and Julisar, 2022). They suggest that larger companies have adhered to more restrictions with higher supervision, thus restricting them from exercising earnings management. Next, ROA is significantly negative with AEM which a coefficient of -0.154 during the pandemic at the 1% level. This is inconsistent with Rakshit and Paul (2020) that found a positive significant relationship with EM. However, using Model (8), the result is supported by (Rakshit and Paul, 2020). ROA (with a coefficient of 0.497) has a significantly positive 1% level with AEM before the pandemic. In addition, there is also a significant positive association which a coefficient of 0.486 between ROA and REM during the COVID-19 pandemic. According to Rakshit and Paul (2020), managers of profitable firms seek to exercise earnings management to attain their desired level of earnings and acquire the trust of investors. Lastly, LIQUIDITY is significantly positive with both AEM and REM. For AEM, the coefficient is 0.214 at a 10% significance level and a coefficient of 0.385 at a 1% significance level in the period before and during the pandemic respectively. Additionally, this study supports Rakshit and Paul's (2020) conclusion that businesses with strong liquidity have less motivation to manipulate their earnings.

Further analysis was conducted by using each proxy (AbCFO, AbPROD and AbDISEXP) of the integrated real earnings management to identify which proxy of the real earnings management activity has a significant effect on financially distressed firms during the period. The result is presented in Table 5 below. It shows that FinDistress is positively associated at the 1% level with both AbCFO and AbDISEXP before and during the COVID-19 pandemic. The coefficients for AbCFO before and during the pandemic are 0.716 and 0.646 respectively. This finding is supported by Campa (2019). In addition, the coefficient for AbDISEXP is 0.753 before the pandemic and 0.792 during the COVID-19 pandemic. Meanwhile, FinDistress exhibits a significant negative association with AbPROD (with a coefficient of -0.290 at 1% significance level) before the pandemic and also during the pandemic (with a coefficient of -0.087 at 10% significance level). However, this finding is contradict with (Campa and Miriano, 2015). Overall, the result of this study concludes that the worse the financial condition of a firm, the more AbCFO and AbDISEXP activities and the less AbPROD are practiced by the firm. Furthermore, Roychowdhury (2006); Cohen and Zarowin (2010), who conclude that firms that manage earnings upwards are likely to have one or all of these accounting effects: (i) due to the discount that was given or the lenient credit terms that were used to speed up sales for the current period, the cash flow from operations was incredibly low, and (ii) unusually low discretionary expenses because the effort to boost current-period profitability, research and development, advertising, and general and administrative expenditures were aggressively cut, which in turn raised the operating margin for the current period.

Table 5

*Regression Result of each Component in Real Earnings Management*

Variables	Panel A: Regression Result before the pandemic (2018 - 2019)			Panel B: Regression Result during pandemic (2020 - 2021)		
	AbCFO	AbPROD	AbDISEXP	AbCFO	AbPROD	AbDISEXP
(Constant)	0.541*** (3.171)	-0.393*** (-3.282)	0.297** (2.228)	0.062 (0.284)	1.943 (0.976)	0.323** (2.253)
FinDistress	0.716*** (21.565)	-0.290*** (-6.807)	0.753*** (24.246)	0.646*** (15.496)	-0.087* (-1.819)	0.792*** (20.005)
R2	0.706	0.517	0.743	0.616	0.496	0.654
Adjusted R2	0.702	0.510	0.739	0.611	0.488	0.649
F-statistics	157.713***	70.192***	189.233***	105.420**	64.433***	124.017***
N	336	336	336	336	336	336

**Note:**

This table shows the summary of regression for each component of the integrated Real Earnings Management measure for a sample of 336 firm-year observations. AbCFO is abnormal cash flow from operating activities; AbPROD an abnormal production costs; AbDISEXP is abnormal discretionary expenses and FinDistress is the proxy for firms' financial health measured by a modified Z-score.

\*, \*\*, \*\*\* significant at the 0.1, 0.05 and 0.01 levels respectively.

**Conclusion**

This empirical study examines the impact of financial distress on the choice of earnings management approach in the period before and during the COVID-19 pandemic. It uses a sample of Malaysian public listed firms between 2018 - 2021 which consists of 672 firm year observations. The first and second hypotheses are accepted. The coefficient,  $\alpha_1$  in Model (7) indicated a significant negative association between financial distress and AEM both before and during the COVID-19 pandemic. It suggests that the healthier the firm (lower degrees of distress), the more likely the accrual earnings management approach will be used to meet earnings targets. In addition, the third and fourth hypotheses are also supported, thus, the finding is highlighted that financially distressed firms did engage in real earnings management in the period before and during the pandemic. Since real earnings management activities are less detectable, managers who are under extreme pressure, such as when they are at risk of going bankrupt, prefer to manage real activity earnings management without considering the long-term effects (Campa & Miriano, 2015). The main finding is that the choice of earnings management approach is influenced by the financial health of the companies. The findings also indicate that both before and after the COVID-19 pandemic, Malaysian public listed companies seem to be more likely to get involved in REM and less likely to engage in AEM. Based on previous literature and the finding of the current study it can be concluded even if the approach has a far higher cost than the other choices, a firm in financial distress will choose to use an earnings management strategy that is difficult to identify.

In addition, the significant effects between control variables (LEVERAGE, SIZE, ROA and LIQUIDITY) with earnings management can also be highlighted as they have an influence on both AEM and REM approaches. This evidence offers some guidance to regulators and practitioners to respond appropriately to recent failures of businesses affected by



opportunistic EM, which could have an impact on the accuracy of accounting earnings. In addition, this study also contributes to the earnings management literature, notably how managers choose to manipulate earnings at the different levels of financial health specifically in the period before and during the COVID-19 pandemic.

However, this study has several limitations, which must be addressed. First, it examines firms as a whole without taking into account the variety of industries that could have different characteristics and influence the choice of earnings management approach. Second, the data only demonstrate an association between financial distress and earnings management, not a cause-and-effect link. Therefore, additional theoretical and empirical research is needed to better understand how financial distress causes REM. Finally, further study may be conducted by including samples from other developing countries to compare the trend in choice of earnings management approach made which would give more insights into the results.

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