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Financial distress and earnings management: evidence from non-financial companies listed on the Ho Chi Minh Stock Exchange

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Abstract

The study examines the impact of financial distress on earnings management for Vietnamese non-financial companies. The System Generalized Method of Moments was employed to estimate a dynamic panel data model. Data were collected from non-financial companies listed on the Ho Chi Minh Stock Exchange from 2011 to 2020. The results show that financial distress has a positive impact on earnings management. Specifically, enterprises with good financial health and low risk of bankruptcy tend to make upward profit adjustments, while financially distressed enterprises tend to make downward profit adjustments. This may be due to the supervisory pressure of auditors and creditors, which makes the most affected enterprises no longer have the opportunity to undertake profit manipulation. At the same time, a company with high operating performance tends to maintain profit growth to impress investors in the market. The study results warn policymakers, enterprises, and investors when even financially sound enterprises are incentivized to undertake earnings management. This paper provides additional evidence that financial distress is positively associated with earnings management, which contradicts the findings of some prior studies.

Keywords: Financial distress, Earnings management, Profit adjustments, Vietnam

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1. Introduction

Earnings management has become increasingly popular among firms worldwide. The consequences could vary from seriously affecting the transparency of the market, eroding the development prospects of firms, to damaging trust from investors in the stock market in particular and the financial markets in general. For example, Xerox, an office equipment corporation in the USA, falsely claimed 6.4 billion USD in profit within five years. This event caused US stock prices to fall to the lowest within six months. At the same time, Xerox company was subject to a 10 million USD fine from the US Securities and Exchange Commission. In Vietnam, Eximbank adjusted its profit to nearly 1,000 billion VND in 2014, turning the company's position from suffering a significant loss to earning a profit. This event raised much insecurity among investors. Eximbank was then put on a warning on the Ho Chi Minh Stock Exchange (HOSE) and was forced to amend and publish the exact profit figure.

Earnings management is the concern of not only firm managers but also academic researchers. Recently, the number of studies on motivations for earnings management has steadily increased. These studies show that managers are incentivized to smooth income under various circumstances. Earnings management comes from two reasons, which are market influence and agency relationships (Filip and Raffournier, 2014). When the former concerns the firm's desire to hide losses (Burgstahler and Dichev, 1997; Degeorge *et al.*, 1999) or to prepare for a specific event (i.e., equity offerings, initial public offerings) (Teoh *et al.*, 1998), the latter refers to firm's attributes (i.e., earnings-based compensation, bonus plan) (DeFond and Jiambalvo, 1994; Guidry *et al.*, 1999; Dichev and Skinner, 2002). From the mentioned viewpoint, financial distress could be related to a market influence factor that provides an "ideal" context for firms' managers to manipulate financial statements to avoid reporting huge losses (Iatridis and Kadorinis, 2009; Jaggi and Lee, 2002).

Numerous studies have indicated that economic downturns reduce the transparency of financial statements. Particularly, firm managers are more motivated to undertake earnings management during economic busts (Burgstahler and Dichev, 1997), and the quality of financial reports decreases when the economy enters a recession (Trombetta and Imperatore, 2014). Therefore, the impact of a financial crisis at a firm level is an interesting research topic, especially in the context that the risk of financial distress among firms increases due to the impact of the COVID-19 pandemic. This paper analyzes the level and sign of earnings management from listed non-financial companies on HOSE in Vietnam from 2011 to 2020 to measure the impact of financial distress on accounting manipulations. The choice of listed non-financial companies has several advantages. First, the COVID-19 pandemic has significantly affected non-financial companies (OECD, 2020). Second, only listed companies are chosen because the financial reports of these companies are audited and, therefore, provide more robust evidence.

Vietnam was chosen in this research due to the limited number of studies focusing on the impact of corporate finance in general and financial distress in particular on earnings management among firms in this country. The time frame for data collection of earnings

management in Vietnamese studies is relatively short, which may affect the accuracy of the calculated earnings management variable. Moreover, among the studies conducted in Vietnam, the number of control variables representing firm characteristics included in the research model is still limited. Therefore, by using more extended time series and adding more control variables to strengthen the validity of the model, this study tries to provide further evidence that enriches the research literature on the impact of financial distress on earnings management in the Vietnamese context.

Following prior research, earnings management is measured with discretionary accruals. The data come from 200 non-financial companies listed on HOSE from 2011 to 2020, leading to a sample of 1,990 observations. Using the System Generalized Method of Moment, this study provides evidence that financial distress positively impacts earnings management. Companies with good financial health and a low risk of bankruptcy (high Z-score) tend to make upward profit adjustments. By contrast, financially distressed companies (low Z-score) tend to make downward profit adjustments.

The remainder of the paper is structured as follows. Section 2 frames this study within the literature on the impact of financial distress on earnings management. Section 3 details the data collection, variables, and methodology used to run the model. Section 4 presents and discusses the empirical results. Finally, section 5 concludes the study.

2. Theoretical framework and literature review

2.1 Theoretical framework

2.1.1 Earnings management

Managers are those responsible for informing investors, creditors, suppliers, customers, and the general public of the company's financial performance, enabling these stakeholders to make accurate and optimal decisions. With specific knowledge of the company's internal situation, managers are expected to give an objective viewpoint, which should reflect the firm's actual situation. In other words, the information is meaningful only when it is reliable (Spohr, 2005). However, the information asymmetry between firm managers (internal users) and external users of financial statements always exists, enabling managers to adjust to preparing and reporting financial information, hence achieving their purposes. The act of doing these manipulations is called earnings management.

Schipper (1989) is one of the first scientific researchers to define earnings management as "a purposeful intervention in the external financial reporting process with the intent to obtaining one private gain". Healy and Wahlen (1998) introduced a broader concept: "Earnings management can be considered as a misleading and deceiving act from shareholders". In addition, Abdul and Haneem (2006) argued that "unlike fraudulent practices, earnings management is undertaken through the selection of accounting principles, procedures, and estimation methods that are consistent with managers' purpose, but still within the accepted framework of accounting standards".

In short, earnings management appears in various forms. It happens when managers flexibly apply accounting principles to falsify information on financial statements, blinding related parties about the actual situation of the company, hence achieving pre-determined goals.

2.1.2 Financial distress

Financial distress is not a bizarre concept and has become the research topic of various studies worldwide. However, there are many definitions of financial distress due to the different views of researchers. According to Altman and Hotchkiss (2011), financial distress is the period from when the company faces difficulties until it goes bankrupt. Specifically, during financial distress, the firm consistently records negative net profits, delays dividend payments, undertakes large-scale restructuring, and lays off staff (Platt and Platt, 2002). Financial distress is characterized by negative interest coverage and earnings before interest and taxes (Platt and Platt, 2004). According to McLeay and Omar (2000), several signals of financial distress could be the company recording a loss and beginning to sell shares to private investors, forcing a restructuring or reorganization, and the value of the company's equity is lower than 0. Financial distress is a broader concept than bankruptcy, representing the state of a company having comprehensive difficulties in meeting its financial obligations in time or facing liquidity shortages (Boda and Uradnicek, 2016).

In short, financial distress is a condition that continues for several years. During that period, the company continuously loses liquidity level and has difficulty paying its debt obligations and maintaining operations. If this situation persists, the company shall go bankrupt.

2.1.3 Agency theory

The principal-agent relationship exists whenever someone (the principal) hires another (the agent) to represent his or her interests (Ross *et al.*, 2012). This relationship, therefore, is closely related to trust, responsibility, and the expectation of loyalty. The principal always expects the agent to act in the principal's best interest. However, the agent theory indicates that the principal-agent relationship in the corporate context often leads to a conflict of interest (Jensen and Meckling, 1976). Specifically, the manager (the agent) does not act in the interests of the shareholders (the company owners).

For joint stock companies, shareholders authorize managers or boards of directors to make most of the decisions related to the firms' operation. Managers have an obligation to act in the best interests of shareholders. However, in reality, managers tend to act in their interests or to the detriment of the interests of the real owners of the companies. First, there may be a conflict between the managers and shareholders regarding risk tolerance. Shareholders might be willing to take higher risks to receive higher returns, while managers might not want to make risky decisions to preserve their salary and job position. In addition, managers are often those who know more information about the operation of the companies than shareholders. This situation of "asymmetric information" creates opportunities for managers to develop business strategies that do not serve the sustainable interests of the firms, weakening the

owners' ability to control the firms. Another frequent case is that the managers may prioritize the interests of a certain group of shareholders over the rest of the shareholders.

Agency costs arise because most large public or private companies are managed by non-owners. These are additional costs arising from a conflict of interest when an agent makes decisions on behalf of the employer. In the context of a firm, agency costs come from conflicts of interest between creditors, managers, and owners.

Considering the conflict of interest between the firm's owners and managers, the researchers believe that the less ownership of the company the managers take, the less responsibility they have to bear when the company underperforms. Besides, they have more incentives to engage in behaviors contrary to the owners' sustainable interests. According to Jensen and Meckling (1976), this agency's equity cost includes monitoring costs, bonding costs, and residual losses.

When a company is under effective management, the agency costs shall be lower, and the shareholders' value increases, showing that the benefits of the managers parallel the interests of the firm owners. In addition, Jensen and Meckling (1976) pointed out that increasing the proportion of debt in firms' capital structures could reduce agency costs. Specifically, the increase in debt financing shall put pressure on the managers to come up with wiser and more effective strategies, and the company might also be forced to use free cash flow to pay off debt, reducing the opportunity for managers to perform acts of using cash for improper purposes.

2.2 Literature review

The link between financial distress and earnings management is a subject appealing to many researchers worldwide. However, the findings from previous studies on this topic are diverse. Some researchers claim that financially distressed companies tend to increase their profit in their financial statements. On the contrary, many studies provide evidence to prove that companies in financial difficulties or at risk of bankruptcy often reduce their profit with accounting principles, which is opposite to the former conclusion. Furthermore, besides studies that confirm the existence of an empirical relationship between financial distress and earnings management, several studies indicate that these two quantities are not correlated.

There are several reasons to believe that earnings should be adjusted higher when firms face financial difficulties. First, in such a situation, most firms are likely to report lower earnings, which probably raises managers' intention to engage in income-increasing earnings management to cover the drop in operational performance (Ahmad-Zaluki *et al.*, 2011). Managers of the most affected companies may distort the profit to avoid a significant decrease in the firms' stock prices, which would have a detrimental influence on their remuneration (Charitou *et al.*, 2011). Second, debt covenants also lead to upward earnings management. Due to the fact that those covenants are, to a certain extent, based on earnings (Dichev and Skinner, 2002), manipulating earnings upward shall reduce the chance of breaking the regulations (DeFond and Jiambalvo, 1994; Iatridis and Kadorinis, 2009; Saleh and Ahmed, 2005; Sweeney, 1994).

A strand of literature focuses on providing evidence that financially distressed firms undertake upward earnings management. Cheng *et al.* (2010) collected a sample of 130 non-financial companies facing losses in China for three consecutive years, from 2001 to 2003, to study the impact of delisting pressure on profit manipulation. The results of this study showed that the more likely companies are to be delisted, the more likely they are to adjust their profits to be higher, even those whose impact of delisting is negligible. Similarly, Charitou *et al.* (2011) examined 15,049 financially sound companies and 1,082 companies filing for bankruptcy in the United States between 1990 and 2004 to see the level of earnings management among companies with different financial situations. The study results showed that financially healthy companies tend to timely record negative news in their financial statements, whereas financially distressed ones prioritize recognizing positive information. This means that companies in financial difficulties tend to adjust profits to be higher. Sharing the same viewpoint, Campa and Camacho-Miñano (2015) conducted a research paper on 362 small- and medium-sized companies at risk of bankruptcy in Spain to study the impact of financial distress on their choice of profit manipulation. The authors used the GMM regression method to measure the impact of financial distress on the accrual-based and real earnings management levels. Results showed that companies prefer real earnings management to accrual-based earnings management when they become more heavily indebted. It can be explained that when facing a difficult and complex financial situation, managers prioritize using tricks that are more effective and harder to detect even if the risks and consequences are harder to control. Recently, the modified Jones (1991) model, Raman and Shahrur (2008) model, and Altman's Z-score are also employed by Rakshit *et al.* (2021) to reaffirm that highly distressed firms have more incentives to undertake income-decreasing earnings management.

On the contrary, managers of financially troubled firms may be incentivized to manipulate earnings downward, especially those that must restructure debt capital to avoid failing to pay off debts. Reporting losses may assist these debtors in obtaining concessions from debtees. Banks can refuse these concessions and call for the firm's liquidation. However, when the realizable value of a firm's assets is low, banks usually choose debt restructuring (i.e., waiving covenants, delaying principal and interest, or reducing the interest rate) rather than calling the loan (Asquith *et al.*, 1994). In addition, relationships between the agency and the employees might also lead to income-reducing earnings management. For instance, DeAngelo *et al.* (1994) found that reporting losses assists managers in portraying the firm as tremendously distressed, which is likely to gain concessions from employees who still doubt the severity of the firm's hardships.

To give evidence to the latter argument, another strand of literature documents that firms undertake downward earnings management when facing financial distress. DeAngelo *et al.* (1994) have offered several reasons to support this statement. The first reason managers decide to cut down on recording accrual transactions is to avoid closer attention from accounting firms, especially when there are signals that the companies' financial situation is struggling. The other reason lies in the pressure coming from creditors. To keep the creditors' trust and

avoid losing credit rating due to the implementation of earnings management during financial distress, most firm managers choose to reduce accrual activities to show that they are prepared for unexpected situations and will take serious steps to overcome difficulties. The reason provided by Saleh and Ahmed (2005) states that companies that have lost the ability to pay their debts will have an incentive to record a decrease in profits to take advantage of support or to obtain more favorable capital financing terms from the government. Analyzing large panel data of public companies from India, Gandhi (2021) also concluded that income-decreasing real earnings management is prevalent among financially distressed firms.

In Vietnam, few studies have been conducted on the relationship between financial distress and earnings management. The results from this paper favor the positive impact of financial distress on earnings management. Following the method of Ohlson's (1980) O-score, Dechow *et al.* (1995) and Richardson *et al.* (2005), Alphonse and Nguyen (2015) found that compared to firms with a high risk of financial distress, those that are less likely to face financial difficulties have more intention of using accrual-based earnings management for upward profit adjustments. This finding suggested that managers of distressed firms are prevented from inflating earnings due to their being closely monitored by creditors. Similarly, Vo and Hoang (2013) conducted a study on 85 companies that audited financial statements for five consecutive years from 2007 to 2011 to test the relationship between bankruptcy risk and earnings management. The authors measured earnings management using Leuz's model and used the Z-score index to measure bankruptcy risk. By applying descriptive statistical methods, the authors provided evidence that companies with a high risk of bankruptcy have the highest average earnings management. Conversely, the companies that are not yet at risk of bankruptcy have the lowest average earnings management. In addition, the authors also used a linear regression model by ordinary least squares (OLS), with the independent variable and the dependent variable being the adjusted level of profit and the risk of bankruptcy, respectively. The regression results showed that the regression coefficient of the independent variable is positive. Hence, there is a positive relationship between the risk of bankruptcy and earnings management. Le (2020) confirmed the positive relationship between financial distress and earnings management. The author examined the effects of ownership structure, firm size, and growth rate on the relationship between financial distress and adjusted profit. The results showed that the higher the level of foreign ownership, the higher the growth rate, and the smaller the firm size, the lower the positive effect of financial distress on earnings management.

Almost all previous studies confirm the existence of an empirical relationship between financial distress and earnings management. However, they do not reach the same conclusion, especially papers in foreign countries, as a sign of these manipulations. Therefore, the effect of financial distress on the earnings management level among firms is unclear. This empirical analysis should provide further evidence for non-financial companies listed on the Ho Chi Minh Stock Exchange.

3. Research methods

3.1 Empirical model

Since different factors, including financial distress, may often have gradual effects on earnings management, this study uses a dynamic panel data model as follows:

$$DA_{it} = \beta_0 + \beta_1 DA_{i,t-1} + \beta_2 Zscore_{i,t} + \beta_3 Size_{i,t} + \beta_4 CFO_{i,t} + \beta_5 Lev_{i,t} + \beta_6 ROA_{i,t} + \beta_7 Issue_{i,t} + \beta_8 Inv_{i,t} + \beta_9 Liq_{i,t} + \varepsilon_{i,t}, \quad (1)$$

where i is company; t is time in years; β_0, \dots, β_9 are estimated regression coefficients of respective variables; $\varepsilon_{i,t}$ is the random error.

Discretionary accruals (DA) is the dependent variable of the model, measuring the level of earnings management of the enterprise i at year t , calculated by the modified-Jones model (Dechow *et al.*, 1995).

This model determines the earnings management of the enterprise based on the adjustable accrual accounting variable, which is calculated by determining the difference between the total accrual accounting variable (TA) and the non-adjustable accrual accounting variable (NDA). The accrual accounting variable can be adjusted in the following model:

$$\frac{TA_{i,t}}{A_{i,t-1}} = \alpha_1 \left(\frac{I}{A_{i,t-1}} \right) + \alpha_2 \left(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}} \right) + \alpha_3 \left(\frac{PPE_{i,t}}{A_{i,t-1}} \right) + \varepsilon_{i,t}, \quad (2)$$

where $A_{i,t-1}$ is the book value of total assets of company i at the end of year $t-1$; $\Delta REV_{i,t}$ is the difference in revenue of company i between year t and year $t-1$; $\Delta REC_{i,t}$ is the difference in receivables of company i between year t and year $t-1$; $PPE_{i,t}$ is the historical cost of fixed assets; t is the year of earnings management; $\alpha_1, \alpha_2, \alpha_3$ are parameters estimated by ordinary least squares (OLS).

From here, this paper determines earnings management (EM), which is the value of the accrual accounting variable that can be adjusted (DA) or the residual $\varepsilon_{i,t}$ in model (2).

The model's primary independent variable is the Z-score, measuring the enterprise's financial distress level. Based on Altman (2000), the Z-score is calculated according to the following formula:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5,$$

where X_1 is the working capital/total assets; X_2 is the undistributed profit/total assets; X_3 is the profit before interest and taxes/total assets; X_4 is the market value of equity/total liabilities; X_5 is the revenue/total assets. A firm with a Z-score less than 1.81 is financially distressed, a firm with a Z-score from 1.81 to 2.99 has no risk of financial distress in the short term but should be cautious in the long term, a firm with a Z-score higher than 2.99 is financially sound.

To test the impact of financial distress on earnings management, seven control variables in the model include firm size, cash flow from operating activities, financial leverage, return on assets, equity issuance, inventory change, and liquidity.

Firm size (Size) represents the firm's size. Some researchers argue that large-sized enterprises are less inclined to manipulate their profit due to being entitled to more effective internal control systems, higher auditing quality, and fear of losing reputation if profit manipulation is found (DeAngelo *et al.*, 1994). The second view supports that enterprise size is proportional to earnings management. Large-sized companies tend to be pressured to meet or exceed market expectations (Barton and Simko, 2002). In addition, it is easier for these companies to manipulate their profit because they are more diversified in transaction entries. The separation between the principal and agent also facilitates earnings management (Jensen and Meckling, 1976). Firm size is determined by taking the natural logarithm of total assets reported on the firm's financial statements at the end of each year (Ross *et al.*, 2012).

Cash flow from operating activities (Cfo) represents the cash flow from operating activities. The negative relationship between cash flow from operating activities and earnings management has been proven through many studies (Becker *et al.*, 1998; Kothari *et al.*, 2005). Companies often manipulate profits through upward revenue recognition. At this time, the companies choose accounting methods to recognize revenue early, provide promotional policies for customers, or loosen the terms of postpaid sales. At this time, the revenue on the financial statements increases, causing the profit to rise accordingly, but the company's cash flow decreases because the revenue-generating transactions recognized by the enterprise do not generate cash inflow. The company reduces selling prices, leading to a decrease in net receipts and failure to collect receivables or a sharp increase due to a loosened credit policy. To eliminate the impact of differences in company size, this control variable is calculated by taking the net cash flow from operating activities recorded on the statement of cash flows divided by total assets recorded at the end of the year (Ross *et al.*, 2012).

Financial leverage (lev) is financial leverage measuring the debt-to-equity ratio. Several studies provide evidence that leverage has an effect on increasing earnings management. Shan *et al.* (2010) argue that companies with high external debt are incentivized to overestimate profit. In addition, companies with a high leverage ratio tend to adjust their profit upward to avoid breaching their debt obligations (Becker *et al.*, 1998; Dechow *et al.*, 1995). On the other hand, some studies confirm that companies with high debt will be subject to more supervision from creditors, especially banks. Hence, the opportunity to make profit adjustments is limited (Jensen and Meckling, 1976). Financial leverage is determined by dividing total liabilities by total equity recorded on the balance sheet at the end of each year (Ross *et al.*, 2012).

Return on assets (ROA) is a relationship between return on assets (ROA) and earnings management that has been found by previous studies (Kothari *et al.*, 2005). Low-profit companies tend to undertake earnings management to avoid the risk of devaluation in valuations made by investors and analysts (Ashari *et al.*, 1994). By contrast, some studies show that companies with high-profit growth on assets are usually small- and medium-sized, difficult to access, and manage asset size, so these companies have more opportunities to make profit adjustments (Skinner and Sloan, 1999). Return on assets is calculated by dividing operating profit by total assets (Ross *et al.*, 2012).

Equity issuance (issue) is an impact of equity mobilization pressure on earnings management that has been proven by many studies (Friedlan, 1994; Jeong-Bon Kim, 2010; Shan *et al.*, 2010; Teoh *et al.*, 1998). Graham *et al.* (2005) asserted that this is one of the biggest drivers of earnings management. Most managers believe that the information on the financial statements will affect the price of issuing shares to the public. Therefore, they make upward profit adjustments to increase the efficiency of capital mobilization (Friedlan, 1994). Making upward profit adjustments will help the company impress investors, create motivation for positive changes in the price of shares traded on the secondary market to increase liquidity, and make capital mobilization easier and more cost-effective (Rosner, 2010). The equity issuance variable is measured as the ratio of equity in the current year to equity in the previous year.

Inventory change (inv) variable represents the inventory change. A sudden decrease in inventory is a normal response of an enterprise experiencing financial difficulties (DeAngelo *et al.*, 1994). Therefore, any unusual reduction in inventory in the financial statements signals that the enterprise's managers are willing to disclose unstable financial status instead of manipulating profits to hide negative information. Rosner's research also shows that an increase in ending inventory recognized by an enterprise is a sign of earnings management. The variable inventory change is measured by the ratio of inventory in the current year to inventory in the previous year.

Liquidity (liq) variable represents the liquidity level of a company. The impact of liquidity on earnings management has been verified by previous studies (Gombola *et al.*, 2016). Managers of companies with a highly maintained liquidity ratio are often concerned with the risks faced by their company in the short and long term, so they are less motivated to make profit adjustments. In addition, Gombola *et al.* (2016) show that the characteristics of companies applying flexible accounting policies to recognize upward profit are high leverage ratios and low liquidity ratios. This study determines liquidity by current assets divided by current liabilities (Ross *et al.*, 2012).

3.2 Data collection

Data were collected from non-financial companies listed on HOSE from 2011 to 2020. Companies in the financial sector, including banks, financial companies, and insurance companies, are excluded from the sample because their financial statements are not consistent with the financial statements of the other enterprises.

Because one-year lag data is needed to measure some variables in the model, the data were collected from 354 non-financial companies over ten years from 2011 to 2020 from Vietstock. After excluding 154 companies listed intermittently and not disclosing enough data for ten years, the data sample was left with 200 companies after processed, corresponding to 1,990 observations. The data type used is panel data.

3.3 Estimation method

The following tests are conducted, in addition to the standard regression coefficient tests: (i) Wald test to evaluate the joint significance of the model; (ii) Hansen test of overidentifying restrictions, where the null hypothesis posits that all the instruments are exogenous; (iii) Arellano-Bond test to detect second-order serial correlation in the residuals; and (iv) difference-in-Hansen tests to assess the exogeneity of various subsets of instruments.

To estimate the above dynamic panel data model and handle the endogeneity problem, this study applies the System Generalized Method of Moments (System GMM) methodology developed by Arellano and Bover (1995) and Blundell and Bond (1998), which establishes a system of two equations: equation (1) in differences and equation (1) in levels. Forming this system of two equations facilitates the handling of the endogeneity problem by allowing the immediate use of internal instrumental variables that already exist in the model inputs. The lagged values of the explanatory variables are used as instruments for the differenced equation, and the lagged values of the differenced explanatory variables are used as instruments for the equation in levels.

4. Results and discussion

4.1 Descriptive statistics

Table 1 describes data for the variables in the study. Statistical results show that the earnings management level of enterprises listed on HOSE may range in [-0.419; 0.649] with a mean of -0.001 (less than 0). Therefore, it can be seen that, on average, the enterprises in the study tend to make downward profit adjustments. However, this figure is not high, so the difference between upward and downward profit adjustments is insignificant. The Z-score of the observations may range from [-0.372; 0.649] with a mean of 4.675 (greater than 2.99). It can be said that the enterprises listed on HOSE generally have a low financial distress level and low bankruptcy risk.

Table 1. Descriptive statistics

Variables	Obs.	Mean	Std. Dev.	Min	Max
DA	1,990	-0.001	0.092	-0.419	0.649
Zscore	1,990	4.675	5.291	-0.372	71.573
Size	1,990	28.087	1.282	25.497	33.677
Cfo	1,990	0.061	0.116	-0.385	0.97
Lev	1,990	1.564	2.495	0.03	33.027
ROA	1,990	0.071	0.088	-0.414	0.531
Issue	1,990	1.109	0.345	0.024	6.884
Inv	1,990	1.308	2.514	0.000	51.728
Liq	1,990	2.249	2.303	0.097	31.876

Source: Authors' calculation

The result of the correlation analysis among nine variables in the model is presented in Table 2. The correlation matrix shows that some independent variables have statistically significant relationships with the dependent variable DA, including CFO, Lev, ROA, Issue, Inv. CFO and Lev are negatively correlated with DA, while ROA, Issue, and Inv are positively correlated with DA. CFO, ROA, Issue, and Inv strongly correlate with DA, with correlation coefficients of -0.594, 0.134, 0.140, and 0.083, respectively. These four variables are expected to have significant impacts on earnings management.

Table 2. Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) DA	1.000								
(2) Zscore	-0.007	1.000							
(3) Size	0.025	-0.234***	1.000						
(4) Cfo	-0.594***	0.290***	-0.114***	1.000					
(5) Lev	-0.049**	-0.049**	0.100***	-0.102***	1.000				
(6) ROA	0.134***	0.473***	-0.089***	0.418***	-0.228***	1.000			
(7) Issue	0.140***	-0.003	0.035	-0.015	-0.003	0.176***	1.000		
(8) Inv	0.083***	-0.008	-0.016	-0.061***	-0.005	-0.003	0.067***	1.000	
(9) Liq	0.008	0.448***	-0.193***	0.155***	-0.139***	0.357***	0.024	0.008	1.000

Notes: *, **, and *** indicate significance level at 10%, 5%, and 1%, respectively.

Source: Authors' calculation

The correlation between the Z-score and DA is not statistically significant. However, this is a univariate analysis. The impact of financial distress on earnings management in a multivariate analysis is investigated to obtain more accurate and thorough results.

4.2 System GMM estimation results

According to Table 3, the p-value of the Wald test is 0.00, indicating that the model is statistically significance. Besides, the p-value of the Arellano-Bond test - AR(2) is greater than 0.05, showing no second-order serial correlation. Finally, the p-value of the Hansen test indicates that the instruments are valid.

Table 3. Results using the System GMM method

DA	Coef.	St.Err.	t-value
DA (Lag1)	0.001	0.016	0.04
Zscore	0.002**	0.001	2.11
Size	-0.011**	0.005	-2.16
Cfo	-0.748***	0.021	-35.63
Lev	-0.002***	0.000	-6.57

Table 3. Results using the System GMM method (*continued*)

DA	Coef.	St.Err.	t-value
ROA	0.462***	0.049	9.38
Issue	0.008***	0.001	9.99
Inv	0.000	0.000	1.14
Liq	-0.004***	0.001	-3.04
Constant	0.322**	0.144	2.24
Number of obs.		1,787	
Number of instruments		56	
Wald test (χ^2)		6721.35***	
Hansen test of overid. (χ^2)		41.25 ^{ns}	
Arellano-Bond test - AR(2) (z)		-0.58 ^{ns}	
Difference-in-Hansen tests of exogeneity of instrument subsets			
GMM instruments for levels			
Excluding group (χ^2)		24.08 ^{ns}	
Difference (χ^2)		17.17 ^{ns}	
GMM-style instruments (lags of dependent variable)			
Excluding group (χ^2)		3.38 ^{ns}	
Difference (χ^2)		37.86 ^{ns}	
GMM-style instruments (endogenous variables)			
Excluding group (χ^2)		28.06 ^{ns}	
Difference (χ^2)		13.18 ^{ns}	
IV-style instruments (exogenous variables)			
Excluding group (χ^2)		29.69 ^{ns}	
Difference (χ^2)		11.55 ^{ns}	

Notes: ** and *** denote statistical significance at 5% and 1%, respectively. NS denotes non-significant.

Source: Authors' calculation

4.3 Discussion

Regarding the influence of financial distress on earnings management, the regression coefficient of the financial distress variable (Z_score) is 0.001, which is significant at 5%. This result shows that financial distress has a positive impact on earnings management. In other words, enterprises with severe financial distress tend to adjust their profit downward, and financially sound enterprises tend to make upward profit adjustments.

Managers of financially troubled firms may be incentivized to manipulate earnings downward, especially those that must restructure debt capital to avoid failing to pay off

debts. Reporting losses may assist these debtors in obtaining concessions from debtees. Banks can refuse these concessions and call for the firm's liquidation. However, when the realizable value of a firm's assets is low, banks usually choose debt restructuring (i.e., waiving covenants, delaying principal and interest, or reducing the interest rate) rather than calling the loan (Asquith *et al.*, 1994). In addition, relationships between the agency and the employees might also lead to income-reducing earnings management. For instance, DeAngelo *et al.* (1994) found that reporting losses assists managers in portraying the firm as tremendously distressed, which is likely to gain concessions from employees who still doubt the severity of the firm's hardships.

This study provides evidence that earnings management on an accrual basis may no longer achieve the desired goal during severe financial distress. As such, managers will adjust the profit with real actions, which is riskier and more challenging to detect, and the DA variable in the research model cannot measure these behaviors. Besides, companies with good business situations and good financial health are also entirely motivated to make upward profit adjustments, even more motivated than companies operating at a loss because the stock prices of these companies are rising. They want to maintain this upward momentum and take that opportunity further to make a positive impression on investors as a basis to open up more opportunities in the future.

In short, motives of earnings management are present in both financially sound enterprises and financially distressed enterprises. Enterprises at risk of bankruptcy tend to make downward profit adjustments. More worryingly, companies with good financial health tend to beautify their financial statements, which will lead to unresolved issues in the long run, negatively impacting their future operation.

Regarding the control variables of the model, cash flows from operating activities have a negative impact on earnings management with a correlation coefficient of -0.748, which is significant at 1%. This result is consistent with many previous studies. A company's upward adjustment to accruals will have a negative impact on its net cash flows (Livnat and Santicchia, 2006). By contrast, a company with high and steady cash flow tends to be in sound financial health and not intentionally adjust accruals to change actual profit results (Le, 2020). From the results of this study, it can be concluded that cash flow from operating activities is not only a good indicator of the situation and prospects of an enterprise but also indicates whether such an enterprise is manipulating its profit.

Return on assets is also strongly correlated to earnings management with a coefficient of 0.461, which is significant at 1%. The research results show that return on assets positively impacts earnings management. This result is inconsistent with the study by Kothari *et al.* (2005) but consistent with the studies by Skinner and Sloan (1999), Robin and Wu (2015). Companies with high returns on assets are small- and medium-sized and have difficulties accessing and managing asset size, hence facilitating earnings management. In addition, some companies recording high profits are incentivized to adjust their profit to send positive signals to investors and attract outside investment.

This study's results support previous research conclusions on the impact of equity issuance and liquidity on earnings management. Specifically, equity issuance positively impacts earnings management with a coefficient of 0.008, which is significant at 1%. The pressure from fund mobilization is always an important motivation for businesses to undertake earnings management to increase profits (Friedlan, 1994; Jeong-Bon Kim, 2005; Shan *et al.*, 2010; Teoh *et al.*, 1998). Liquidity has a negative impact on earnings management with a coefficient of -0.004, which is significant at 1%. Managers of companies with a highly maintained liquidity ratio are often concerned with the risks their company faces in the short and long term, so they are less motivated to undertake profit manipulation.

Firm size negatively impacts earnings management with a coefficient of -0.011, which is significant at 5%. Big-sized enterprises are less inclined to manipulate their profit due to being entitled to more effective internal control systems, higher auditing quality, and fear of losing reputation if profit manipulation is found (DeAngelo *et al.*, 1994).

The result on the impact of financial leverage on earnings management is consistent with Jensen and Meckling (1976). High-leverage companies tend to manage earnings less or, more precisely, make fewer upward profit adjustments than low-leverage companies. According to previous studies, one explanation for this relationship is that high-leverage companies are subject to more supervision from creditors, especially large financial institutions such as banks (DeAngelo *et al.*, 1994). On the other hand, the managers of these companies also fear that if their profit manipulation is discovered, they will completely lose the trust of creditors, and a lack of funding can push an enterprise to the brink of bankruptcy.

Inventory change has no statistically significant correlation with earnings management. Therefore, it can be seen that in the study scope of non-financial companies listed on HOSE, inventory change has no impact on profit manipulation.

5. Conclusions

This study aims to test the impact of financial distress on earnings management for firms listed on HOSE. The data were collected from 200 non-financial companies in 10 years, from 2011 to 2020, the System GMM were applied to estimate a dynamic panel data model. The financial distress variable is measured by the Z-score, and the earnings management variable is measured by the modified Jones (1991) model. The results of the study provide statistical evidence that financial distress has a positive impact on earnings management. Enterprises with good financial health and low risk of bankruptcy tend to make an upward profit adjustment, while financially distressed enterprises tend to make a downward profit adjustment. This may be due to the supervisory pressure of auditors and creditors, which means that the most affected enterprises no longer have the opportunity to undertake profit manipulation. Meanwhile, a company with high operating performance tends to maintain profit growth to impress investors in the market, which is why they make upward profit adjustments. The study results also show a concern that companies with positive business results and financial health are at risk of undermining their growth momentum and future

performance if they overuse upward profit adjustments without really improving internal factors. This paper provides further evidence of the positive impact that financial distress has on earnings management, given that previous studies do not reach the same conclusion.

The findings of this study also have implications for policymakers and related authorities. The research results show that the mean absolute value of the variable DA in the sample is 0.065, proving that, on average, the adjusted profit value of listed firms on HOSE is equivalent to 6.5% of the firms' total asset value. For companies with large total assets, this number is considerable. Consequently, proposing solutions to control profit-adjustment behaviors more effectively is vital, ensuring information transparency. Firstly, it is crucial to develop effective methods for identifying and warning against earnings management practices. Secondly, deterrent sanctions for fraudulent activities and delays in information disclosure should be implemented. Lastly, accounting standards should be established and aligned with international standards.

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