Moderating Role of Profitability in The Interaction of Liquidity, Leverage and Sales Growth on Financial Distress

Salma[1], Emma Suryani[2*], Wawan Ichwanudin[3]
{5551180038@untirta.ac.id[1] , emma.suryani@untirta.ac.id[2*] , ichwan0308@untirta.ac.id}

Management Department, University of Sultan Ageng Tirtayasa[123]

Abstract. This study aims to determine the effect of liquidity, leverage and sales growth on financial distress and the role of profitability as a moderator. The sample was selected using a purposive sampling technique, with a total sample of 11 coal sub-sector companies in the IDX period 2012-2021. The analytical method used is moderated regression analysis (MRA). The results of this study indicate that liquidity has a significant positive effect on financial distress, leverage has a significant negative effect on financial distress, And profitability can weaken the effect of liquidity and leverage on financial distress. The implications of this study further strengthen the agency theory, where the agent or company manager plays an essential role in managing liquidity and leverage and profitability in determining a company's financial distress level. Furthermore, it can also be used as a consideration for investors in analyzing and choosing to invest in the right company.

Keywords: Financial Distress, Liquidity, Leverage, Sales Growth, Profitability.

1. Introduction

The globalization of the economy might have resulted in a significant rise in the number of brand-new businesses and companies, creating competition between companies even more powerful. Companies that lack competitive strength will face financial difficulties or go bankrupt because they will lose in competition with other companies. Uncertain economic conditions are frequently a factor in a company's poor performance. A drop in sales or selling prices, profits, or an imbalance between income and expenses (assets and debt) can all induce financial distress.

Financial distress arises when a sales revenue declines before it goes bankrupt. As a result, the condition of financial distress must have been researched or analyzed as quickly as possible so that the situation can be handled immediately and the negative consequences minimized. Altman 1968 developed a formula to detect the condition of a company's financial distress with the familiar term Altman Z-Score [1] in determining the status of a business experiencing financial distress or not. The company's financial situation is excellent if the z-score is high. Coal companies are the subjects of this research because they have been experiencing poor financial conditions in recent years. As a result of China's policy of limiting coal imports, coal companies' prices and revenues are falling. These conditions, combined with the high operating costs of this sub-sector, can make coal companies vulnerable to financial distress. The following is the Coal Mining z-score chart subsector for the period 2012-2021:

ICOSTELM 2022, November 04-05, Bandar Lampung, Indonesia

DOI 10.4108/eai.4-11-2022.2328387

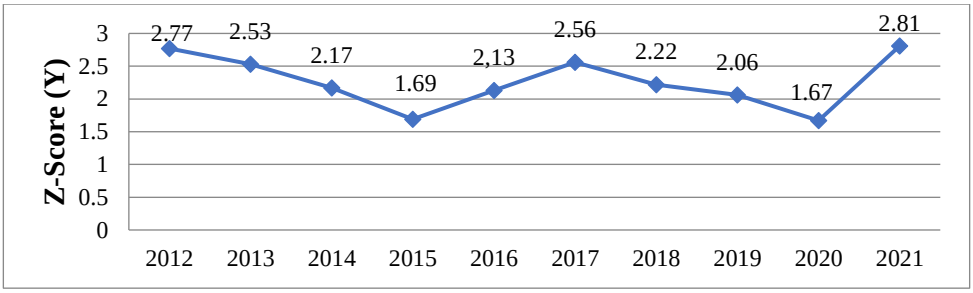

Fig. 1. Graph of financial distress data (Z-Score) of Coal Mining sub-sector companies for the period 2012-2021.

The average Z-score in the Coal Mining industry from 2012 to 2021 is less than 2.99. Companies free of financial distress must have a Z-Score value greater than 2.99. Based on the data processing results, it is possible to conclude that the Coal Mining sub-sector experienced financial distress between 2012 and 2021.

This study also engages financial statement analysis, such as through financial ratios, as a model that may be used to predict financial distress. Liquidity, leverage, and sales growth are the financial ratios, with the profitability ratio serving as a moderation variable. The terms liquidity and leverage are used in this study because it is suspected that the cost of a firm's assets and debt is very influential on its financial health. After all, if a company is unable to meet its obligations, it is undergoing financial difficulties [2]. Sales Growth is used in this study because it is suspected that the high and low levels of sales reflect whether or not the operational activities that occur in a company. Suppose there is a problem in the company's operational activities. In that case, it will also cause problems in the financial condition of the company [3], so if it continues to occur and If not resolved, it can cause financial distress to the risk of bankruptcy. However, from the results of previous studies, there are still research gaps. Because there is still a research gap, profitability is chosen as the moderating variable.

The high and low sales, assets, and debts owned can also be observed from the company's profit because profits from its manufacturing activities can increase the value of assets that can be utilized to fulfill the needs of the company and can also be used to maximize the level of product sales further so that later the company can get even greater profits, the company's financial situation will be stable, and it will be able to avoid financial distress. So with profitability, it will affect the level of liquidity, leverage, and sales growth of the company so that later it can weaken or strengthen the relation between these variables with the condition of financial distress.

2. Literature Review and Hypotheses Development

2.1 Agency Theory

Michael C. Jensen and William H. Meckling proposed agency theory in 1976. *Agency theory* is defined as a theory that explains the agency relationship and the issues that arise due to it (agency problems) [4]. According to this theory, the agent is the manager who performs as the principal's agent in encounters with third parties. On the other hand, the principal is the investor or creditor who gives the mandate to the agent. As a result, the agent will control the company, which means that the agent will carry out the company's

activities. Agents must be open and honest in their management of the company. An agent's responsibilities include submitting financial statements to the company for a specific period.

2.2 Liquidity and Financial Distress

The ability of a company to meet current obligations using current assets is demonstrated by its liquidity. According to Agency Theory, companies that can meet their current obligations well reflect excellent asset and current debt management carried out by agents to produce a more excellent value of current assets than current debt. As a result, the company's finances will be stable, causing the z-score value to rise and the company to avoid financial distress. This statement is consistent with the findings of research from [2], [5], and [3], which demonstrates that the elevated liquidity, the elevated z-score value increases to mitigate the impact of the company in financial distress.

H1: The higher the Liquidity, the higher the Financial Distress (z-score).

2.3 Leverage and Financial Distress

Leverage indicates the amount of debt used in financing the company. Based on Agency Theory, companies with a high level of leverage show that agents use much debt as funding for the company. The extensive use of this debt can cause significant liabilities in the future. It will undoubtedly decrease the company's z-score value, making it vulnerable to financial difficult. It is similar to the study results from [2], [5], and [6], which demonstrate that the larger the leverage, the lesser the z-score value, and thus the impact of a company experiencing financial distress.

H2 : The higher the Leverage, the lower the Financial Distress (z-score).

2.4 Sales Growth and Financial Distress

Sales Growth describes the company's ability to increase its sales growth rate consistently. Per the Agency Theory, the high level of sales growth indicates that the agent has successfully determined the right sales strategy to produce high and stable sales. As a result, the company's income rises. The financial condition will be stable to avoid financial distress, and an increase in the z-score value will characterize the company's financial stability. This statement is consistent with the findings of research from [3], [7], [8], and [9], which demonstrates that the elevated the sales growth, the elevated the z-score value increases to mitigate the impact of the corporation's economic distress.

H3 : The higher the Sales Growth , the higher the Financial Distress (z-score).

2.5 Liquidity, Profitability and Financial Distress

The company's ability to pay its current debt with assets is indicated by liquidity. According to Agency Theory, good asset management is carried out by agents to obtain certain benefits. The company's profits will be put to cover current liabilities, reducing the possibility of financial difficulties. This statement is consistent with the findings of two studies [10], [11], which showed that profitability could reduce the impact of the relationship between liquidity and financial distress.

.H4 : Profitability weakens the effect of Liquidity on Financial Distress.

2.6 Leverage, Profitability and Financial Distress

Leverage demonstrates debt repayment capacity of the company with assets and the amount of debt financed by the company. According to Agency Theory, good asset

management is carried out by agents to generate sure profits. Profits will be utilized to charge off the company's debts, and in the presence of profits, agents prefer not to use much debt as a source of income, reducing the level of leverage and the likelihood of the firm undergoing financial difficulties. This statement is consistent with the findings of [12], which show that profitability can reduce the impact of the leverage relationship on financial difficult.

H5 : Profitability weakens the effect of Leverage on Financial Distress.

2.7 Sales Growth, Profitability and Financial Distress

Sales expansion demonstrates the company's potential to increase sales at any time. According to Agency Theory, if the agent makes correct decisions in its operational activities, the product can be sold at a high capacity, resulting in a high income and profit for the company. These profits can be reinvested to increase sales in the succeeding time frame, ensuring the firm's financial stability and avoiding financial difficulties. This statement is consistent with the findings of [13], which show that profitability can reduce the impact of sales growth relationships on financial difficult.

H6 : Profitability weakens the effect of Sales Growth on Financial Distress.

3 Research Methods, Result and Discussion

This study is quantitative. This study's population included 22 Coal Subsector firms listed on the IDX from 2012 to 2021. Purposive Sampling will be used in this study, and 11 companies will be sampled. This study relies on secondary data based on accounting statements on the IDX of Coal Mining companies from 2012 to 2021. The descriptive analysis method was used in this study to analyze data. The data was analyzed using Moderated Regression Analysis (MRA) and SPSS IBM 22 software.

3.1 Descriptive Statistics

Table 1. Descriptive Statistics Test Result

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
CR	110	,099	5,099	1,42831	,939333
DAR	110	,071	1,898	,57588	,280472
SG	110	-,984	7,355	,32995	,989471
ROA	110	-,644	,471	,03572	,114863
Z-SCORE	110	-2,474	5,907	1,36657	1,364204
Valid N (listwise)	110				

The liquidity variable (CR) is the independent variable in this study, with the minimum being 0.099, the maximum being 5.099, the mean being 1.42831, and the standard deviation being 0.939333. The leverage variable (DAR) is this study's independent variable, with the minimum being 0.071, the maximum being 1.898, the mean being 0.57588, and the standard deviation being 0.280472. The sales growth variable is an independent variable in this study, and the minimum is -0.984, the maximum is 7,355, the mean is 0.32995, and the standard deviation is 0.989471. The profitability variable (ROA) is the moderating variable in this study, with the minimum being 0.644, the maximum being 0.471, the mean being 0.03572, and the standard

deviation being 0.114863. The dependent variable is financial distress (Z-Score), with a minimum of -2.474, a maximum of 5.910, a mean of 1.36657, and a standard deviation of 1.364204.

3.2 Classic Assumption Test

Table 2. Normality Test Kolmogorov-Smirnov Result

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		110
Normal Parameters[a,b]	Mean	,0000000
	Std. Deviation	,75852863
Most Extreme Differences	Absolute	,068
	Positive	,068
	Negative	-,061
Test Statistic		,068
Asymp. Sig. (2-tailed)		,200[c,d]

Based on table 2, Kolmogorov-Smirnov normality test results obtained a significance value of 0.200, and the significance value is above 0.05 (> 0.05), so it can be concluded that the data is normally distributed.

Table 3. Linearity Test (Lagrange Multiplier) Result

Model Summary				
Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,348[a]	,121	,069	,73758257

Based on table 3, the calculated C^2 value (n x R^2) = 110 x 0.121 = 13,31. Meanwhile, the table C^2 value (n-k) = 110 – 4 = 106 = 131,031. From these calculations, it can be seen that the calculated C^2 value (13,31) < (131,031) C^2 table. So, it can be concluded that the regression model in this study is linear.

Table 4. Multicollinearity Test Result

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1,690	,277		6,094	,000		
	CR	,277	,088	,190	3,133	,002	,797	1,255
	DAR	-1,482	,331	-,305	-4,473	,000	,634	1,576
	SG	-,256	,077	-,186	-3,331	,001	,945	1,058
	ROA	6,153	,794	,518	7,753	,000	,659	1,516

Based on the results of the multicollinearity test above, It can be seen that all variables do not exhibit multicollinearity symptoms because they have a tolerance value of > 0.10 and a VIF value of < 10.

Table 5. Heteroscedasticity Test (Glacier) Result

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,425	,181		2,344	,021
	CR	-,013	,058	-,024	-,230	,819
	DAR	,309	,217	,170	1,425	,157
	SG	-,076	,050	-,147	-1,501	,136
	ROA	,005	,519	,001	,009	,993

In this study, all variables have a significant probability > (0.05). So, it can be concluded that the regression model in this study is in the form of homoscedasticity or that there is no heteroscedasticity.

3.3 Moderated Regression Analysis (MRA) Test

Table 6. Moderated Regression Analysis (MRA) Test Result

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,479	,266		5,564	,000
	CR	,384	,092	,265	4,187	,000
	DAR	-1,507	,313	-,310	-4,820	,000
	SG	-,148	,092	-,108	-1,621	,108
	ROA	16,935	2,571	1,426	6,586	,000
	CR*ROA	-3,018	,895	-,406	-3,372	,001
	DAR*ROA	-8,704	1,980	-,788	-4,395	,000
	SG*ROA	-1,892	1,253	-,146	-1,510	,134

a. Dependent Variable: Z-SCORE

Liquidity has a significant positive effect on Financial Distress

The first hypothesis that liquidity has a significant positive effect on Financial Distress (z-score) is *accepted*. Liquidity has a significant positive effect with a coefficient worth of 0.384 and a significance of 0.000 < 0.05. The outcomes of this research are in keeping with previous research [2], [5], [3] which present the results that the more, the increased the liquidity (current ratio), the increased the value of Financial Distress (z-score). It is possible to conclude that increased the current ratio or the level of liquidity indicates the current assets of a large company, the greater the firm ’s capability to reimburse current debt, thereby increasing the company's z-score value and based on the Altman method if the z-score value increases, it denotes the firm's financial situation is improving and can prevent the company from financial distress.

Leverage has a significant negative effect on Financial Distress

The second hypothesis, states that leverage has a significant negative effect on Financial Distress (z-score), is *accepted*. Leverage has a significant negative effect with a coefficient worth of -1.507 and a significance of 0.000 < 0.05. The outcomes of this research are in keeping with previous research [2], [5], [6], which present results that the higher the leverage

(debt to total asset ratio), the lower the value of Financial Distress (z-score). It is possible to conclude that increased leverage indicates the amount of debt used as funding. It causes the company to have difficulty paying its debts in the future, reducing its z-score value based on the Altman method. Suppose the z-score value decreases to indicate that the company's financial condition is worsening. It can lead the company to a state of financial difficult.

Sales Growth has no significant negative effect on Financial Distress

A third hypothesis is rejected: Sales Growth has a significant positive effect on Financial Distress (z-score). Sales Growth has no significant adverse effect, with a coefficient worth of -0.148 and a significance of 0.108 > 0.05. The findings of this study are inconsistent with with previous research [3], [7], [8], [9] but have similarities with research from [14], [15], [16], where the high sales growth of a company cannot influence the occurrence of financial distress. It is possible to conclude that increased sales growth, the expenses incurred will also increase, as happened in this Coal sub-sector company, where the average company in this sub-sector has operating expenses that can reach or even exceed 50% of total sales or income so that the profits obtained are decreasing because they are used to finance these expenses. It is the same as high sales growth that cannot increase the company's z-score value, so it cannot be used as a determinant of its success. Can avoid financial distress or not.

Profitability weakens the influence of Liquidity on Financial Distress

A fourth hypothesis that Profitability can mitigate the influence of Liquidity on Financial Distress is *accepted*. Profitability can weaken the impact of Liquidity on Financial Distress with a coefficient worth of -3.018 and a significance of 0.001 <0.05. The outcomes of this research are in keeping with previous research [10] and [11], which present that Profitability can weaken the effect of the Liquidity relationship on Financial Distress. Based on the findings of this study, it can be concluded that any profit that can be obtained by the agent (management) of the company from the excellent management of the firm's current assets will be applied to charge its current debts. It can improve the value of the z-score so that it will reduce opportunities or keep the company from financial distress. Profitability in this study can function as an independent variable because Profitability can directly affect financial distress. Profitability can also function as a moderating variable because Profitability can interact with the independent variable (liquidity), so it can be concluded that the moderating relationship is quasi-moderation.

Profitability weakens the influence of Leverage on Financial Distress

A fifth hypothesis that Profitability can mitigate the influence of Leverage on Financial Distress is *accepted*. Profitability can also mitigate the influence of Leverage on Financial Distress, with a coefficient worth of -8.704 and a significance of 0.000 <0.05. The outcomes of this research are in keeping with previous research [12], which presents that Profitability weakens the influence of the Leverage relationship on Financial Distress. Based on the results of this study, it can be concluded that any profits obtained by the firm can be used to settle its debts. In addition to obtaining high profits, agents will usually be more inclined to choose not to use debt as much as funding, with not much use. Debt can reduce the level of leverage so that the price of the firm's z-score also increases. Of course, this will reduce the opportunity or potential for the corporate to be exposed to financial difficult. Profitability in this study can function as an independent variable because Profitability can directly affect financial distress. Besides that, Profitability can also function as a moderating variable because Profitability can interact with independent variables (leverage), so it can be concluded that the moderating relationship is quasi-moderation.

Profitability can't moderate the influence of Sales Growth on Financial Distress

A sixth hypothesis that profitability can lessen the influence of sales growth on financial distress is rejected. Profitability cannot moderate the impact of Sales Growth on Financial Distress, with a coefficient worth of -1.892 and a significance of 0.134 > 0.05. The outcomes of this research contradict previous studies [13]. However, they have similarities with research from [17], [8] that high and low profitability cannot significantly increase or decrease the relationship between sales growth and financial distress conditions. It can be concluded that the profit generated by the company is not used to increase sales growth but is used to finance the company's routine needs, or it could be because the profit earned is not enough to increase sales in the future due to the small income or sales growth in the current period and accompanied by operating expenses that will reduce the company's revenue/sales results so that this cannot be used as a determinant of the company's chances of being affected by financial distress. Profitability in this study can only be used as an independent variable. It cannot be a moderating variable because profitability cannot interact with the independent variable (sales growth), so it can be concluded that the moderating relationship is a moderating predictor.

4 Conclusion and Implication

This study concludes that Liquidity has a major positive impact on Financial Distress (z-score), Leverage has a major negative impact on Financial Distress (z-score), Sales Growth has an insignificant negative impact on Financial Distress (z-score), Profitability weakens the impact of Liquidity on Financial Distress, Profitability weakens the influence of Leverage on Financial Distress, Profitability cannot moderate the affect of Sales Growth on Financial Distress.

The implications of this study have theoretical and managerial implications. On the theoretical side, the findings of this study further strengthen the agency theory, where the agent or company manager plays a vital role in managing liquidity and leverage, and profitability in determining a company's financial distress level. From the managerial side, the management of the company is expected that this research can motivate to further improve the performance of company management from the results of the financial statements. Agents can pay more attention to the use or management of assets, debts, and profits because, based on the findings of this research, the financial components are very impactful in deciding a company's financial health condition, especially in coal companies. Furthermore, it can also be used as a consideration for investors in analyzing and choosing to invest in the right company. Based on the research results, investors can pay more attention to the company's assets, debts, and profits, especially if they want to invest in coal companies so that investors can minimize risk and optimize profits.

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