International Journal of Educational Technology Research (IJETR)
Vol. 4, No. 3 September 2026: 69-80

The Effect of Liquidity, Leverage, Profitability, and Corporate Social Responsibility on Financial Distress (A Study of the Construction Materials and Diversified Metals & Mining Subsectors Listed on the Indonesia Stock Exchange, 2020–2024)

Muhammad Afran Madjid[1*], Sugiyono[2]
Universitas Mercu Buana, Indonesia
Corresponding Author: Muhammad Afran Madjid**:** muhammadafran43@gmail.com

A R T I C L E I N F O
Keywords: Liquidity, Leverage, Profitability, Corporate Social Responsibility, Financial Distress.

Received : 27, July
Revised : 20, August
Accepted: 8, September

©2026 Madjid, Sugiyono (s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International.

A B S T R A C T
This research investigates how liquidity (CR), leverage (DER), profitability (ROA), and the environmental dimension of Corporate Social Responsibility (CSR) jointly influence financial distress, measured through the Altman Z-Score, in firms belonging to the Construction Materials and Diversified Metals & Mining sub-sectors on the Indonesia Stock Exchange (IDX) for the 2020–2024 period. A causal quantitative approach underpins the study. Purposive sampling identified seven qualifying firms, generating a panel of 35 firm-year observations. Secondary data were drawn from each firm's audited annual financial reports posted on the IDX's official site and were processed through panel regression in EViews 13. Findings indicate that liquidity (CR) exerts a positive and statistically significant influence on financial distress: firms holding adequate liquid resources are better positioned to cover short-term liabilities, which in turn lowers distress probability and reinforces financial resilience. Leverage (DER), profitability (ROA), and CSR, however, show no significant influence over the period studied. It is hoped these results can guide corporate managers, investors, and future scholars in identifying the drivers of financial distress, as captured by the Altman Z-Score, within Indonesia's basic-materials industry.

INTRODUCTION

No company is immune to the possibility of financial instability while carrying out its operations. Financial distress, an early warning sign of possible corporate failure, sets in when a firm starts struggling to honor its payment commitments or when cash flow falls short of covering outstanding liabilities. Causes commonly include economic slowdowns, poor governance practices, excessive debt loads, sector-specific pressures, or external shocks such as a pandemic. Firms facing this condition typically respond through operational adjustment, debt restructuring, refinancing arrangements, or by seeking assistance from investors and creditors (Pebriani et al., 2024).

A firm's exposure to financial distress is typically gauged through a set of indicators covering liquidity, leverage, and profitability. Among liquidity measures, the Current Ratio (CR) estimates how likely a firm is to run into financial trouble: greater liquidity generally points to sounder financial footing and a reduced chance of distress, while a thin current ratio points to looming liquidity strain (Inggamal, 2022). Leverage, captured through the Debt to Equity Ratio (DER), compares a firm's total obligations, including short-term liabilities, against its equity base; a larger DER points to heavier dependence on borrowed capital rather than internal funds (Arief et al., 2021). Profitability, meanwhile, is often proxied by Return on Assets (ROA), which captures how effectively a firm converts its asset base into earnings and provides a benchmark for evaluating returns on new investment (Arief et al., 2021). When liquidity and profitability ratios both trend downward, this typically signals deteriorating financial health and can become a key trigger of distress.

Indonesia's construction-materials sub-sector supplies building inputs such as cement, concrete, and other infrastructure-support goods, whereas the diversified metals and minerals sub-sector supplies core industrial materials including steel, glass, chemicals, and additional base metals. A case in point is PT Solusi Bangun Indonesia Tbk (SMCB), whose 2023 finances reveal a notable tension: despite posting a sizeable IDR 894 billion profit, the firm's liabilities climbed 1.9% year-on-year to IDR 9.702 trillion, evidence that healthy earnings can still coexist with a growing debt load (IPOTNEWS, 2024). PT Waskita Karya Tbk, meanwhile, confronted IDR 19.95 trillion in short-term debt coming due within twelve months (Bloomberg Technoz, 2023), which led the firm to negotiate a standstill arrangement to postpone interest and principal payments to its bank creditors under a Master Restructuring Agreement (CNBC Indonesia & Binekasri, 2024).

Data from Statistics Indonesia (BPS) show the construction sector accounted for 9.92% of national Gross Domestic Product (GDP) in 2023, placing it fifth among the largest contributors to the economy (BPS, 2024b). The minerals and coal sub-sector added roughly IDR 2,198 trillion to GDP that same year, or about 10.5% of Indonesia's total GDP of IDR 20,892 trillion (ESDM, 2024). At the firm level, PT Bumi Resources Tbk reported a USD 2.35 billion liquidity shortfall as of 31 December 2023, its short-term obligations outstripping consolidated current assets and casting doubt on its ongoing viability (EmitenNews.com, 2023), while PT Aneka Tambang Tbk (ANTM) was entangled in a lawsuit valued

at roughly 1.13 tons of gold (around IDR 1.10 trillion), leading it to defer certain short-term obligations pending a Supreme Court decision (CNBC Indonesia & Binekasri, 2023).

The COVID-19 outbreak intensified these distress concerns further, as it disrupted supply chains worldwide, slowed the flow of raw materials, and pushed up logistics expenses (Bisnis.com, 2020). Large-scale infrastructure initiatives were also set back, including a USD 33 billion capital-relocation project that Bappenas formally postponed in September 2020 (equipmentindonesia.com, 2021). Because domestic industry still depends heavily on imported inputs such as steel, cement, and chemicals, firms remained vulnerable to swings in the rupiah's exchange rate (The Jakarta Post, 2020), a vulnerability worsened by climbing global prices for base metals and construction materials that pushed up costs on major infrastructure projects (Reuters, 2024). Together these pressures made it harder for many firms in the construction materials and diversified metals & mining sub-sectors to sustain cash flow and meet short-term obligations, elevating their exposure to financial distress.

A firm's Corporate Social Responsibility (CSR) engagement is another factor linked to financial distress, since socially active firms tend to carry lower financial risk and enjoy more favorable financing conditions. The gains from CSR extend beyond investors and the company itself to society more broadly, raising shareholder value, lowering default risk, easing financing access, and building a stronger corporate reputation through greater transparency. Firms that engage more actively in CSR initiatives also tend to be more transparent about those activities, which helps close the information gap separating management from investors (Khan et al., 2021). Beyond that, CSR engagement is associated with lower risk exposure and stronger credit ratings; firms that pursue CSR policies vigorously tend to disclose more and conceal less unfavorable news, which curbs the odds of sharp share-price drops, strengthens perceived creditworthiness, and ultimately eases access to external financing (Boubaker et al., 2020).

Reviewing the Altman Z-Score trend for the construction materials and diversified metals & mining sub-sector across 2020–2024 (Figure 1) shows financial health moving up and down over time, with a clear downward drift in the average score from 2022 through 2024, a sign of building financial strain and heightened distress exposure. This trend points to the importance of firms proactively assessing and addressing distress risk to protect long-term business continuity.

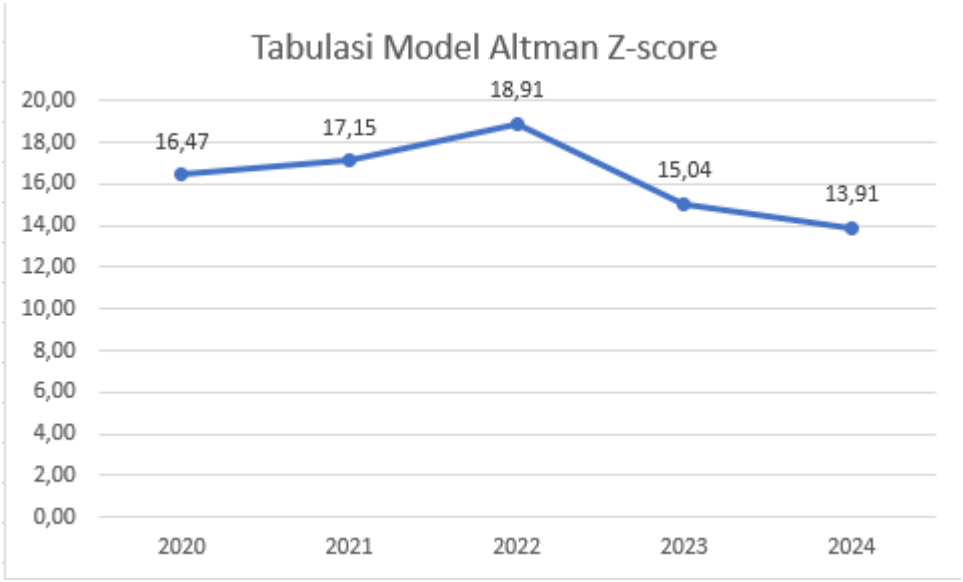


Figure 1. Average Altman Z-Score of the Construction Materials and Diversified Metals & Mining Sub-sector, 2020–2024

Source: processed data (2026)

LITERATURE REVIEW

Signaling Theory

First proposed by Spence (1973), Signaling Theory addresses the asymmetry of information that exists because company insiders know more about the firm's prospects than parties outside it. Firms narrow this gap by transmitting signals, positive or negative, to their investors (Azizah & Lismawati, 2024). One key channel for doing so is information disclosure: when disclosed information is sufficiently complete, transparent, and trustworthy, external uncertainty falls and stakeholders can make better-informed, more rational decisions. This study relies on Signaling Theory as its overarching framework for understanding how financial ratios act as signals of an issuer's condition. Solid performance across financial ratios is expected to push the Altman Z-Score higher, functioning as a favorable signal that tells investors a firm is financially sound and unlikely to face distress, whereas a low score works as an unfavorable signal. Current Ratio (CR), Debt to Equity Ratio (DER), and Return on Assets (ROA) together capture a firm's underlying condition, which investors and creditors rely on to gauge financial health and distress likelihood.

Stakeholder Theory

Stakeholder Theory maintains that an organization's obligations extend beyond shareholders to encompass the various groups its activities touch. Freeman (1984), as quoted in Kivits & Sawang (2021), describes stakeholders as any individual or group capable of influencing, or being influenced by, an organization's pursuit of its goals. Central to the theory is the idea of building mutually beneficial ties with parties such as employees, customers, suppliers, and the local community, with an eye toward generating long-term value for everyone involved rather than financial returns for investors alone (Kivits & Sawang, 2021). Here, Stakeholder Theory grounds the expected link between Corporate Social Responsibility and financial distress. Disclosure of environmental CSR activity signals how a firm honors its obligations to

stakeholder interests; in principle, meeting this obligation cultivates trust and legitimacy, deepens stakeholder relationships, and ultimately helps sustain the business and its financial condition.

Trade-off Theory

Trade-off Theory frames capital-structure choices as a balancing act between the tax advantages debt offers and the rising costs of financial distress that accompany higher leverage. The tax advantage, known as the debt tax shield, stems from a firm's ability to deduct interest payments from taxable income, meaning each extra unit of debt yields some tax saving at the margin. At the same time, additional debt raises the odds of financial distress, a state in which a firm struggles to meet principal and interest payments, which brings both direct costs (legal and administrative bankruptcy expenses) and indirect costs (disrupted operations, creditor disputes, and reputational harm) (Garnadi et al., 2023). Within this study, Trade-off Theory is used to explain the leverage-distress relationship captured by DER: debt yields tax benefits up to a point, but once that point is exceeded, the costs of distress and bankruptcy risk begin to climb, making DER a meaningful gauge of a firm's exposure to this risk.

Liquidity

Liquidity reflects a firm's ability to meet its short-term obligations using its current assets. A higher level of liquidity indicates that the company has sufficient resources to settle liabilities due within one year, thereby supporting financial stability and reducing the likelihood of financial distress. In this study, liquidity is measured using the Current Ratio (CR), which compares current assets with current liabilities (Inggamal, 2022).

$$CR = \frac{Current\ Assets}{Current\ Liabilities}$$

Leverage

Leverage describes the extent to which a company relies on debt to finance its assets and business operations. A high level of leverage indicates that the company bears greater financial obligations and depends more heavily on external funding. In this study, leverage is measured using the Debt to Equity Ratio (DER), which compares total liabilities with total equity (Arief et al., 2021).

$$DER = \frac{Total\ Debt}{Total\ Equity}$$

Profitability

Profitability represents a company's ability to generate profit from the assets it controls. A higher profitability level indicates that the company is more effective in utilizing its assets to produce earnings and maintain financial performance. In this study, profitability is measured using Return on Assets (ROA), which compares net income with total assets (Arief et al., 2021).

$$ROA = \frac{Net\ Income}{Total\ Assets}$$

Environmental Corporate Social Responsibility

Environmental Corporate Social Responsibility reflects the extent to which a company discloses and carries out its responsibilities toward the environment affected by its business activities. Environmental CSR disclosure may include

information concerning energy use, emissions, waste management, environmental conservation, and compliance with environmental regulations. In this study, environmental CSR is measured using an environmental disclosure index based on the proportion of environmental items disclosed by the company in its annual or sustainability report (Widasari, Tanur & Situmorang, 2023).

$$\text{Index} = \frac{Items\ Disclosed}{Items\ Expected} \times 100$$

Hypothesis Development

Effect of Current Ratio on Financial Distress.

Signaling Theory suggests that a firm reporting a high current ratio sends the market a favorable signal about its financial footing, which lowers perceived risk and bolsters investor confidence. Ample liquidity also helps dampen the uncertainty typically tied to financial-difficulty risk. Ningsi et al. (2024) describe the current ratio as a measure of how well a firm can meet short-term obligations from its current assets, noting that a higher ratio translates into stronger coverage and, consequently, a lower chance of distress. This view is echoed by Patricia Saragih et al. (2023), Astuti & Sjarif (2022), Inggamal (2022), Yolanda et al. (2024), and Yusuf et al. (2022), each of whom finds a positive relationship between the current ratio and financial distress as captured by the Altman Z-Score, that is, stronger liquidity corresponds with a healthier financial standing (a higher Z-Score). On this basis, the hypothesis put forward is:

H1: Current Ratio has a positive effect on financial distress (Altman Z-Score).

Effect of Debt to Equity Ratio on Financial Distress.

Trade-off Theory holds that while debt carries tax benefits, pushing debt past an optimal threshold drives up the cost of distress and bankruptcy risk. A larger DER, signaling heavier reliance on debt relative to a firm's own capital, therefore adds financial pressure and can hamper a firm's ability to fulfill its obligations. Zikri & Kurniawati (2024) describe DER as a gauge of how much a firm leans on borrowed funds versus its own capital; an elevated DER points to greater reliance on debt to fund operations and investment, which pushes up interest expense and default risk, and, under the Altman Z-Score framework, erodes the market value of equity relative to total debt, weakening the firm's overall financial condition. This aligns with the results reported by Ningsi et al. (2024), Ulayya Adzroo & Hari Suryaningrum (2023), Maharani et al. (2025), and Burnika et al. (2024), who find DER negatively related to financial distress, that is, a higher DER corresponds with greater difficulty. Accordingly:

H2: Debt to Equity Ratio has a negative effect on financial distress (Altman Z-Score).

Effect of Return on Assets on Financial Distress.

Under Signaling Theory, a strong return on assets conveys a favorable signal to the market, suggesting sound asset management and stable earnings, which softens negative perceptions among investors and stakeholders and can reduce distress risk. Indriaty et al. (2019) characterize ROA as a measure of how efficiently a firm turns its assets into profit; firms posting higher ROA tend to operate more efficiently and generate stronger earnings, which supports financial stability and lowers distress risk. Maharani et al. (2025), Saidah & Sulistiyo (2024), Butarbutar et al. (2024), and Adam Rafli (2025) lend support to

this, finding a positive relationship between ROA and distress avoidance, meaning a higher ROA points to a healthier financial position, further removed from distress. Accordingly:

H3: Return on Assets has a positive effect on financial distress (Altman Z-Score).

Effect of the Environmental Dimension of CSR on Financial Distress.

Stakeholder Theory holds that firms cannot focus exclusively on shareholder interests but must also respond to the concerns of their broader stakeholder base. Here, the theory is applied to the environmental dimension of CSR, treating environmental disclosure as one channel through which firms address stakeholder expectations. Robust CSR practice can deepen a firm's ties with its stakeholders and support long-term continuity, which should, in turn, lower the odds of distress and push the Z-Score upward. Laksmiwati et al. (2021) describe CSR as evidence of a firm's commitment to social and environmental sustainability, noting that firms with strong CSR programs tend to build better relationships with stakeholders, including communities, customers, and investors, which can polish corporate image and dampen the kind of uncertainty that might otherwise threaten financial health. Edt et al. (2023), Nugrahanti (2021), Purwaningsih & Aziza (2019), Ulayya Adzroo & Hari Suryaningrum (2023), and Yohanes Tampubolon et al. (2020) back this view, finding that a stronger environmental-CSR dimension corresponds with lower distress likelihood, that is, greater CSR commitment aligns with reduced risk. Accordingly:

H4: The environmental dimension of CSR has a positive effect on financial distress (Altman Z-Score).

Figure 2 sets out the study's conceptual framework, mapping CR, DER, ROA, and the environmental dimension of CSR as independent variables against financial distress, measured via the Altman Z-Score, as the dependent variable. Each hypothesized direction draws on the theoretical grounding and prior findings discussed above, and each is tested individually through panel data regression.

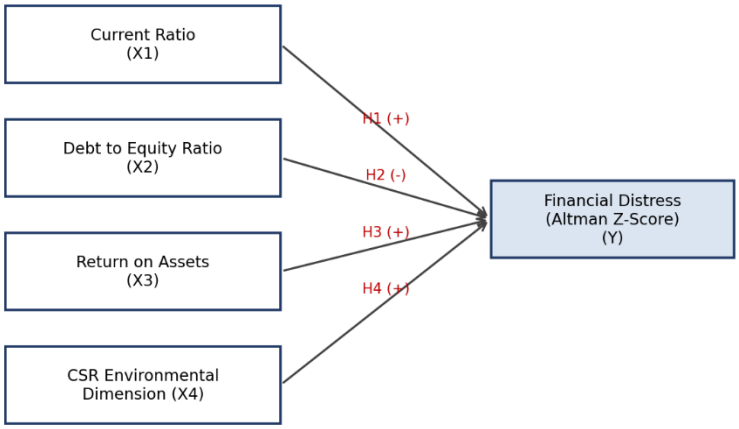


Figure 2. Conceptual Framework

METHODS

This research follows a causal quantitative design aimed at testing hypotheses about how several independent variables affect a dependent variable, drawing on a longitudinal panel of secondary data. Current Ratio, Debt to Equity Ratio, Return on Assets, and the environmental dimension of Corporate Social Responsibility serve as the independent variables, while financial distress, proxied by the Altman Z-Score, is the dependent variable. Secondary data came from the sample firms' annual financial statements posted on the Indonesia Stock Exchange's official website (www.idx.co.id) and were processed in EViews 13, covering descriptive statistics, selection among panel regression approaches (Common Effect, Fixed Effect, and Random Effect Models, chosen via the Chow and Hausman tests), model feasibility checks (the F-test and coefficient of determination, R^2), and partial hypothesis testing via t-test.

RESULTS AND DISCUSSION

Descriptive Statistics

Descriptive statistics for the dependent and independent variables, based on 35 firm-year observations (7 companies × 5 years), are presented in Table 4.

Table 1. Descriptive Statistics

	Y	X1	X2	X3	X4
Mean	1.6463	1.4404	-0.1540	0.0064	152.0714
Median	1.9650	1.3060	0.6650	0.0260	146.7930
Maximum	7.3570	2.9170	1.9390	0.1140	371.7200
Minimum	-4.1530	0.3430	-10.8261	-0.4990	89.7240
Std. Dev.	2.3827	0.5950	2.6490	0.1213	54.6667
Skewness	0.0158	0.3581	-2.7695	-2.8359	1.8701
Kurtosis	3.7853	2.8378	10.2954	11.0720	8.4275
Jarque-Bera	0.9007	0.7864	122.3579	141.9340	63.3604
Probability	0.6374	0.6749	0.0000	0.0000	0.0000
Sum	57.6210	50.4150	-5.3891	0.2230	5322.5000
Sum Sq. Dev.	193.0199	12.0366	238.5795	0.4999	101607.0912
Observations	35	35	35	35	35

Source: EViews 13 output, processed data (2026)

With a mean of 1.6463, the Altman Z-Score (Y) sits below the 1.81 distress-zone cutoff, suggesting that the sample firms fall, on average, within the distress zone across the observation period. The median score of 1.9650 places the sample's midpoint in the grey zone, whereas the spread between the maximum (7.3570) and minimum (-4.1530) points to substantial variation between financially sound and severely distressed firm-years, a pattern echoed by the comparatively large standard deviation (2.3827).

Current Ratio (X1) averages 1.4404, meaning current assets cover current liabilities roughly 1.44 times over on average, a reasonably comfortable liquidity cushion. INTP posted the sample's highest CR (2.9170) in 2020, while WSBP recorded the lowest (0.3430) in 2022, pointing to a stretch of acute liquidity pressure for that firm. Debt to Equity Ratio (X2) averages -0.1540, a negative figure resulting from firm-years with negative equity; its median of 0.6650, however, shows that equity still dominates the capital structure in most firm-years. TINS recorded the highest DER (1.9390) in 2020, reflecting a comparatively aggressive reliance on external funding, whereas WSBP's -10.8261 in 2020 marks

the lowest value, driven by substantial negative equity. Return on Assets (X3) averages a modest 0.64%, ranging from a high of 11.40% (ANTM, 2022) to a low of -49.90% (WSBP, 2020), the latter reflecting a period of heavy losses. The environmental CSR index (X4) averages 152.07, with WSBP recording both the highest disclosure level (371.72, in 2020) and the lowest (89.72, in 2021), underscoring how much environmental-disclosure practice varies across the sample.

Panel Data Regression Model Selection

Three estimation approaches were compared: the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). Under CEM, CR (X1) alone shows a significant effect on financial distress (prob. 0.0001 < 0.05), with DER, ROA, and CSR falling short of significance (prob. 0.4444, 0.5820, and 0.4457, respectively). FEM tells a similar story, with CR again significant (prob. 0.0008 < 0.05) and DER, ROA, and CSR remaining non-significant (prob. 0.1519, 0.1538, and 0.7740). REM likewise shows CR as significant (prob. 0.0000), with DER, ROA, and CSR again non-significant (prob. 0.0735, 0.1929, and 0.0743). Choosing among the three models was then carried out using the Chow and Hausman tests.

Figure 3. Chow Test Results

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

Effects Test	Statistic	d.f.	Prob.
Cross-section F	24.638580	(6,24)	0.0000
Cross-section Chi-square	68.896114	6	0.0000

Source: EViews 13 output, processed data (2026)

Both the Cross-section F and Cross-section Chi-square probabilities from the Chow test come out at 0.0000, well under the 0.05 threshold, so H0 is rejected and the Fixed Effect Model is favored over the Common Effect Model.

Figure 4. Hausman Test Results

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

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	145.923929	4	0.0000

Source: EViews 13 output, processed data (2026)

The Hausman test similarly returns a Chi-square probability of 0.0000, below 0.05, leading to rejection of H0 and confirming that the Fixed Effect Model is preferred over the Random Effect Model. Taken together, the two tests point to the Fixed Effect Model (FEM) as the most suitable estimation approach for this study.

Fixed Effect Model Regression Results

Table 2. Fixed Effect Model Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.347543	0.760612	-0.456925	0.6518
X1	1.253796	0.325199	3.855478	0.0008
X2	-0.205067	0.138558	-1.480016	0.1519
X3	2.088106	1.417942	1.472632	0.1538
X4	0.000940	0.003238	0.290352	0.7740

Source: EViews 13 output, processed data (2026)

The Fixed Effect Model produces the following panel data regression equation:

Financial Distress = -0.347543 + 1.253796 CR − 0.205067 DER + 2.088106 ROA + 0.000940 CSR

With a probability of 0.6518 (> 0.05), the constant term of -0.347543 fails to reach statistical significance. Current Ratio (X1) carries a coefficient of 1.253796 and a probability of 0.0008 (< 0.05), pointing to a significant positive effect: stronger liquidity tracks with a higher Altman Z-Score, i.e., a reduced chance of financial distress. Debt to Equity Ratio (X2), with a coefficient of -0.205067 and a probability of 0.1519 (> 0.05), shows no significant effect, though its negative sign still matches the hypothesized direction. Return on Assets (X3), coefficient 2.088106 and probability 0.1538 (> 0.05), likewise shows no significant effect despite its positive sign. The environmental CSR index (X4), with a coefficient of 0.000940 and a probability of 0.7740 (> 0.05), also shows no significant effect, and its coefficient magnitude sits close to zero.

Model Feasibility Test (F-Test)

Figure 5. Feasibility Test Results

F-statistic	41.25485
Prob(F-statistic)	0.000000

Source: EViews 13 output, processed data (2026)

With an F-statistic of 41.25485 and a probability of 0.000000 (< 0.05), H0 is rejected, confirming that CR, DER, ROA, and CSR together provide a statistically significant explanation of variation in financial distress, and that the model is fit for further analysis.

Coefficient of Determination (R^2)

Figure 6. Coefficient of Determination Results

R-squared	0.945023
Adjusted R-squared	0.922116

Source: EViews 13 output, processed data (2026)

An Adjusted R-squared of 0.922116 shows that CR, DER, ROA, and CSR collectively account for 92.21% of the variation in financial distress (Altman Z-Score), leaving the remaining 7.79% attributable to factors not captured by the model.

Hypothesis Testing (t-Test)

Results of the partial (t-test) hypothesis testing, summarized in Table 8, can be read as follows. The Current Ratio's probability of 0.0008 (< 0.05) supports acceptance of H1: CR exerts a significant positive effect on financial distress, so a higher current ratio corresponds with a lower distress likelihood. The Debt to Equity Ratio's probability of 0.1519 (> 0.05) leads to rejection of H2, meaning DER

shows no significant effect on financial distress. Return on Assets, with a probability of 0.1538 (> 0.05), likewise leads to rejection of H3, ROA has no significant effect on financial distress. Finally, the environmental CSR index's probability of 0.7740 (> 0.05) results in rejection of H4: environmental CSR disclosure shows no significant effect on financial distress.

Table 3. Summary of Hypothesis Testing Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.347543	0.760612	-0.456925	0.6518
X1	1.253796	0.325199	3.855478	0.0008
X2	-0.205067	0.138558	-1.480016	0.1519
X3	2.088106	1.417942	1.472632	0.1538
X4	0.000940	0.003238	0.290352	0.7740

Source: processed data (2026)

DISCUSSION

The Effect of Current Ratio on Financial Distress

This study confirms that the Current Ratio significantly affects financial distress among firms in the construction materials and diversified metals & mining sub-sectors over 2020–2024, leading to acceptance of H1. Through the lens of Signaling Theory, liquidity functions as a key signal that creditors and investors read to assess a firm's capacity to meet short-term obligations. As the current ratio climbs, stakeholders interpret it as evidence that the firm can operate without being weighed down by near-term default risk. That healthier liquidity position feeds directly into the Altman model's calculation, lifting the final Z-Score and pushing the firm further away from the distress zone. This result aligns with Astuti & Sjarif (2022), Inggamal (2022), Patricia Saragih et al. (2023), Yolanda et al. (2024), and Yusuf et al. (2022).

The Effect of Debt to Equity Ratio on Financial Distress

The statistical results show no significant effect of the Debt to Equity Ratio on financial distress among the sample firms, so H2 is rejected, a result that runs counter to Trade-off Theory's expectation that rising leverage should heighten financial burden and distress risk. This lack of significance suggests DER, by itself, does not directly drive a firm's distress condition as captured by the Altman Z-Score. Part of the explanation may lie in the sample's varied capital structures, including firms with negative equity that generate negative DER figures, as with PT Waskita Beton Precast Tbk (WSBP), which experienced a capital deficiency. In such instances, DER loses some of its meaning as a leverage indicator, since a negative value reflects negative equity rather than low debt usage, which can weaken how consistently DER relates to distress across the sample. It is also worth noting that because the Altman Z-Score already folds in several capital-structure and solvency-related components, DER's marginal explanatory power as a standalone predictor may simply be diluted. This result is in line with Ningsi et al. (2024), Burnika et al. (2024), and Maharani et al. (2025).

The Effect of Return on Assets on Financial Distress

H3 is rejected, as Return on Assets shows no significant relationship with financial distress. Signaling Theory treats profitability as a core indicator of financial health; for firms in the construction materials and diversified metals & mining sub-sectors, whose fortunes are closely tied to global commodity prices,

the ability to squeeze profit from total assets reflects management efficiency, and a higher ROA should, in principle, point to a stronger capacity to cover operating costs and obligations. In this sample, however, profit swings over the observation period, driven by post-pandemic volatility and shifting commodity prices, seem to have undercut ROA's reliability as a distress predictor. This finding echoes Yuliani et al. (2023), Ningsi et al. (2024), Harijanto & Widiatmoko (2023), Kaok & Akbar (2023), and Yoyo & Priyowidodo (2024).

The Effect of Environmental CSR on Financial Distress

H4 is likewise rejected, as environmental CSR does not significantly affect financial distress, implying that the extent of environmental-responsibility disclosure does not, on its own, directly lower bankruptcy risk in this sample. Stakeholder Theory anticipates that firms operating in ways that benefit all stakeholders build long-term legitimacy, and that CSR disclosure should, in theory, reinforce this legitimacy and thereby strengthen financial standing. Yet the evidence here suggests that within the construction materials and diversified metals & mining sub-sectors, CSR disclosure tends to be treated more as a regulatory compliance requirement than as a deliberate strategy for drawing capital or averting financial crisis; investors in this sector appear to weight fundamental economic indicators more heavily than social-responsibility activity when evaluating distress risk. This departs from Nugrahanti (2021), Purwaningsih & Aziza (2019), Ulayya Adzroo & Hari Suryaningrum (2023), and Yohanes Tampubolon et al. (2020), all of whom report a significant CSR-distress relationship.

CONCLUSION

Drawing on the results and discussion concerning how liquidity (CR), leverage (DER), profitability (ROA), and the environmental dimension of CSR relate to financial distress among firms in the construction materials and diversified metals & mining sub-sectors on the Indonesia Stock Exchange during 2020–2024, several conclusions emerge. First, liquidity exerts a significant positive influence on financial distress (Altman Z-Score): stronger liquidity translates directly into better financial health, in keeping with Signaling Theory, under which robust liquidity tells creditors and investors that a firm can cover its short-term obligations, meaningfully lowering distress risk. Second, leverage shows no significant effect on distress, which Trade-off Theory can help explain; firms in these sub-sectors appear to keep their capital structure close to an optimal point, so that debt-financing benefits, such as funding exploration or capacity expansion, remain reasonable relative to the financial risk involved, backed by a solid fixed-asset base and anticipated future cash flows. Third, profitability shows no significant effect on distress; although Signaling Theory would expect ROA to reflect financial health, profit volatility tied to post-pandemic conditions and global commodity prices over the study period meant profitability alone could not reliably guard against distress in this sample. Fourth, environmental CSR shows no significant effect on distress; viewed through Stakeholder Theory, CSR activity during the study period appears to have functioned mainly as an added cost not yet translated into near-term

financial payoff, such that its influence on the financial indicators feeding into the Altman Z-Score could not be clearly detected.

For management in the construction materials and diversified metals & mining sub-sectors, these results point toward prioritizing tighter liquidity management, through closer cash-flow control and careful short-term debt restructuring, as a direct lever for reducing bankruptcy risk; even though profitability did not emerge as a significant short-term distress predictor here, management should still work to sustain operational efficiency and positive profitability so as to preserve investor confidence and support the business over the long run. Investors and creditors operating in the basic materials and mining sector may benefit from paying closer attention to liquidity (Current Ratio) and debt-adequacy (Debt to Equity Ratio) indicators rather than leaning solely on short-term profitability, which can swing considerably with macroeconomic conditions. Future researchers are encouraged to widen the sample size and extend the observation window, adopt a broader CSR index that captures social and economic dimensions alongside the environmental one, add further explanatory variables such as sales growth, firm size, corporate governance, or macroeconomic indicators, and test alternative distress-prediction models, such as Springate, Zmijewski, or Grover, for comparative validation.

ACKNOWLEDGMENT

The author wishes to convey heartfelt thanks to Universitas Mercu Buana, particularly the Faculty of Economics and Business, Department of Management, for the guidance, opportunities, and support extended throughout this research.

REFERENCES

Adam Rafli, A., & Nurismalatri. (2025). Pengaruh Return on Asset (ROA), Total Asset Turnover (TATO), dan Debt to Equity Ratio (DER) terhadap Financial Distress pada PT Astra International Tbk. *Cakrawala: Jurnal Ekonomi*, 2(1), 17–26.

Andeska, R. (2020). Analisis prediksi financial distress pada perusahaan sektor konstruksi. *Jurnal Ilmu Manajemen*, 8(2).

Arief, H., Fauzi, F., Sarantian, E. T. P., Ashshidiqy, N., & Kolis, D. N. (2021). Pengaruh Kinerja Keuangan Likuiditas, Leverage dan Profitabilitas terhadap Financial Distress. *Jurnal JDM*, 4, 68–77.

Astuti, S., & Sjarif, D. (2022). Effect of current ratio, debt to equity ratio and sales growth on financial distress with return on assets as intervening variable. *Journal of Accountancy Inaba*, 01(3). https://doi.org/10.56956/jai.v1i1.7

Azizah, S., & Lismawati, L. (2024). The effect of financial performance on financial distress. *Jurnal Ilmiah Akuntansi Kesatuan*, 12(1), 167–178. https://doi.org/10.37641/jiakes.v12i1.2470

Boubaker, S., Cellier, A., Manita, R., & Saeed, A. (2020). Does corporate social responsibility reduce financial distress risk? *Economic Modelling*. https://doi.org/10.1016/j.econmod.2020.05.012

BPS. (2024a). *Berita Resmi Statistik: Pertumbuhan Ekonomi Indonesia Triwulan II-2024*. Badan Pusat Statistik.

BPS. (2024b). *Indikator Konstruksi, Triwulan IV-2023*. Badan Pusat Statistik.

Burnika, E., Pahala, I., & Handarini, D. (2024). Analisis rasio keuangan untuk memprediksi kondisi financial distress perusahaan consumer cyclicals. *RIGGS: Journal of Artificial Intelligence and Digital Business*.

Caparino, O., Simamora, S. C., & Unsurya, M. (2020). Pengaruh financial distress (Altman Z-Score) dan debt equity to ratio terhadap return saham sub sektor perbankan di Bursa Efek Indonesia tahun 2018. *Jurnal Ilmiah M-Progress*, 10(2).

Fitrianingsih, D. (2021). Pengaruh current ratio, debt ratio, net profit margin dan return on equity terhadap financial distress. *Akuntansi Dewantara*, 5(2). https://doi.org/10.26460/ad.v5i2.9814

Garnadi, I. M., Halim, E. H., & Indrawati, N. (2023). Analisis model dinamis trade-off theory pada struktur modal perusahaan konstruksi di Bursa Efek Indonesia. *Daya Saing*, 9(2). https://doi.org/10.35446/dayasaing.v9i2.1239

Inggamal, A. (2022). Analysis financial ratios on financial distress of transportation company listed on Indonesian Stock Exchange in 2017–2020 period (Vol. 2).

Khan, N., Malik, Q. A., Saghir, A., Rasheed, M. H., & Husnain, M. (2021). Does corporate social responsibility reduce financial distress? Evidence from emerging economy. *Management Science Letters*, 11(8), 2225–2232. https://doi.org/10.5267/j.msl.2021.4.007

Kivits, R. A., & Sawang, S. (2021). *Stakeholder Theory*. In Route to Success. Springer.

Laksmiwati, M., et al. (2021). Corporate social responsibility dan komitmen keberlanjutan perusahaan. *Jurnal Akuntansi Multiparadigma*.

Maharani, J., & Ramli, R. (2025). Pengaruh current ratio, debt to equity ratio, return on asset dan ukuran perusahaan terhadap financial distress pada perusahaan sub-sektor konstruksi. *PARADOKS Jurnal Ilmu Ekonomi*, 8(4).

Ningsi, Z. S., Akila, A., & Mursalin, M. (2024). Pengaruh current ratio (CR), return on asset (ROA) dan debt to equity ratio (DER) terhadap financial distress pada perusahaan sub sektor transportasi yang terdaftar di Bursa Efek Indonesia (BEI) periode 2019–2022. *Journal of Management Small and Medium Enterprises (SME's)*, 17(2), 285–296. https://doi.org/10.35508/jom.v17i2.12046

Nugrahanti, Y. W. (2021). Pengaruh pengungkapan corporate social responsibility terhadap financial distress dengan mekanisme corporate governance sebagai pemoderasi. *Simposium Nasional Perpajakan*, 1(1).

Nurhamidah, C., & Kosasih. (2021). Pengaruh current ratio, debt to equity ratio, dan return on equity terhadap financial distress. *Jurnal Riset Akuntansi Aksioma*, 20(2), 81–90. https://doi.org/10.29303/aksioma.v20i2.133

Patricia Saragih, C., Suri, A., Ayu, S., & Setiyawati, H. (2023). The effect of current ratio, return on assets, and debt equity ratio on financial distress. *International Journal of Management Studies and Social Science Research*, 05(05), 267–275. https://doi.org/10.56293/ijmsssr.2022.4723

Pebriani, R. A., Syafitri, L., & Meiriasari, V. (2024). Financial distress: Ratio of financial statements of mining and metals companies. https://doi.org/10.36908/isbank.v10i1.1205

Purwaningsih, R. W., & Aziza, N. (2019). Pengaruh corporate social responsibility terhadap financial distress dimoderasi oleh siklus hidup perusahaan pada tahap mature. *Jurnal Akuntansi*, 9(3), 173–186. https://doi.org/10.33369/j.akuntansi.9.3.173-186

Saidah, H., & Sulistiyo, H. (2024). Analisis pengaruh rasio keuangan terhadap financial distress pada perusahaan transportasi yang terdaftar di BEI periode 2020–2023. *Bilancia: Jurnal Ilmiah Akuntansi*, 8(4), 370. https://doi.org/10.35145/bilancia.v8i4.4734

Setiyowati, S., & Mardiana, A. (2022). Corporate social responsibility dan risiko keuangan perusahaan. *Jurnal Akuntansi dan Keuangan*.

Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355–374.

Ulayya Adzroo, N., & Hari Suryaningrum, D. (2023). Pengaruh leverage, likuiditas, profitabilitas, sales growth, good corporate governance dan corporate social responsibility terhadap financial distress pada perusahaan manufaktur yang terdaftar di Bursa Efek Indonesia periode 2015–2019. https://doi.org/10.21009/wahana.18.018

Yohanes Tampubolon, L., Fahria, R., & Maulana, A. (2020). Pengaruh corporate social responsibility terhadap financial distress: Peran moderasi firm life cycle. *Prosiding BIEMA Business Management, Economic, and Accounting National Seminar*, 1.

Yusuf, M., Suhendar, Sudaryo, Y., Yosep, M. A., Permana, O., Djalil, A., Haat, M. H. C., Muhammad, Z., Yusliza, M. Y., & Saputra, J. (2022). Pengaruh current ratio (CR), debt to equity ratio (DER), dan return on assets (ROA) terhadap financial distress pada perusahaan manufaktur sub sektor otomotif dan komponen. *EKONAM: Jurnal Ekonomi*, 04.

Zikri, M. S., & Kurniawati, E. (2024). Pengaruh current ratio, debt to asset ratio, debt to equity ratio terhadap financial distress dengan return on asset sebagai variabel moderasi pada perusahaan retail yang terdaftar di BEI periode 2019–2023. *Zona Keuangan: Program Studi Akuntansi (S1) Universitas Batam*, 14(3). https://doi.org/10.37776/zuang.v14i3.1702