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FINANCIAL DISTRESS AND INDONESIAN MANUFACTURING STOCK PRICES: A ZMIJEWSKI-GROVER MODEL
FINANCIAL DISTRESS DAN HARGA SAHAM MANUFAKTUR DI INDONESIA: MODEL ZMIJEWSKI-GROVER

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A B S T R A C T

In today's volatile economic environment, understanding the factors that influence stock prices is crucial for investors, policymakers, and corporate management. Financial distress, in particular, poses significant risks to company valuations and investor confidence. This study aims to test and analyze the effect of financial distress on stock prices using two models, namely Zmijewski (1984) and Grover (2001), focusing on manufacturing companies, especially in the textile sector, electronic and computer products, automation and transportation, paper, and chemical products. The sample consisted of 53 manufacturing companies listed on the Indonesia Stock Exchange (IDX) from 2018 to 2023, with a total of 318 data points. The data analysis method applied is multiple linear regression analysis. The results showed that financial distress, as measured by both models, has a significant negative effect on stock prices, with the X-score value exerting a more pronounced influence than the G-score in reducing stock prices.

Kata Kunci:
financial distress, Model Zmijewski, Model Grover, Stock Price

A B S T R A K

Dalam lingkungan ekonomi yang bergejolak saat ini, memahami faktor-faktor yang memengaruhi harga saham sangat penting bagi investor, pembuat kebijakan, dan manajemen perusahaan. Kesulitan keuangan, khususnya, menimbulkan risiko yang signifikan terhadap valuasi perusahaan dan kepercayaan investor. Penelitian ini bertujuan untuk menguji dan menganalisis pengaruh kesulitan keuangan terhadap harga saham menggunakan dua model, yaitu Zmijewski (1984) dan Grover (2001), dengan fokus pada perusahaan manufaktur, terutama di sektor tekstil, produk elektronik dan komputer, otomasi dan transportasi, kertas, dan

produk kimia. Sampel terdiri dari 53 perusahaan manufaktur yang terdaftar di Bursa Efek Indonesia (BEI) dari tahun 2018 hingga 2023, dengan total 318 titik data. Metode analisis data yang diterapkan adalah analisis regresi linier berganda. Hasil penelitian menunjukkan bahwa kesulitan keuangan, sebagaimana diukur oleh kedua model, memiliki efek negatif yang signifikan terhadap harga saham, dengan nilai X-score memberikan pengaruh yang lebih nyata daripada G-score dalam mengurangi harga saham.

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1. Introduction

The manufacturing sector, particularly textiles, electronic and computer products, automation and transportation, paper, and chemical products, plays a vital role in the Indonesian economy and has significantly contributed to GDP and job creation. This sector also continues to increase the complexity and added value of products, which indicates companies' involvement in high-tech and innovative activities, making it attractive to research the effect of innovation on corporate financial performance.

Listed manufacturing companies play an essential role in the Indonesian capital market. Research related to this sector provides insight into how financial information from manufacturing companies can influence stock prices and investors' investment decisions. Given the volatility and complexity of the stock market, the manufacturing sector provides rich data to analyze the relationship between financial performance and stock prices. In addition, the financial information provided by companies in this sector impacts the employment process and their stock prices. Previous studies have examined how financial information affects a company's stock price.

According to Muthohirin (2023), the presentation of financial information includes reports such as income statements, balance sheets, cash flow statements, and other essential reports for making investment decisions. Investors rely on financial information to assess the value of a company's shares. In an effective market, stock prices reflect publicly available financial information, so investors pay close attention to the financial workings of a company (Arnova, 2016). Poor financial performance increases stock prices, such as losses, negative cash flow, and weak financial conditions.

Conversely, positive financial performance, such as stable and high profits and positive cash flow, tends to reduce stock prices (Subakti et al., 2021). Subsequently, for speculators to form educated speculation choices, businesses must oversee and report money related data precisely and totally (Taskurun & Muhammad Aziz, 2023) . Only

accurate or complete financial information can lead to business assessment errors and stock price volatility (Mellennia, 2023). To further understand how a company's financial condition affects stock prices, it is essential to consider the impact of financial distress.

Financial distress occurs when a company has difficulty meeting its financial obligations, such as paying debt or debt interest, and this condition is often an early sign of potential bankruptcy (Kusumawati, 2022). Factors causing financial distress include declining revenues or profits, high debt burden, mismanagement, and poor macroeconomic conditions. Meanwhile, signaling theory in the financial context states that company managers have more information about the company's state than external investors and can use specific actions to send signals to the market about the actual state of the company (Wany et al., 2022). For example, A sudden decline in revenue, coupled with increasing operating expenses, may signal financial distress for a company (Baby et al., 2024) For instance, if a retail company reports a significant drop in sales due to changing consumer preferences and simultaneously increases its promotional spending to attract customers, investors may perceive this as a warning sign (Vanderlynden et al, 2024). This situation could lead to concerns about the company's ability to maintain profitability, resulting in a decline in stock prices as investors reassess the associated risks.

Research on the impact of financial distress on stock prices has been a primary focus in finance. Various financial distress models have been developed to identify businesses in financial distress. The two most commonly used models for financial distress calculation are the Zmijewski (1984) and Grover (2001) models. Although both models were developed long ago, they remain relevant in research on bankruptcy and financial distress as they have proven effective and accurate in predicting bankruptcy. These models still need to be used in research on financial distress as a measurement tool compared to five other models that experts in the field have developed. Therefore, this study uses these models to prove that they are able to predict financial distress in a company.

The Zmijewski (1984) model uses logistic regression analysis to identify potentially bankrupt companies based on several key financial ratios. The Zmijewski model uses three main financial ratios, namely return on assets, debt ratio, and current ratio, which are still considered fundamental in assessing the financial health of companies today.

This model is simple yet powerful, making it still widely used in research and practice in predicting bankruptcy with a high degree of accuracy (Zmijewski, 1984).

Meanwhile, Grover's (2001) model refines the previous model with a focus on better prediction accuracy, thus maintaining its relevance for research that requires a financial distress prediction approach. The ratios reflect essential aspects such as profitability, leverage, and liquidity, which remain critical indicators in financial analysis. Financial distress is particularly relevant for manufacturing companies, especially in the textile, electronic, and computer products, automation and transportation, and paper and chemical products industries. The intense competition and thin profit margins make them highly vulnerable to financial fluctuations.

Most studies show that financial statement information affects the stock price, which is the subject of this research. For example, Harsono and Ande (2018) found that financial distress indicators affect stock prices. This finding is in line with the research of Oktaviani and Purwanto (2020), Nugroho et al. (2021), and Taskurun & Muhammad Aziz (2023), who also found that financial distress indicators affect stock prices. On the other hand, research by Ahszhaffat and Suyono (2022) and Octaviani et al. (2024) found that financial distress indicators do not affect stock prices.

This study aims to analyze the effect of X-Score and G-Score on a company's stock price using signal theory as the basis of analysis. This study aims to examine whether a high X-Score and a low G-Score, which indicate financial risk or financial problems, can decrease investor confidence and contribute to a decrease in stock price. Using multiple linear regression models, this study will quantify the extent to which both variables affect stock prices, as well as provide a deeper understanding of how a company's financial condition can affect investment decisions and stock market dynamics.

Finally, financial information affects the stock prices of mining companies, especially textiles, electronic and computer products, automation and transportation, and paper and chemical products listed on the IDX. The pattern of financial performance of companies experiencing financial difficulties can affect stock prices. Therefore, companies must provide accurate and open financial information so investors can use it to assess and make decisions. In addition, recent research has begun to investigate the additional effects of financial information on this industry. This research shows that financial distress, as measured by both models, has a significantly negative effect on

stock prices, with the X-score having a more significant impact than the G-score in reducing stock prices.

2. Literature Review

2.1 Signaling Theory

Signalling Theory, developed by Michael Spence in the 1970s, states that firms or individuals use information or signals to reduce uncertainty for other parties, such as investors or creditors. These signals usually relate to quality, financial health, or future prospects in a corporate context. Investors are known to require information relating to financial ratios or figures. With the ratio information obtained from financial reports, outsiders can assess whether the company can change the direction of the original goal, meaning that the company can overcome survival and financial difficulties (Ramly et al., 2019). When a company experiences financial difficulties, it is often perceived as a negative signal by investors, who see it as an indication of high risk and potential future problems (Krisyadi, 2021). In the context of the Zmijewski-Grover model, financial distress is indicated by poor financial ratios, such as a high debt ratio or low liquidity ratio (Husein, 2014). As a result, the company's share price tends to decline as the market responds to this negative signal by lowering expectations of the company's future performance, thus reflecting investors' assessment of increased risk.

2.2 Ratio Analysis

Financial ratio analysis aims to determine the financial conditions that tend to occur in the company or to overcome these problems. Three factors can cause financial distress: insufficient capital, too large liabilities, and income not in accordance with the target. So, to avoid financial problems, businesses must maintain financial balance (Jumliana, 2024).

2.3 Financial Distress.

Signs of financial distress appear before the company goes bankrupt or is liquidated due to poor financial circumstances. Ramdani (2020) suggests that financial distress is when the company's finances are wrong or experiencing a crisis. So, it is essential to anticipate financial situations that can disrupt business operations. Several factors can cause financial distress, such as poor corporate governance, the competence of managers and company staff in running the business properly, or inappropriate skills and expertise in managing company finances. For these problems, financial distress is

the state of a company that has difficulty paying debts, which signals the beginning of bankruptcy (Jumliana, 2024).

2.4 Zmijewski X-Score Method

It is known that the Zmijewski model applies financial ratio models such as group ratio, rate of return, liquidity, leverage, turnover, coverage fixed payment, trend, company size, and stock return volatility. The results of the research conducted by Zmijewski show differences between companies categorized as healthy and unhealthy.

Based on the Zmijewski X-Score analysis, the central hypothesis proposed is that companies with low scores indicate a high likelihood of bankruptcy. To support this hypothesis, research can explore several sub-hypotheses, such as the significant variation in the Zmijewski X-Score across industry sectors, the negative relationship between the score and other financial ratios, and the impact of revenue declines over the past two years on the score (Chua & Rustam, 2023). In addition, the difference in scores between listed and unlisted companies and the effect of debt restructuring measures on score improvement is also the focus of the analysis (Kartiko, 2023). In addition, the difference in scores between companies listed on the stock exchange and those not can be explained by greater transparency and supervision. At the same time, debt restructuring measures can improve financial conditions, improving scores (Shavshukov & Zhuravleva, 2023).

Based on the Zmijewski X-Score analysis, the central hypothesis proposed is that companies with low scores indicate a high probability of bankruptcy. To support this hypothesis, this study is in line with previous research by Sari et al (2023) and Chua & Rustam (2023), which explored several sub-hypotheses, such as the significant variation in the Zmijewski X-Score across industry sectors, the negative relationship between the score and other financial ratios, and the impact of revenue declines over the past two years on the score. In addition, the difference in scores between listed and unlisted companies and the effect of debt restructuring measures on improving the score was also the focus of the analysis (Kartiko, 2023). In addition, the difference in scores between listed and unlisted companies can be explained by greater transparency and oversight. At the same time, debt restructuring measures can improve financial conditions and scores (Shavshukov & Zhuravleva, 2023).

Based on Signaling Theory, a high X score (indicating financial distress) is perceived as a negative signal that lowers investor confidence and stock price. This

decrease in confidence influences investors' decision to reduce shareholdings, lowering the demand for and price of the company's shares. Thus, a high X score can lead to a decline in share price in response to increased uncertainty and negative perceptions of the company's financial prospects. This reflects how negative information or signals can affect markets and stock prices through investor expectations and behaviour changes.

This hypothesis is built on the assumption that a higher X-Score correlates with financial instability, as shown in studies by Krisyadi (2021) and Jumliana (2024). This study aligns with previous research by Sari et al. (2023) and Kartiko (2023), which provide insights into using X-Score across different sectors to identify the risk of financial distress negatively correlated with stock performance. This is also consistent with Oktaviani and Purwanto's (2020) research, which states that Zmijewski X-Score significantly negatively affects stock prices. Based on the above statement, the researcher will develop the following hypothesis:

H1: As indicated by Zmijewski's X-Score, financial distress negatively impacts the company's share price.

2.5 Grover G-Score Method

This hypothesis states that companies with a low G-Score are more likely to face financial distress. The logic behind this hypothesis is that G-Score, which evaluates various financial metrics such as Profitability, liquidity, and capital structure, may serve as an early warning system for potential financial distress. While research can explore sub-hypotheses, this study aligns with previous research by Akbar et al. (2022). Choirunnisak et al. (2024) on the negative relationship between G-Score and specific financial indicators such as debt-to-equity ratio and cash flow, indicating that lower scores correlate with higher debt burden and poorer liquidity capability (Choirunnisak et al., 2024). In addition, the impact of the industry sector on score variation may suggest that companies in more volatile sectors tend to have lower G-Score (ref). Research could also investigate how a history of revenue declines correlates with a lower G-Score, where revenue declines are often an early indicator of financial distress (Sonia & Yuliusman, 2024). In addition, firms that actively pursue debt restructuring may show better scores than those that do not, which suggests that proactive measures may help overcome financial problems (Shavshukov & Zhuravleva, 2023).

Based on Signaling Theory, a low G-Score indicates financial problems or potential bankruptcy risk for the company, which serves as a negative signal to investors. This signal provides information that the company may face difficulties meeting its financial obligations or an unstable financial condition, potentially reducing investors' confidence in its prospects. When the G-Score is low, investors will perceive the company as having a higher risk, affecting their perception of its future viability. This decrease in investor confidence can decrease demand for the company's shares, lowering its share price. As a result, a low G-Score leads to negative perceptions that worsen market expectations, causing investors to sell their shares and lower the overall share price.

This hypothesis is built on the assumption from Shavshukov and Zhuravleva's (2023) study that firms with low G-Score can improve their financial condition through debt restructuring, thereby reducing distress signals. However, in the case of persistently low G-Score, financial distress can lead to a decline in stock prices. In line with previous research, Nugroho et al. (2021) found that financial distress, especially the calculation of G-Score, hurts stock returns through the mediation of systematic risk and profitability, ultimately reducing investor confidence and lowering stock prices. Based on the above statement, the researchers will formulate the following hypothesis:

H2: As indicated by Grover's G-Score, financial distress negatively impacts the company's share price.

2.6 Research Conceptual Framework

Based on the theory that has been used, the researcher then describes the conceptual framework model for the following research hypothesis:

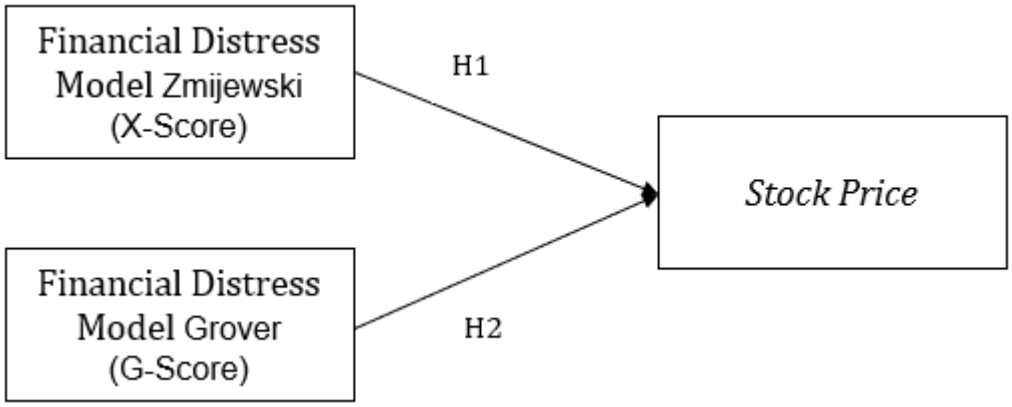

Figure 1
Research Conceptual Framework

In this conceptual framework, X_1 (X-Score) and X_2 (G-Score) serve as independent variables that affect Y (Stock Price) as the dependent variable. A high X_1 (X-Score) indicates significant financial distress, such as bankruptcy risk, which provides a negative signal to investors. Based on Signaling Theory, this negative signal reduces investors' confidence in the stability of the company, which then decreases the demand for shares and ultimately leads to a decrease in stock price (Y). Similarly, a low X_2 (G-Score) also indicates potential financial problems or higher risk, which can reduce investor confidence and decrease the company's share price.

Thus, both X_1 (X-Score) and X_2 (G-Score) directly affect the stock price (Y) through changes in investor perception and confidence. Both send negative signals that potentially increase uncertainty in the market, which causes investors to sell shares and lower the company's share price. This decrease in investor confidence illustrates how negative information about a company's financial condition can influence investment decisions and directly impact the company's share price.

3. Method of Research

3.1 Research Design

In this study, researchers used quantitative research methods. The quantitative method is a scientific step to see the reality of data in a concrete, observable, and measurable manner. This method produces data from the interpretation of numbers from statistical analysis results. The data in this study were obtained from the Indonesia Stock Exchange (IDX) and Osiris. The known variables in this study are (independent variables) financial distress Zmijewski X-Score method (X1) and financial distress Zmijewski G-Score method (X2), and one dependent variable, namely stock price (Y). This study does not include control variables because the main focus is analyzing the direct relationship between financial distress (using Zmijewski-Grover Score) and stock price to identify the primary influence without interference from other variables. The model used was designed to maintain simplicity and to make it easier to interpret, while the addition of control variables may add complexity and make it difficult to conclude. In addition, data limitations are also a factor, as sufficient data for the control variables may not be fully available in the context of Indonesian manufacturing companies.

3.2 Sampling Methods and Data Collection Techniques

The data collection technique in this study uses the documentation method, which aims to copy or record documents provided by secondary data sources. The samples used in this study were selected using the purposive sampling method, with the following criteria: a) Manufacturing sector companies, especially those engaged in textiles, electronic and computer products, automation and transportation, paper, and chemical products, which are listed on the Indonesia Stock Exchange (IDX) from 2018 to 2023. b) The financial statements used are the company's annual reports (annual reports). The financial statements used are annual reports in Rupiah and have been audited from 2018 to 2023. c) The company has closed stock price data from 2018 to 2023. From the results of data collection, there are 53 manufacturing companies listed on the Indonesia Stock Exchange (IDX) from 2018 to 2023, so 318 data were obtained.

3.3 Research Model

The statistical model used to test the relationship between **X_1 (X-Score)**, **X_2 (G-Score)**, and **Y (Stock Price)** can be a **multiple linear regression model**. In this model, **Stock Price (Y)** is influenced by two independent variables, **X-Score (X_1)** and **G-Score (X_2)**.

$$Y=\beta0+\beta1X1+\beta2X2+\epsilon$$

Description

Y = Stock Price (dependent variable)

X1X_1 = X-Score (first independent variable)

X2X_2 = G-Score (second independent variable)

β0\beta_0 = Constant or intercept

β1\beta_1 = Regression coefficient for X-Score (X_1), which shows how much influence X-Score has on stock price

β2\beta_2 = Regression coefficient for G-Score (X_2), which indicates how much influence G-Score has on stock price

ϵ\epsilon = Error term (model error or unobserved disturbance)

Model Explanation:

β1\beta_1 and **β2\beta_2** measure the direct effect of each of **X_1 (X-Score)** and **X_2 (G-Score)** on stock price (**Y**). If the coefficients are significant, there is a strong relationship between the independent variables and the stock price.

β0\beta_0 is the value of the stock price when **X_1** and **X_2** are zero.

This model makes it possible to test how much influence each factor (X-Score and G-Score) has on the company's stock price and see if both variables contribute significantly to changes in stock price. The model was tested using multiple linear regression analysis to determine the significance and magnitude of the effect of **X-Score** and **G-Score** on **stock price**.

The measurement of X-Score

The equation model developed by Zmijewski can be formulated as follows X1; ROA measures a company's ability to generate profits from the use of assets. ROiA is calculated by dividing net profit with the company's total assets, namely it is measured by comparing net profit divided by total assets, then the Debt ratio is measured by total debt divided by total assets, then the current ratio is measured by comparing the total current assets with the total current liabilities of the company. So it can be calculated as follow:

$$\mathbf{X = -4{,}3\ 4{,}5X_1 + 5{,}7X_2 + 0{,}004X_3}$$

Description

X_1 = Return on Asset or Return on Investment

X_2 = Debt Ratio

X_3 = Current Ratio

If the value of X> 0, the company tends to experience financial distress. If the value of X < 0 or negative, then the company tends not to experience financial distress.

The measurement of Z-Score

The Grover model was created in 1968 by Jeffrey S Grover, who designed and reviewed the Altman Z-Score model. The design results in the following equation model:

$$\mathbf{G = 1{,}650\ X1 + 3{,}404\ X2 + 0{,}016\ X3 + 0{,}057}$$

X1 = Working capital / Total assets

X2 = Earning before interest and taxes / Total Ssset

X3 = Net income / Total assets

A company is considered unhealthy if its score is less than or equal to -0.02 ($Z \leq -0.02$), while a company is considered healthy if its score is equal to or more than 0.01 ($Z \geq 0.01$).

Stock Price

The company can obtain shares from capital owners as a new source of funds and must pay dividends and capital gains as a return on capital. The share price is the market value of an issuer's or company's shares at a particular time. Stock prices constantly change due to the relationship between company performance and market conditions in the secondary market. The existence of supply and demand prices can cause changes in stock prices. Investors assess the company's condition and make requests and offers at that price (Manulang et all, 2021)

3.4 Data Analysis Technique

Data analysis techniques using descriptive statistics, classical assumption tests (such as normality, multicollinearity, autocorrelation, and heteroscedasticity), and multiple linear regression analysis (such as t, F, and coefficient of determination tests) are used to analyze data using the help of the IBM Statistical for Product and Service Solution (SPSS) Version 23 program

4. Result and Discussion

4.1 Result

The results of the research conducted using the SPSS program produced the following descriptive statistics:

Tabel 1

Statistik Deskriptif

	N	Minimum	Maximum	Mean	Std. Deviation
X (X-Score)	318	-4,3	2,57	-1,43	1,24
G (G-Score)	318	-4,18	44,25	1,13	4,34
Y	318	,0,15	255,77	16,49	30,93
Valid N (listwise)	318				

Source: Secondary data tested by SPSS, 2024

Table 1 presents summary descriptive statistics for variables X (X-Score), X (G-Score), and Y from the 318 samples, showing each variable's minimum, maximum, mean, and standard deviation. X (X-Score) has an average of -1.43251220 with moderate variation, while X (G-Score) has an average of 1.133050332 with more significant variation, indicating a distinct influence on stock prices. Y, which represents the stock price, has an average of 16.49816235 with high variation, reflecting the stock market's volatility. All valid samples were used in the analysis, and the relationship between X-

Score, G-Score, and stock price can be further analyzed to understand the factors that influence stock price movements.

Tabel 2

Koefisien Determinasi

Model	R	R Square	Adjusted R Square	Std. Eror of the Estimate	Durbin-Watson
1	,234[a]	,055	,049	2,02444	1,580

Source: Secondary data tested by SPSS, 2024

Table 2 presents an R-value of 0.234, indicating a weak correlation between the independent and dependent variables. The R Square value of 0.055 indicates that only 5.5% of the variability in the dependent variable can be explained by the regression model, suggesting that the model is less effective in explaining the data. Adjusted R Square has a value of 0.049, slightly lower than R Square, which takes into account the number of variables in the model. The standard error of the estimate of 2.02444 indicates the degree of deviation of the observed values from the regression line. The Durbin-Watson value of 1.580, close to 2, indicates the absence of significant autocorrelation in the residuals.

Tabel 3

Uji Simultan (Uji F)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	74,777	2	37,388	9,123	,000[b]
	Residual	1290,977	315	4,098		
	Total	1365,754	317			

Source: Secondary data tested by SPSS, 2024

Table 3 displays the regression analysis results to test the overall model's significance. In this table, the sum of squares for regression is 74.777 with 2 degrees of freedom (df), while the sum for residuals is 1,290.977 with 315 degrees of freedom. The mean square value for regression is 37.388, and for residuals is 4.098. The F value obtained is 9.123 with a significance of 0.000, which indicates that the regression model as a whole is significant in explaining the data variability with a very high confidence level.

Tabel 4

Uji Hipotesis

Model		Unstadardized	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	,911	,177		5,132	,000
	x1	-,280	,091	-,168	-3,065	,002
	x2	-,072	,026	-,150	-2,729	,007

Source: Secondary data tested by SPSS, 2024

Table 4 shows the results of the regression analysis to test the effect of the independent variables x1 and x2 on the dependent variable. The unstandardized regression coefficients (B) show values of 0.911 for constant, -0.280 for x1, and -0.072 for x2, with standard errors of 0.177, 0.091, and 0.026, respectively. The standardized regression coefficients (Beta) are -0.168 for x1 and -0.150 for x2. The t-count values for constant, x1, and x2 are 5.132, -3.065, and -2.729, respectively. The significance values (p-value) are 0.000, 0.002, and 0.007, respectively, indicating that all coefficients are statistically significant ($p < 0.05$).

4.2 Discussion

In this research focus, the scope is clarified more deeply with empirical evidence regarding the provisional grief analysis formulated at the beginning. The results of the indications to answer the hypothesis can be described below:

Based on the statistical results obtained, the X-Score coefficient number has a regression coefficient of -0.280 with a significance level of 0.002, which means that every one unit increase in X-score will decrease the stock price by 0.280. This indicates a significant negative relationship between X-score and stock price. When a company faces financial difficulties, the theory of Financial Distress, which analyses its financial condition and ability to meet financial obligations, becomes relevant. One method often used in this theory is the X-Score, a variant of the Zmijewski model designed to predict bankruptcy risk. X-Score calculates a score based on financial ratios such as liquidity, solvency, and profitability to assess the likelihood of financial distress. When the X-Score shows a low value, it indicates a high level of bankruptcy risk. The negative signal resulting from this low score causes investors to feel less confident about the stability and prospects of the company. As a result, investors tend to undervalue the company's shares, resulting in a decline in the stock price. Thus, the X-Score method indirectly affects the stock price by reflecting and communicating the company's financial risk to the market.

Based on the statistical results, the G-Score coefficient has a regression coefficient value of -0.072 with a significance level of 0.007. This indicates that every one-unit increase in G-Score will decrease the stock price by 0.072. This also shows a significant negative relationship between G-Score and stock price. In Financial Distress theory, the "G-Score" method is essential for assessing bankruptcy risk by focusing on specific financial indicators. The G-Score, developed by Grover and Zmijewski, measures the likelihood of financial distress by calculating a score based on financial ratios that reflect a company's financial health. These ratios typically involve liquidity, solvency, profitability, and some additional indicators relevant to the specific industry or company context. When the G-Score shows a low value, the company is in significant financial distress, indicating a high potential for bankruptcy. A decrease in this score provides a negative signal to investors about the company's economic risks. As a result, investors who seek safety and stability may reduce their exposure to the company's shares. This decrease in confidence often leads to a reduction in share price as the market reacts to the negative signal provided by the G-Score, reflecting investors' concerns about the company's potential financial instability and failure. Thus, G-Score is an essential indicator in predicting the negative impact of economic distress on a company's stock price.

Overall, both X-score and G-score significantly negatively affect stock price. This means that an increase in X-score or G-score tends to decrease stock prices, with the effect of X-score being more significant than G-score; this is reinforced by empirical evidence from recent research conducted by Oktaviani and Purwanto (2020) stating that this study shows that Zmijewski X-Score has a significant negative effect on stock prices, supporting the hypothesis that the higher the risk of bankruptcy, and the more significant the negative impact on stock prices. Nugroho et al. (2021) found that financial distress hurts stock returns by mediating systematic risk and Profitability, which reduces investor confidence and lowers stock prices. Kusumawati and Haryanto (2022) examined property and real estate sector studies, showing that X-Score and Altman Z-Score significantly affect firm value. X-Score is more accurate in predicting bankruptcy and its impact on firm value. Therefore, the conclusion drawn in this study is that H1 and H2 are recognized because they have appropriate benchmarks.

The acceptance of H1 and H2 indicates that financial scores, both X-score and G-score, are strong indicators of a company's financial condition and directly impact stock prices. Behind the acceptance of these hypotheses is that lower scores reflect higher risk

and potential bankruptcy, directly reducing investor confidence. As such, investors tend to sell shares of companies with low scores, decreasing the share price.

This result implies that investors and financial analysts should consider these scores when making investment decisions. Companies with financial difficulties need to take strategic steps to improve their financial condition, such as restructuring or improving operational efficiency. By improving their scores, companies can reduce the risk of bankruptcy and mitigate the negative impact on stock prices, thereby increasing investor confidence and market stability.

By improving their scores, companies can reduce the risk of bankruptcy and mitigate the negative impact on stock prices, thereby increasing investor confidence and market stability. Finally, a better understanding of the relationship between financial scores and stock prices can benefit stakeholders, including corporate management, investors, and market regulators.

5. Conclusion, Suggestion, and Limitation

5.1 Conclucion

This study concludes that financial distress experienced by the manufacturing sector, especially textiles, electronic and computer products, automation and transportation, paper, and chemical products from 2018-2023, has proven to reduce company value; it is concluded that both X-Score and G-Score have a significant and negative effect on stock price. The X-Score variable has a more significant influence than the G-Score on stock price, indicated by a more considerable regression coefficient value and a higher t-value. Both variables are significant at the 0.05 significance level, indicating that changes in the X-Score and G-Score variables will significantly impact stock price changes.

5.2 Suggestion

It is recommended that similar research be conducted in other fields, such as high-tech, agriculture, or services, to find out whether the effect of X score and G scores on stock prices also applies in those fields. This will broaden the scope of the study. Also, it is essential to include additional variables that may affect stock prices, such as government policies, global market conditions, or macroeconomic indicators, for a more thorough analysis. In addition, it is necessary to identify and analyze moderator or mediator variables, such as corporate liquidity, risk management, or corporate

governance, to understand the dynamics of a more complex relationship. In addition, comparative studies between countries can be conducted to find out how X score and G scores differ in various economic and regulatory contexts.

5.3 Limitation

This study has limitations, including only focusing on the manufacturing sector, especially textiles, electronic and computer products, automation and transportation, paper, and chemical products, where the manufacturing sector is broad. Thus, it may not reflect the condition of other industries as a reference in using the Zmijewski and Grover methods to calculate financial distress itself. Regarding the methods used, they tend to ignore non-financial variables so that the analysis cannot estimate external factors that can affect financial distress.

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