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Does Financial Distress Contribute on Relation Between Debt Intensity and Debt to Capital at Book with Fraud?

Junaidi[1], Noorlailie Soewarno[2], and Isnalita[3]
junaidi@trunojoyo.ac.id[1], noorlailie-s@feb.unair.ac.id[2], isnalita@feb.unair.ac.id[3]
[1]Department of Accounting, Faculty of Economics and Business, Airlangga University and Department of Accounting, Faculty of Economics and Business, Trunojoyo University Madura
[2]Department of Accounting, Faculty of Economics and Business, Airlangga University and correspondent author
[3]Department of Accounting, Faculty of Economics and Business, Airlangga University

Abstract: This research aims to examine the negative influence of debt ownership on fraud. Furthermore, this research examines the influence of a high level of financial distress on the relationship between debt ownership and fraud. This research observes manufacturing companies in ASEAN countries. In order to ensure that the research model is robust, this research uses variance-covariance error analysis. The results prove that debt ownership can mitigate fraud, but when the company experiences high financial distress this relationship changes to positive. To the best of the researcher's understanding, the use of debt intensity and the use of the financial distress variable as a moderating variable as an explanation of fraud has never been done. Both of these are new research along with findings that can add to theory building. The logical argument that this finding can be used as a theory building is that the conclusion is that when debt ownership obtains abnormal returns through a high cost of debt, supervision is weakened.

Keywords: Debt Intensity, Debt to Capital at Book, Fraud, Financial Distress

Introduction

Debt ownership in manufacturing companies in ASEAN is an important aspect that influences the company's performance and financial stability. In this region, companies often rely on debt financing as a strategy to support their growth and expansion. Research shows that companies in ASEAN, especially those in the manufacturing sector, tend to have a high dependence on debt (Setianto et al. 2022). Wise debt management is very important to avoid excessive interest costs. If debt management is not done well, it can result in increased interest costs which will ultimately result in financial distress. Apart from that, financing through debt often leads to fraud. One of the fraud phenomena as a result of debt management is the case of Asia Water Technology Ltd in Singapore.

Fraud in the business world is an issue that attracts the attention of researchers and practitioners in the fields of accounting and finance. Fraudulent

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incidents that occur within a company can harm stakeholders and affect overall market stability. This research aims to examine the effect of debt intensity and Debt to capital at book on fraud. It is assumed that if there is a significant negative influence, it means that monitoring debt ownership is effective in reducing fraud. Next, this research explores the impact of financial distress on the relationship between debt intensity and Debt to capital at book with fraud. If the negative influence above turns into a significant positive, it means that the company is experiencing high financial distress, then monitoring debt ownership will no longer be effective in mitigating fraudulent behavior. This research is important because methodologically, the use of moderating variable financial distress and adding the independent variable debt intensity, to the best of the researcher's knowledge, has never been done.

Hermawati and Murtanto (2021) used the total debt variable and (Lou and Wang 2011) used the debt ratio variable, the two studies above did not find a negative influence on fraud. Contrasting results were found by (Skousen et al. 2008 and Rahmawati 2012) who found a significant negative effect of variables related to debt on fraud. This research offers a debt intensity variable which, according to the researchers' understanding, has never been tested with fraud. Furthermore, this research also uses the contingent variable of financial distress as a novelty of research. Researchers argue that monitoring debt ownership will be less effective at high levels of company financial distress. This is due to the factor that the interest rate obtained by the debt owner is very high.

Graham et al. (2008) and Lai et al. (2019) found that in companies that were indicated to have committed fraud (directors were indicated to be related to companies that committed fraud), there was a positive influence of fraud events on the cost of debt. This means that a company that is indicated to be fraudulent will attempt to cover up its fraud through increasing debt. This is indicated by an increase in debt costs. Ardhiansyah et al. (2019) and Annisa et al. (2024) found a positive influence of Debt to capital at book on the potential to present financial reports containing fraud. These two tests are carried out on local government financial reports. Tests on private companies were carried out by (Ormazábal 2018 and Boivie et al. 2012) who found that managers attempted to avoid serving in companies that were suspected of committing fraud in order to maintain their reputation. Mansi et al. (2021) found a relationship between the cost of debt and high levels of bankruptcy due to failure to fulfill debt covenants. This research is based on the results of research (Sawangarreerak and Thanathamathee 2021) which found that transferring supervision to debt ownership can mitigate the extent of the consequences of fraud. This research adds a dummy variable for financial distress to reveal the effectiveness of monitoring debt ownership in mitigating fraud.

Research using the financial distress variable as a mediating variable has been carried out by (Nurfadilah et al. 2024). The research results found the mediating effect of financial distress on the relationship between the fraud triangle and financial statement fraud. On the other hand, research results (Saputra et al. 2024) did not find a mediating effect of financial distress on the relationship between capacity, board turnover, financial targets and ineffective supervision with financial statement fraud in manufacturing companies in Indonesia. These contradictory results offer further testing by utilizing the financial distress variable

as a moderating variable. A company's capital structure, as measured through its debt-to-equity ratio and debt intensity, often serves as an indicator of financial health. However, high debt can also increase pressure on management to achieve expected performance, which in turn can trigger fraud in an effort to meet these expectations.

Rawal et al. (2024) found no effect of financial distress on the debt to capital ratio. On the other hand Ifada and Yulianto (2022) found that financial distress had an effect on material misstatements in financial statements. This was done by the manager because of demands for company stability. Furthermore Johnston et al. (2009) concluded that at the level of supervision over the existence of high debt, companies experiencing financial distress tend to experience a reduction in their debt rating. Furthermore, the importance of considering control variables in this analysis cannot be ignored. Control variables such as market to book value (MBV), company performance (Tobin), cost of employee intensity (CEmpInt), asset intensity (AI), payout ratio (PR), earnings yield (EY), quick ratio (QR), and free cash flow per share (fcfpershare) will be considered to reduce bias that may arise due to external factors. By using this approach, the research aims to provide a more comprehensive picture of the dynamics that occur between debt structure, financial conditions and the possibility of fraud. It is hoped that the research will contribute to a better understanding of how debt and financial distress interact in the context of corporate fraud, as well as provide better guidance for practitioners and academics in assessing fraud risks related to corporate capital structures. This study also aims to add to existing literature and can be used as a basis for developing risk mitigation strategies against fraud in financial reports prepared by companies.

Theoretical Foundations and Hypothesis Development

Literature Review

Trade-off Theory states that companies will seek an optimal capital structure by balancing the benefits and costs of using debt. This theory views debt as an important tool for achieving an optimal capital structure by taking into account tax benefits and financial distress costs. Tax benefits occur because the cost of debt is a deduction from taxable profit. This will be different if the funding comes from capital issuance. The consequence of issuing capital is dilution which will reduce the manager's achievements in the eyes of shareholders. Apart from that, dividend payments are also a tax object so funding from share issuance has no impact on tax benefits.

In contrast, Packing order theory states that companies tend to choose internal funding (from retained earnings) before using debt or issuing second-tier shares. However, when a company has large debts, this can indicate that the company is in a less than ideal financial position. To maintain credibility in the eyes of creditors and investors, management may be encouraged to commit fraud so that the company appears to be in better condition than it actually is. This theory states that companies tend to prefer internal funding to external funding and do not assume an optimal capital structure.

The difference in perspective between these two theories lies in determining the optimal capital structure. In conditions where the proportion of

debt is still within the tolerable limit of financial distress, the role of debt owners can improve the company's performance. On the other hand, if the company is experiencing a high level of financial distress, the role of the debt owner will be reduced as the party who has the ability to monitor the manager's performance.

Hypothesis Development

In a dynamic economic context, research on the influence of capital structure on corporate behavior, especially fraud, becomes increasingly relevant. One important aspect of capital structure is debt intensity and the debt to capital at book ratio, which are important indicators in company financial management. Fraud in financial reports can raise doubts about a company's integrity and transparency, and has the potential to harm various parties, from shareholders to creditors.

This research focuses on the influence of debt intensity and Debt to capital at book ratio on fraud, by considering financial distress as a moderating variable. Financial distress often trigger companies to make unethical decisions, including manipulating financial reports. In addition, the interaction between the financial distress dummy and debt intensity and Debt to capital at book ratio is expected to provide deeper insight into how difficult financial conditions can influence the relationship between debt and fraud.

The Effect of Debt Intensity on Fraud

The interaction between debt intensity and fraudulent activity has received significant attention in the financial criminology and corporate governance literature. Debt intensity, defined as the ratio of a company's total debt to its total assets, serves as an important metric in understanding a company's financial leverage and risk profile. As organizations face increasing pressure to maintain operational continuity, understanding the correlation between rising debt levels and the likelihood of fraudulent behavior is critical.

Beasley (1996) found a positive effect of leverage on fraudulent financial reporting. This is in line with research by Mensah and Nkuah (2014), which found that companies with significant debt obligations often manipulate profits to satisfy creditors and investors. Zhang et al. (2016) found a direct relationship between debt intensity and the likelihood of financial misstatements. Research conducted by Liu and Zhang (2018) shows that high leverage can also facilitate asset misappropriation and other forms of employment fraud. The hope of meeting financial obligations may cause employees to rationalize theft or abuse of power as retaliation against organizational instability.

Dechow and Skinner (2000) state that companies that are under stress are more susceptible to accounting irregularities because they attempt to create a guise of financial stability. This behavior is often exacerbated in an environment characterized by restrictive loan covenants that pressure executives to uphold certain financial metrics. Ashbaugh-Skaife et al. (2008) highlight that companies under significant financial stress may view fraud as a necessary means of survival, thereby prioritizing short-term profits over long-term sustainability.

High levels of leverage can increase feelings of desperation among corporate executives, thereby creating an environment in which unethical decisions become increasingly rationalized. Chen et al. (2015) emphasize that

industries with high levels of debt tend to exhibit an increased risk of fraud as firms engage in competitive behavior to maintain market share and meet stakeholder expectations.

In contrast, Skousen et al. (2008) and Rachmawati et al. (2023) found a significant negative effect of variables related to debt on fraud (tax aggressiveness). Geiger and Marquardt's (2004) research uses the moderating variables of institutional framework and governance structure. The research results concluded that the higher the institutional and governance framework, the negative influence of debt ownership on fraud. Companies equipped with strong internal controls and monitoring mechanisms show lower fraud incidence rates despite high debt levels. This shows that effective governance can mitigate the risks associated with financial distress.

This research uses the debt intensity variable to mitigate fraud. If the company's prospects are good, high debt intensity usually indicates that the company has a large debt repayment commitment, which can affect its profitability and liquidity. Apart from that, the role of debt ownership will be higher in monitoring the manager's asymmetric behavior. Debt ownership will tend to view the Company's assets as the basis for providing debt other than equity. The higher the company's assets, the more confident the debt owner is in providing loans. If the company goes bankrupt, the debt ownership will be repaid through the sale of assets. If total assets are sufficient to pay total liabilities, debt ownership will increase supervision so that fraudulent behavior can be avoided. (Shakouri et al. 2021) found a negative effect of leverage index on fraud. Violation of debt covenants is considered a significant red flag for financial fraud. Investors often use these violations to assess fraud risk, suggesting a direct relationship between debt intensity and the likelihood of fraudulent activity (Paiva 2018). Based on the argument above, the researcher proposes the first hypothesis as follows:

H1: there is a negative influence of debt intensity on fraud.

The Moderating Effect of Financial Distress on the Relationship between Debt Intensity and Fraud

Research that specifically tests the moderating influence of financial distress on the relationship between debt intensity and fraud has never been carried out, according to the researchers' understanding. Nurfadilah et al. (2024) found the mediating effect of financial distress on the relationship between the fraud triangle and financial statement fraud. On the other hand, research results (Saputra et al. 2024) did not find a mediating effect of financial distress on the relationship between capacity, board turnover, financial targets and ineffective supervision with financial statement fraud in manufacturing companies in Indonesia. These contradictory results offer further testing by utilizing the financial distress variable as a moderating variable.

For debt holders, the correct interest payments and the amount of assets used as collateral when the company goes bankrupt are the basis for making decisions about granting loans. However, if the contractual agreement begins to be violated, the debt holders will reduce their supervision because of the high interest rate compliance element. Debt owners hope that the company can repay

the loan when it is due, regardless of the financial distress experienced by the company. Based on the argument above, the researcher proposes hypothesis 2 as follows:

H2: The negative influence of debt intensity on fraud changes to positive when the level of financial distress is high.

Effect of Debt to Capital at Book on Fraud

Creditors usually stipulate a debt agreement or debt covenants, such as limits on debt-to-equity ratios or capital expenditure restrictions. This can limit managers' opportunistic behavior, for example in making risky investments that could be detrimental to the company. The debt management ratio shows the debt repayment capacity of an entity or the funds that can be used to pay debts in the future. If this ratio is high, then the entity's debt is higher than the owner's equity, this shows that the entity has a risk regarding debt payments, both loans and interest payable. A high ratio can also influence bankruptcy concerns. However, if this ratio is low, then the entity has less debt than equity and is still making a profit from its operations. This ratio also shows whether an asset can generate income. These revenues reflect the performance of the entity and management.

Hermawati and Murtanto (2021) used the total debt variable and (Lou and Wang 2011) used the debt ratio variable, the two studies above did not find a negative influence on fraud. Many studies have been conducted that find the positive influence of debt to capital at books on fraud (Ardhiansyah et al. 2019; Annisa et al. 2024; Rahman and Jie 2024). On the other hand, (Skousen et al. 2008) (Rahmawati 2012) found a significant negative effect of variables related to debt on fraud. This result is supported by research results (Paiva 2018) which concluded that at a high level of debt, the quality of financial reports is better. This provides an initial indication that debt ownership is effective in mitigating fraudulent behavior.

At a certain level of debt to capital ratio, debt ownership does not experience a conflict of interest with investors. If investors do not want distortions in their ownership, they will certainly require managers to finance new business lines through debt funding. Debt ownership considers that the prospect of increasing assets and income through debt funding that does not violate debt contractual agreements, can actually increase supervision of debt ownership in order to mitigate the fraudulent behavior of managers. Based on the arguments above, the researcher proposes the following hypothesis:

H3: there is a negative effect of Debt to capital at book on fraud.

The Moderating Effect of Financial Distress on the Relationship between Debt to Capital at Book and Fraud

Debt ownership is interested in the Company's obligation to pay off the interest and principal of the loan and not violate the debt contract. At a certain level of debt, debt holders are not too interested in the Company's financial distress. This happens because if the company goes bankrupt, as long as the

assets are sufficient to cover debts, the interests of creditors will still be maintained.

Research that tests the moderating variable of financial distress on the debt to capital at book relationship has never been carried out to the best of the researcher's understanding. Zhou and Reesor (2015) found a moderating effect of leverage on the relationship between misrepresentation and the cost of debt. The more a company presents false financial reports, the higher the cost of debt, especially at high leverage levels.

At a certain level of debt, if the interest of the debt owner only focuses on the interest and principal of the loan, does the debt owner pay attention to the company's financial distress? This is a fundamental question in the development of researchers' logic to prove based on archival data. If the debt owner pays attention to the level of financial distress, the demand for loan interest will increase. This results in the cost of debt increasingly reducing profits which in the end can lead to financial distress. Autore et al. (2014) concluded that at high levels of leverage, companies that have experienced financial fraud will find it difficult to obtain funding from debt. Managers in companies that commit fraud will experience an increase in the cost of debt and have distress obtaining funding from debt (Lai et al. 2019).

The level of financial distress requires managers to cover loans through the issuance of new loans. However, the debt contract agreement requires the manager to fulfill the terms of the new debt issuance. Autore et al. (2014) concluded that at the level of heavy litigation, company managers try to seek debt funding from within the country. This occurs because managers perceive that foreign debt funding has the knowledge to detect misstatements in financial statements. This can lead managers to commit fraud. Based on the argument above, the researcher proposes hypothesis 4 as follows.

H4: The negative effect of debt to capital at book on fraud changes to positive when financial distress are high.

Methods

This research uses a quantitative approach with an explanatory research design. The data collected is secondary data which focuses on manufacturing companies listed on the stock exchanges of ASEAN countries in the period from 1995 to 2023. ASEAN countries in this study are limited to 6 countries, namely Indonesia, the Philippines, Malaysia, Singapore, Thailand, and Vietnam. The use of secondary data originating from Osiris and Bloomberg provides advantages because it allows analysis of a larger and more in-depth population.

Population and Sample

The population in this research are all companies listed on the ASEAN countries Stock Exchange. Samples will be taken using purposive sampling techniques, with the criteria being that companies have complete financial data during the research period. These criteria include companies that have data regarding debt, equity, profit and loss statements, and most importantly, companies that are experiencing financial distress from above 0 to 45.48. This

value is the value after winsorizing has been carried out. The following is table 1 which presents the population and samples used as research objects.

Table 1. Sample determination and data sources

	Firm-year observations
Total sample from fiscal years 1995-2023	47.796
Less: firm-year observations with missing	
There is no financial distress	(41.320)
Missing	(3.129)
Main sample	3.347

Research Variables

The variable tested is fraud as the dependent variable. Researchers use two independent variables, namely Debt Intensity and Debt to capital at book. Next, the researchers used the moderating variable financial distress. Apart from that, researchers also included control and instrumental variables in the model.

The dependence variable used in this research is fraud. Dechow et al. (2011) states that fraud is a scaled probability (F-score) that can be used as a red flag or signal of the likelihood of earnings misstatement. Tarjo et al. (2022) calculates the F-score using the following formula:

$$f\text{-}score = Accrual\ Quality + Financial\ Performance$$

$$Accrual\ Quality = \frac{WC+NCO+FIN}{Average\ Total\ Asset}$$

$$Financial\ Performance = \Delta Receivable + \Delta Inventories + \Delta Cash\ Sales + \Delta Earnings$$

Debt Intensity (DI) is the proportion of total debt to total assets. Debt to capital at book (DCR) is the proportion of interest-bearing debt in total assets. Interest-bearing debt is a type of debt that charges interest to the borrower, such as bank debt, bonds and interest-bearing short-term debt securities. Apart from the two independent variables above, researchers also used the financial distress variable (fd). Financial distress are conditions where companies experience problems in meeting their financial obligations, such as paying debts, interest or operational costs. The proxy used to measure financial distress is the z-score. The Z-score is calculated by adding up (Working capital/total assets) * 1.2 + retained earnings/total assets) * 1.4+(sales/total assets) + (market value of equity/total liabilities) * 0.6.

Apart from the independent variable, this research also uses a dummy interaction variable between financial distress and debt intensity (dfd_di). Dummy interaction variable between financial distress and debt intensity is the interaction of the company at a high z-score level with debt intensity, 1 in a position of high financial distress and 0 in a position of low financial distress. Next, the researcher used a dummy interaction variable for financial distress with debt

to capital at book (dfd_dcr). Dummy interaction variable between financial distress with debt to capital at book is the interaction of the company at a high z-score level with debt to capital at book, 1 in a position of high financial distress and 0 in a position of low financial distress.

Control variables are as follows 1) market to book value (MBV), company performance (Tobin), cost of employee intensity (CEmpInt), asset intensity (AI), payout ratio (PR), earnings yield (EY), quick ratio (QR), and free cash flow per share (fcfpershare). Furthermore, this research uses the instrumental variables company size (size) and leverage (lev).

Data Analysis Techniques

Data analysis will be carried out starting with using the multiple regression method to test the influence of the debt intensity and Debt to capital at book ratio variables on the fraud variable, as well as to evaluate interaction effects. The statistical software used in this analysis is Stata. When fixed effects are selected but do not meet classical assumptions. For model fit purposes, this research uses variance-covariance error to produce a robust model. Before the analysis is carried out, the following steps will be implemented:

1) Carry out comparative tests between common, fixed and random effects, and choose fixed effects
2) Because after testing the classic assumptions of the normality test, multicollinearity test, heteroscedasticity test and autocorrelation test, a fit model was not obtained.
3) Test using variance-covariance error.

Hypothesis Testing

Initially, the researcher discussed descriptive statistics, followed by correlation analysis and then regression. After the regression analysis is carried out, the hypothesis that has been formulated will be tested. The test results will provide information regarding the significant influence of the variables debt intensity and Debt to capital at book ratio on fraud, as well as the impact of the interaction between financial distress and debt intensity and Debt to capital at book ratio on fraud.

Robustness Test

This research uses independent variables using different measurements without changing the meaning of debt ownership. If in the main regression debt ownership is proxied by debt intensity based on assets, then for robust testing purposes this research uses debt intensity based on sales. The logical argument of this research is that it is in the interest of debt owners to focus on paying attention to the company's sales performance in addition to asset performance as a guarantor of debt repayment.

Apart from changing debt intensity, researchers also changed the explanatory variable debt to capital at book by using the variable financial leverage at book. This variable is the sum of (interest bearing debt + Redeemable preferred shares plus preferred shares) divided by (total equity - redeemable preferred shares - preferred shares). Debt owners will be more confident because

the funds used to pay off interest bearing debt have been set aside for redeemable preferred shares.

Endogeneity Test

Endogeneity is a threat to the assumption that the independent variable (exodent), in this case debt intensity and debt to capital at book, actually causes the dependent variable fraud (endogenous). Endogeneity occurs when the dependent variable is actually the cause of the independent variable. If this happens then the results of the model can be biased.

This research uses endogeneity testing via the 2 stage least squares method. Initially, the researcher carried out the first regression, namely changing the independent variable as a dependent variable which would be explained by all the control variables. Next, the residual values obtained for and together with the residual interaction with the interaction of debt intensity and debt to capital at book are tested as independent variables that explain fraud. If these two variables significantly explain fraud then there is an endogeneity problem.

Instrumental variables are control variables that are able to explain the independent variable debt intensity, whereas they are not able to explain the dependent variable fraud. This research uses 2 instrumental variables, namely size and leverage.

Results and Discussion

This section describes the results and discussion. The research results are divided into a presentation of descriptive statistics, correlation analysis, regression analysis using variance-covariance error, robustness analysis, and finally endogeneity analysis.

Descriptive Statistics

This research examines the observed data using descriptive statistics based on research variables. The following is table 2 descriptive statistics.

Table 2: descriptive statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
fscore	3348	.284	.523	-1.596	1.429
Debttocapitalatbook	3348	.101	.108	0	.73
Yes	3348	.278	.148	.022	1.394
FROM	3348	.282	.209	.104	4.842
Size	3348	11.465	1.365	8.806	16.297
MBV	3348	1.307	1.581	0	7.458
Tobin	3348	.925	1.086	0	4.828
Lev	3348	18.669	31.498	-71.27	386.8
Payoutratio	3348	.381	.503	0	3.41
Earningsyieldclose	3348	7.697	8.257	0	45.569
Quickratio	3348	2.193	1.744	.08	8.21
COEI	3348	.116	.082	.002	.398

RDI	3348	.001	.005	0	.034
Size	3348	11.465	1.365	8.806	16.297
fd	3348	4.873	2.163	3.31	45.48

Table 2 presents descriptive statistics which display the average value (mean), standard deviation (Std. Dev.), minimum value (Min), and maximum value (Max) for the research variables used in the model. The financial distress variable (fscore) shows an average value of 0.284 with a standard deviation of 0.523, and has a range from -1.596 to 1.429. The variable Debt to capital at book ratio (Debttocapitalatbook) has an average value of 0.101 and a standard deviation of 0.108, with a value range from 0 to 0.73. Debt intensity based on sales (DI) and debt intensity based on assets (Dia) each have an average value of 0.282 and 0.278, with a standard deviation of 0.209 and 0.148, and a range of values from 0.104 to 4.842 for DI and 0.022 to 1.394 for Dia. The financial hardship dummy (fd) shows a mean of 4.873, with a standard deviation of 2.163, and has a range from 3.31 to 45.48.

Company size (Size) has an average of 11,465, with a standard deviation of 1,365, and a range between 8,806 to 16,297. The average market value to book value (MBV) variable is 1,307 with a standard deviation of 1,581, and ranges from 0 to 7,458. Company performance as measured by Tobin's Q has an average value of 0.925, a standard deviation of 1.086, and a range from 0 to 4.828.

Leverage (Lev) shows an average of 18.669, with a standard deviation of 31.498, and minimum and maximum values of -71.27 and 386.8 respectively. The payout ratio (PR) and earnings yield (EY) variables have a mean of 0.381 and 7.697, respectively, with a standard deviation of 0.503 and 8.257, and values range from 0 to 3.41 for PR and from 0 to 45.569 for EY.

The quick ratio (QR) variable has an average of 2.193, with a standard deviation of 1.744, and a value range from 0.08 to 8.21. Cost of employee intensity (CoEI) has a mean of 0.116 and a standard deviation of 0.082, with a range from 0.002 to 0.398. The asset intensity (AI) variable was recorded with a very small average value, namely 0.001 with a standard deviation of 0.005, and ranged from 0 to 0.034.

Correlation Analysis

Table 3 is a table that explains correlation analysis. This table displays the relationship between the main variables analyzed in this research. The results show several relevant significant correlations with varying direction and strength between the dependent, independent, moderating and control variables as well as instrumental variables. The following is table 3.

Table 3: Correlation Analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) fs	1.000														
(2) CVD	-0.109*	1.000													
(3) Dia	-0.164*	0.701*	1.000												
(4) DI	0.016	0.025	-0.016	1.000											
(5) Size	0.040	0.103*	0.121*	0.094*	1.000										
(6) MBV	-0.045*	0.005	0.146*	-0.049*	0.287*	1.000									
(7) Tobin	-0.019	-0.095*	0.013	-0.057*	0.281*	0.977*	1.000								
(8) Lev	-0.107*	0.876*	0.709*	-0.022	0.082*	0.026	-0.076*	1.000							
(9) PR	-0.155*	-0.084*	-0.081*	-0.057*	0.078*	0.058*	0.078*	-0.058*	1.000						
(10) EY	-0.019	0.016	0.060*	0.036	0.046*	-0.015	-0.026	-0.003	-0.160*	1.000					
(11) QR	0.090*	-0.434*	-0.573*	0.024	-0.139*	-0.099*	-0.017	-0.337*	0.098*	-0.018	1.000				
(12) CEI	-0.111*	-0.325*	-0.341*	0.196*	-0.237*	-0.037	0.012	-0.308*	0.062*	-0.021	0.227*	1.000			
(13) RDI	0.029	-0.074*	0.023	-0.015	0.119*	0.125*	0.128*	-0.048*	-0.007	-0.046*	-0.020	0.089*	1.000		
(14) Size	0.040	0.103*	0.121*	0.094*	1.000*	0.287*	0.281*	0.082*	0.078*	0.046*	-0.139*	-0.237*	0.119*	1.000	
(15) fd	0.125*	-0.290*	-0.350*	-0.082*	-0.037	-0.031	0.030	-0.186*	0.068*	0.038	0.523*	0.021	-0.011	-0.037	1.000
*** p<0.01, ** p<0.05, * p<0.1															

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The fscore variable has a significant negative correlation with the Debt to capital at book ratio (DCV) of -0.109 and with debt intensity (Dia) of -0.164 (p<0.1). In addition, the financial distress dummy variable (fd) shows a significant negative correlation with the Debt to capital at book ratio (DCV) of -0.290 and with debt intensity adjusted (Dia) of -0.350, which reflects a fairly strong and significant relationship (p< 0.1), indicating that as financial distress increase, relative debt levels decrease.

In addition, the company size variable (Size) has a significant positive correlation with DCV of 0.103 and with Dia of 0.121 (p<0.1), which indicates that larger companies tend to have a higher level of debt ratio. The relationship between the control variables shows several significant correlations among them. The market-to-book value (MBV) variable has a significant positive correlation with Tobin of 0.977 (p<0.1), indicating that companies with higher market value tend to have better company performance. Leverage (Lev) has a high positive correlation with DCV (0.876) and He (0.709) (p<0.1), indicating a consistent relationship between leverage and debt intensity in the capital structure. Meanwhile, earnings yield (EY) has a significant negative correlation with the payout ratio (PR) of -0.160, indicating an inverse relationship between the rate of return and the proportion of profits distributed.

The correlation between variables shows a general relationship and most of them are not very high. These results provide an initial conclusion that there is no strong indication of the potential for multicollinearity in the regression model that will be used.

Regression Analysis Using Variance-Covariance Error (VCE-Robust)

Initially, this research concluded the choice of the fixed effect model. However, because it failed to fulfill classical assumptions, this research used variance-covariance error (VCE-Robust). This was done because researchers were confident that the model would be fit when using the VCE-Robust model. The following is table 4.

Tabel 4: Regresi Variance-Covariance Error (VCE-Robust)

	Model1	Model2
Intercept	0.343***	0.429***
	(6.668)	(4.316)
CVD	-0.036	-0.344
	(-0.183)	(-1.218)
Yes	-0.560***	-0.646***
	(-4.305)	(-4.083)
dfd_dcr	0.411	0.498*
	(1.366)	(1.693)
dfd_dia	0.069	-0.036
	(0.502)	(-0.266)
fd	0.015**	0.015*
	(2.158)	(1.847)
Size		0.018**

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		(2.572)
MBV		-0.052
		(-1.223)
Tobin		0.061
		(1.007)
Lev		0.000
		(0.262)
PR		-0.183***
		(-9.416)
EY		-0.003**
		(-2.114)
QR		-0.004
		(-0.507)
COEI		-1.062***
		(-9.132)
RDI		4.418**
		(2.324)
Adj. R2	0.04	0.09
N	3348	3348
In the state	19.299	24.829

This regression analysis evaluates the influence of debt intensity of assets (Dia), debt to capital ratio (DCR), and the interaction of the financial distress dummy (fd) on fraud (fscore). This model also involves control variables such as market to book value (MBV), company performance (Tobin), cost of employee intensity (CEmpInt), asset intensity (AI), payout ratio (PR), earnings yield (EY), quick ratio (QR), free cash flow per share (fcfpershare), as well as instrumental variables in the form of leverage (Lev) and company size (Size).

In Model 1, the variable debt intensity of assets (Dia) shows a significant negative effect on fraud (fscore) with a coefficient of -0.560 at the 1% significance level (t = -4.305). The interaction of the financial distress dummy with the debt to capital ratio (dfd_dcr) is not significant in Model 1, while the moderating variable financial distress (fd) shows a significant positive effect with a coefficient of 0.015 at the 5% significance level (t = 2.158). The adjusted R-squared in Model 1 is 0.04, indicating that the independent variable is able to explain 4% of the variance in fraud (fscore).

Model 2 adds control variables to increase the precision of the estimates. The results show that debt intensity of assets (Dia) still has a significant negative influence on fraud (fscore) with a coefficient of -0.646 at the 1% significance level (t = -4.083). The interaction variable dfd_dcr in Model 2 shows a significant positive effect at the 10% level with a coefficient of 0.498 (t = 1.693), indicating that the impact of debt to capital ratio on fraud (fscore) is influenced by the company's financial distress. The moderating variable financial distress (fd) also shows a significant positive influence on fraud with a coefficient of 0.015 at a significance level of 10% (t = 1.847).

Among the control variables, payout ratio (PR) and cost of employee intensity (CoEI) show a significant negative influence on fraud, respectively with

coefficients of -0.183 (t = -9.416) and -1.062 (t = -9.132) at the significance level 1%. Earnings yield (EY) shows a significant negative influence at the 5% level with a coefficient of -0.003 (t = -2.114), while asset intensity (RDI) has a significant positive influence with a coefficient of 4.418 at the 5% significance level (t = 2.324).

Adjusted R-squared for Model 2 is 0.09, indicating that the addition of control variables increases the model's ability to explain fraud variance (fscore) by up to 9%. The F-statistics in both models are significant, with F-stat = 19.299 in Model 1 and F-stat = 24.829 in Model 2, indicating that the overall regression model is significant in explaining the influence of independent variables on fraud.

Robustness Analysis

This research uses a debt intensity variable based on the sales divider. Apart from looking at asset development as a guarantee for loans, debt holders also focus on the Company's sales revenue as a divider of total debt. In general, the lower this ratio, the more debt owners believe that the company's performance is improving. The following is table 5 of the robustnest test using the debt intensity variable based on sales.

Table 5: Robustnest Test using Debt Intensity with Sales Denominator

	Model1	Model2
Intercept	0.203***	0.393***
	(4.902)	(5.276)
DCB	-0.430***	-0.071
	(-2.880)	(-0.282)
DI	-0.022	-0.187**
	(-0.221)	(-2.524)
dfd_DCB	0.285	0.113
	(1.361)	(0.597)
dfd_DI	0.213**	0.167**
	(2.269)	(2.572)
fd	0.018***	0.011**
	(2.764)	(2.479)
Size		-0.011*
		(-1.829)
MBV		-0.126***
		(-3.760)
Tobin		0.202***
		(4.126)
Lev		-0.001
		(-0.656)
PR		-0.103***
		(-6.692)
EY		0.006***
		(4.014)

QR		0.006
		(1.279)
COEI		-0.313***
		(-3.234)
RDI		0.490
		(0.292)
Adj. R2	0.03	0.50
N	3348	3348
In the state	18.447	.

The results of the regression analysis in Table 5 below show the influence of debt intensity (DI), Debt to capital at book ratio (DCR), the interaction of the financial distress dummy with debt intensity (dfd_di), as well as the moderating variable of financial distress (fd) on fraud (Fscore). Model 1 only includes main and moderating variables, while Model 2 adds control variables such as market to book value (MBV), company performance (Tobin), cost of employee intensity (CoEI), and company size (Size).

In Model 1, the Debt to capital at book ratio (DCV) variable has a negative coefficient and is significant at the 1% level (β = -0.430; t = -2.880), indicating that an increase in the debt to capital at book value ratio tends to reduce fraud. The interaction dummy variable between the financial distress dummy and debt intensity (dfd_di) shows a positive and significant influence at the 5% level (β = 0.213; t = 2.269), indicating that companies with high debt intensity and experiencing financial distress tend to have higher fraud . The financial distress variable (fd) shows a positive and significant coefficient (β = 0.018; t = 2.764), indicating that financial distress directly increases corporate fraud.

In Model 2, which includes control variables, the debt intensity (DI) coefficient becomes significant at the 5% level (β = -0.187; t = -2.524), indicating that the effect of debt intensity on fraud becomes stronger when control variables are taken into account. The negative effect of Debt to capital at book ratio (DCV) on fraud in Model 1 becomes insignificant in Model 2. The interaction dummy (dfd_di) remains significant with a positive coefficient (β = 0.167; t = 2.572), and the financial distress variable (fd) shows a significant positive coefficient at the 5% level (β = 0.011; t = 2.479).

Among the control variables, MBV and payout ratio (PR) show significant negative coefficients, each at the 1% level (MBV: β = -0.126; t = -3.760, PR: β = -0.103; t = -6.692), indicates that increasing market value to book value and payout ratio can reduce fraud. In contrast, Tobin's Q and earnings yield (EY) variables have a significant positive influence on fraud at the 1% level (Tobin: β = 0.202; t = 4.126, EY: β = 0.006; t = 4.014).

The adjusted R-squared for Model 1 is 0.03, while Model 2 increases to 0.50 after adding control variables. The addition of control variables shows that the expanded model is better at explaining fraud variations.

Endogeneity Test

This test is carried out to detect whether there is endogeneity in certain variables in the model. In general, if the dependent variable and contingent

variables are on a ratio scale, the Two-Stage Least Squares (2SLS) method is often used if there is a suspicion of endogeneity. In the first stage, regress the endogenous variables against the instrumental variables. In the second stage, use the predicted values from the first stage as a substitute for the endogenous variables in the main regression. The following is table 6 endogeneity tests.

Table 6: Endogeneity Test

	FIRST	SECOND1
Intercept	0.017	0.302***
	(0.617)	(3.335)
dfd_di	0.547***	
	(6.168)	
fd	-0.021***	
	(-2.685)	
Size	0.021***	0.009
	(9.337)	(1.095)
MBV	0.057***	
	(4.765)	
Tobin	-0.100***	-0.008
	(-5.529)	(-1.015)
Lev	0.000**	-0.002***
	(2.289)	(-4.452)
PR	-0.020***	-0.168***
	(-3.412)	(-8.550)
EY	-0.000	-0.003***
	(-0.104)	(-2.663)
QR	0.005	0.030***
	(0.628)	(5.173)
COEI	0.429***	-1.239***
	(10.030)	(-9.212)
RDI		3.626*
		(1.864)
PREX1		0.338**
		(2.524)
c.PREDX1#c.dfd_di		0.013
		(0.242)
Adj. R2	0.32	0.07
N	3348	3348
In the state	34.904	24.605

This research examines the effect of debt intensity (DI), debt to capital ratio (DCR), and the interaction of the financial distress dummy with debt intensity (dfd_di) on sticky costs (AbsSC) using regression *Two Stage Instrumental Least Squares* (2SLS) to overcome possible endogeneity problems.

In the first stage (*First stage*), the dummy interaction variable between

financial distress and debt intensity (dfd_di) shows a significant positive effect on the instrumental variable (PREDX1) with a coefficient of 0.547 at the 1% significance level (t = 6.168). In addition, several control variables show a significant relationship to PREDX1, such as company size (Size) with a coefficient of 0.021 at the 1% level (t = 9.337) and market-to-book value (MBV) which is also significant at the 1% level with a coefficient of 0.057 (t = 4.765). Leverage (Lev) has a positive effect at the 5% level (t = 2.289), while Tobin's Q (Tobin) and payout ratio (PR) have a significant negative effect on PREDX1 at the 1% level. These results demonstrate the validity of the instrument as well as the significant influence of most of the control variables on the instrument variables, strengthening the model for the next stage.

In the second stage (*Second stage*), the instrumented variable (PREDX1) has a significant positive influence on sticky costs (AbsSC) with a coefficient of 0.338 at the 5% significance level (t = 2.524), indicating that debt intensity, when influenced by the financial distress dummy, is significantly related to sticky costs. Control variables such as payout ratio (PR) and earnings yield (EY) show a significant negative influence on AbsSC, each at the 1% level. In contrast, the quick ratio (QR) shows a significant positive influence at the 1% level (coefficient = 0.030; t = 5.173), while the cost of employee intensity (CoEI) has a significant negative influence with a coefficient of -1.239 (t = -9.212).

Adjusted R-squared for the first model is 0.32, while for the second model it is 0.07. The significant F-statistic values at both stages (First stage: F = 34.904; Second stage: F = 24.605) indicate that this model is suitable and that the selected instruments are valid in explaining sticky costs.

Discussion

The results of this research conclude that debt intensity is a variable that mitigates fraudulent behavior. These results successfully support previous research which found a negative influence of debt intensity on fraud (Skousen et al. 2008 and Rachmawati et al. 2023). The results of this research are robust in measuring debt intensity using asset and sales denominator.

The research results failed to support research conducted by (Beasley, 1996, Ashbaugh-Skaife et al. 2008, Dechow and Skinner 2000, Mensah and Nkuah 2014, Zhang et al. 2016, and Liu and Zhang 2018). This difference in results is likely based on measuring debt holdings. In general, research that finds negative effects tests the debt to capital ratio without taking into account the influence of the company's assets and sales revenue. In principle, debt owners are not interested in this ratio but are more focused on debt collateral, namely assets and company sales revenue which will ultimately increase assets. As with debt intensity, the results of this study conclude that debt to capital at book is a variable that mitigates fraud behavior, although it is not significant. The finding of this negative influence is because debt holders base their lending more on asset collateral and the company's sales income.

In theory, this research supports the Trade-off theory compared to the Packing order theory. This is because the tax benefits have succeeded in positioning the Company in an optimal capital structure. At a certain level of debt, the company needs financing that comes from debt. This is done to increase supervision on the part of the debt owner. However, if the debt level has

increased, the supervisory role of the debt owner will, on the contrary, result in the manager's fraudulent behavior increasing.

Conclusions And Suggestions

This research succeeded in concluding that the basis for the debt owner's decision to fund the company is the level of assets and sales revenue. The higher the assets and sales income, the lower the debt intensity ratio. The higher the decrease in the debt intensity ratio, the lower the fraud will be. On the other hand, debt owners pay less attention to the debt to capital ratio factor because of the optimal capital structure factor.

Furthermore, this research concludes that financial distress are not a factor of concern to debt owners. As long as the interests of debt owners are met, increased funding through debt will continue to be provided. This is proven by the findings that at high levels of financial distress the relationship between debt intensity and fraud is positive.

This research has implications for business decision making. If it is assumed that the debt owner is rational, then the decision to grant a loan should at least take into account the company's financial distress. Obtaining high interest rates in companies experiencing financial distress does not improve the company, on the contrary, it will lead the company to fraud.

Research suggests that the government should pay more attention to lowering corporate bond ratings as an indication of financial distress. This is done because of the limitations of investment decision makers to investigate the Company's financial condition. Capital owners are expected not to trust the motives of debt holders who fund the Company through providing loans. When financial distress occurs, they generally only pay attention to assets and sales income as a guarantee that lending will be safe.

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