Survival Analysis: The Effect of Key Factors on Financial Distress and Longevity of Property Sector Companies Listed on the Indonesia Stock Exchange, with Inflation as a Moderating Variable (2014–2023)

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A B S T R A C T

This study aims to examine the factors influencing financial distress in property sector companies listed on the Indonesia Stock Exchange (IDX) from 2014 to 2023. This quantitative study focuses on four key financial ratios: Return on Equity (ROE), Current Ratio (CR), Debt to Assets Ratio (DTA), and Total Assets Turnover (TATO), with inflation as a moderating variable. A purposive sampling method is used to select 36 companies for the study. Survival analysis is conducted using STATA software to analyze the data. The results of this study show that ROE has a significant negative effect on financial distress, indicating that higher ROE reduces the likelihood of financial distress. In contrast, CR has a significant positive effect on financial distress, suggesting that a higher current ratio is associated with increased financial distress. DTA and TATO have no significant effect on financial distress. Additionally, inflation moderates the effect of ROE on financial distress. Poor ROE management can lead to financial distress. However, inflation has no significant affect on CR, DTA, or TATO. These findings emphasize the importance of efficient financial management, particularly regarding ROE, and the role of inflation in influencing financial distress.

A B S T R A K

Penelitian ini bertujuan untuk menguji faktor-faktor yang mempengaruhi financial distress pada perusahaan sektor properti yang terdaftar di Bursa Efek Indonesia (BEI) periode 2014-2023. Penelitian ini menggunakan pendekatan kuantitatif dan berfokus pada empat rasio keuangan utama: Return on Equity (ROE), Current Ratio (CR), Debt to Assets Ratio (DTA), dan Total Assets Turnover (TATO), dengan inflasi sebagai variabel moderasi. Metode purposive sampling digunakan untuk memilih 36 perusahaan untuk penelitian ini. Analisis survival dilakukan dengan menggunakan perangkat lunak STATA untuk menganalisis data. Hasil penelitian mengungkapkan bahwa ROE memiliki pengaruh negatif signifikan terhadap financial distress, yang mengindikasikan bahwa ROE yang lebih tinggi mengurangi kemungkinan terjadinya financial distress. Sebaliknya, CR memiliki pengaruh positif yang signifikan.

1. INTRODUCTION

To date, the global economy has not fully recovered from the COVID-19 pandemic. In 2021, the number of companies in Indonesia filing for bankruptcy increased significantly, reaching 726. This number began to decline in 2023, reaching 563 companies. However, this high number of bankruptcy filings is not in line with increasing economic growth in Indonesia.

Statistics Indonesia (BPS) reported that economic growth in the third quarter of 2023 was 4.94%. Indonesia's economy is considered healthy if growth exceeds 5%. This indicates that, although the economy remains relatively weak, its condition is still

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under control, approaching that threshold. Indonesia's economic growth from the fourth quarter of 2021 to the second quarter of 2023 was reported as healthy, as it was above 5%. However, in reality, many companies filed for bankruptcy during this period. According to data from the Indonesia Stock Exchange, three companies in the property and real estate sector that filed for bankruptcy are COWL, FORZ, and MAMI. These companies' bankruptcies were caused by protracted debt restructuring processes and low creditor recovery rates. Andi Y. Kadir, Senior Partner and Head of the Dispute Resolution, Restructuring & Insolvency Practice Group, stated that in the debt restructuring process, creditor recovery rates are a primary focus. A company with a high recovery rate is considered healthy, while a company with a low recovery rate is likely experiencing financial distress. Persistent financial distress can lead to a company becoming a zombie, indicating that it is unable to grow or recover despite remaining operational. Therefore, effective capital restructuring is crucial to prevent bankruptcy (Ambarwati & Haryono, 2021) and avoid falling into this category.

A company's inability to repay its debts will result in poor financial condition, and it can be said that the company is experiencing financial distress. Financial distress is characterized by cost overruns due to workforce retention, project delays due to poor management, labor strikes, and supply chain disruptions (Spector, 2019) as well as reduced available financial resources (Crespí-Cladera et al., 2021).

Financial distress can be detected using several approaches, such as the Altman Z Score model (Altman, 1968), the G Score model (Grover, 2001), the S Score model (Springate, 1978), the O – Score model (Ohlson, 1980), the Probit model (Zmijewski, 1984), the Hazard model (Shumway, 2001), and the D Score model (Blum, 1974). Other researchers use proxy approaches to detect financial distress. The proxies used are negative earnings, negative equity (Luu Thu, 2023), IRC < 1, negative markets value of growth (Sehgal et al., 2021) and three consecutive years of negative operating cash flow (Wruck, 1990).

In Indonesia, there is no single best formula for accurately detecting financial distress. Indications of financial distress in Indonesia can be identified using two approaches: negative equity and negative profit (Luu Thu, 2023). Negative equity occurs due to high corporate debt, forcing the company to use paid-in capital to cover its debt (Waqas & Md-Rus, 2018). Continuous negative profits are also a factor that causes companies to experience financial distress.

Bankruptcy filings by several companies raise questions regarding the company's life cycle, such as how long a company can survive in a financially distressed situation and how long a company can survive in a financially distressed situation and ultimately experience delisting (Zhou et al., 2022). The competing risk model is an approach to determine how long it will take for a company to become healthy again and to determine what factors are causing the company to experience financial distress. Survival cycles vary from study to study. Zhou et al.'s (2022) study found that out of 465 observations (firms), 210 survived from 1998 to 2020. Research conducted by Kristanti et al. (2016) examined how long companies can survive financial distress in Indonesia. The results showed that companies survived financial hardship after 5 years for the banking sector, 12.5 years for the AT (agriculture, trade, services, and investment) industry sector, 12 years for the IMP (infrastructure, mining, and property) sector, and 10.5 years for the BCM (basic industry, chemicals, and others) sector.

The ability to survive financial distress can be used to determine how long a company can survive financial distress and to analyze the factors that influence it. Financial distress occurs when there is mismanagement (Waqas & Md-Rus, 2018). Financial performance can be a reflection of whether a company is considered healthy or experiencing financial difficulties. Companies that are not experiencing financial difficulties are those that are able to demonstrate good financial performance (Kristanti et al., 2016). Financial performance can be measured using financial ratios. Financial ratios can provide an understanding of how companies manage their assets, generate profits, pay debts, and use resources efficiently (Subramanyam, 2017). The ratios commonly analyzed in the research are profitability ratio, liquidity ratio, solvency ratio, and activity ratio.

There are inconsistent research results regarding the effect of financial ratios on financial distress. The results of research conducted by Abdioğlu, 2019 and Chen, 2018) show that profitability ratio, as measured using return on equity, has a positive and significant influence on financial distress. However, research conducted by Wu et al. (2021) show that return on equity has a negative and significant effect on financial distress. Meanwhile, research conducted by Ibrahim & Azzam (2023) show that return on equity has no effect on financial distress.

Liquidity Ratio, as measured using the current ratio, has an inconsistent effect on financial distress. The results of research conducted by Ceylan (2021); Chen (2018); Çolak (2021); Gregova et al. (2020); Luu Thu (2023); Waqas & Md-Rus (2018) and Zhu et al. (2022) show that current ratio has a positive and significant effect on financial distress. However, the results of research conducted by Hassan et al. (2023)

show that current ratio has a negative and significant effect on financial distress. Meanwhile, the results of research conducted by Isayas (2021) and Waqas & Md-Rus (2018) show that current ratio has no significant effect on financial distress.

Solvency ratio, as measured using debt to assets ratio, has inconsistent effect on financial distress. The results of research conducted by Ceylan (2021); Fatmayuni et al. (2024); Gregova et al. (2020); Hassan et al. (2023); Luu Thu, (2023); and Waqas & Md-Rus (2018) show that debt to assets ratio has a positive and significant influence on financial distress. However, the results of research conducted by Abdioğlu (2019) and Gregova et al. (2020) show that debt to assets ratio has a negative and significant influence on financial distress. Meanwhile, the results of research conducted by Luu Thu (2023) show that debt to assets ratio has no significant effect on financial distress.

Activity ratio, as measured using total asset turnover ratio (TATO), has an inconsistent influence on a financial distress. The results of research conducted by Ceylan (2021) and Luu Thu (2023) using OLS analysis, Fama - Macbeth analysis, and Neweywest analysis show that total asset turnover ratio has a positive and significant effect on financial distress. However, the results of research conducted by Fatmayuni et al. (2024); Gregova et al. (2020); Wu et al. (2021) and Zhu et al. (2022) show that total asset turnover ratio has a negative and significant effect on financial distress. Meanwhile, the results of research conducted by Amoa-Gyarteng (2021) show that total asset turnover ratio has no effect on financial distress. Because the research findings are still inconsistent, it is necessary to conduct further research.

The independent variables used in this study are return on equity (ROE), current ratio (CR), debt to assets ratio (DTA), and total asset turnover (TATO), while the dependent variable used is financial distress. In addition, this study also uses inflation as a moderating variable. According to Baron & Kenny (1986), moderating variable can be used if there is a weak and inconsistent results in the relationship between the independent variable and the dependent variable under study.

There are inconsistent results in previous research regarding the effect of inflation on financial distress. The results of research conducted by Msomi (2022); and Opoku et al. (2024) show that high inflation increases the volatility of business profits because it directly affects pricing policies, which in turn increases the probability of losses for businesses and worsens financial distress. On the other hand, the results of research conducted by Chandio & Anwar (2020) show that in conditions of high inflation, companies are not always at risk of experiencing financial distress because fluctuating inflation rates tend to significantly reduce financial distress during the research period

2. THEORETICAL FRAMEWORK AND HYPOTHESES

Agency Theory

The agency theory explains the relationship between shareholders and managers. In this theory, shareholders act as principals, while managers function as agents (Laskin, 2021). Agency problems arise when managers hold only a small portion of company shares. This small ownership may reduce their motivation and increase the likelihood of exploiting profits, as shareholders bear most of the costs (Milton et al., 1994).

Agency theory highlights conflicts of interest and the need for monitoring to ensure agents act in principals' interests. Agency costs are divided into three types: 1) monitoring costs by principals, 2) bonding costs for agreements with agents, and 3) residual costs from reduced principal welfare due to differing decisions between principals and agents (Jensen & Meckling, 1976).

Financial Distress

Survival analysis for financial distress in Indonesia indicates that distress occurs when a company cannot meet its debt obligations, potentially leading to bankruptcy. Financial distress indicates a critical situation where a company faces losses and cash deficits, potentially to bankruptcy if it cannot recover (Altman & Hotchkiss, 2005).

There are many models to measure financial distress. Altman Z Score is one of the models to determine financial distress by Altman (1968). Over time, various models have been developed, including G Score model (Grover, 2001), S Score model (Springate, 1978), O Score model (Ohlson, 1980), Probit model (Zmijewski, 1984), Hazard model (Shumway, 2001), and D Score model (Blum, 1974). In addition, some studies use proxies to determine financial distress, such as: 1) companies with negative equity and negative net income (Luu Thu, 2023), 2) IRC < 1 and decline in market value (Sehgal et al., 2021), 3) negative net income for several years (Elloumi & Gueyié, 2001).

Financial Ratio

Financial statements are documents that contain numbers that describe assets (Brigham & Houston, 2019). The financial ratios included in this study are profitability ratio (as measured using return on equity ratio), liquidity ratio (as measured using quick ratio), solvency ratio (as measured using

debt to equity ratio) and activity ratio (as measured using total assets turnover ratio).

Profitability ratio assesses a company's ability to generate profits relative to net income, helps management identify operational strengths and weaknesses, and improves profitability through comparison and monitoring (Brigham & Houston, 2019). Return on equity measures a company's profitability by comparing net income to shareholders' equity, indicating how effectively the company uses its own capital to generate profits (Brigham & Houston, 2019). Liquidity ratio measures a company's ability to meet short-term obligations, indicating how well it can handle its short-term liabilities (Brigham & Houston, 2019). Quick ratio measures a company's ability to meet short-term liabilities using assets, excluding inventory (Brigham & Houston, 2019). Solvency ratio assesses how well a company is financed by long-term debt and its ability to meet all obligations (David, 2016). Total debt to equity ratio compares total liabilities with shareholders' equity to assess how much a company is financed by debt versus equity (David, 2016). Activity ratio measures how effectively a company utilizes its assets (David, 2016). The total debt to equity ratio is a solvency ratio that compares total liabilities to shareholders' equity, assessing how much of a company is financed by debt versus equity (David, 2016).

Inflation

According to Mishkin (2008), inflation is a condition characterized by continuous and rapid price increases over time. Inflation is an important indicator whose stability must be maintained, as fluctuations in inflation can significantly impact a company's stability.

Conceptual Framework

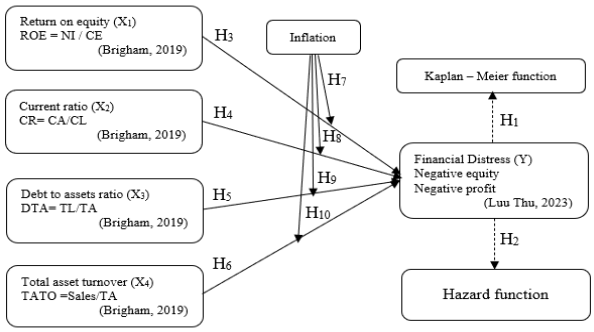

Figure 1 Conceptual Framework

Note: CA: Current Assets; CE: Common Equity; CL: Current Liability; CR: Current Ratio; DTA: Debt to assets ratio; NI: Net Income; ROE: Return on Equity; TA = Total Assets; TATO: Total Assets Turnover ratio; TL = Total Liability.

This study also seeks to determine how long it takes for healthy companies to avoid the risk of financial distress, and how long it takes for companies experiencing financial distress to emerge from it (Zhou et al., 2022). Therefore, the proposed hypotheses are:

H1: The probability of a healthy company being able to survive the risk of financial distress is more than 5 years of research.

H2: The probability of companies with financial distress status being able to emerge from it is less than 5 years of research.

Return on equity (ROE) is a ratio that shows the comparison between net income and common equity. The higher the return on equity, the greater the company's ability to generate profits, thereby reducing financial distress. This theory is supported by research conducted by (Wu et al., 2021), thus the proposed hypothesis is:

H3: ROE has a negative effect on the company's financial distress.

The current ratio (CR) is a financial ratio that measures a company's ability to pay short-term liabilities. The higher the current assets, the greater the company's ability to repay maturing short-term debt, thereby reducing the risk of financial distress. This theory is supported by research conducted by Hassan et al., 2023), thus the proposed hypothesis is:

H4: CR has a positive effect on the company's financial distress.

The debt-to-asset (DTA) ratio is a ratio that shows the comparison of all liabilities to all assets owned by a company. The higher the debt-to-asset ratio, the greater the proportion of debt in the company's capital structure, thus increasing the risk of default because the company's operational financing relies on debt, resulting in a higher risk of the company experiencing financial difficulties. This theory is supported by research conducted by Ceylan (2021); Fatmayuni et al. (2024); Gregova et al. (2020); Hassan et al. (2023); Luu Thu (2023) and Waqas & Md-Rus (2018), thus the proposed hypothesis is:

H5: DTA has a positive effect on the company's financial distress.

Total asset turnover (TATO) is a ratio that indicates a company's ability to manage all its assets. The more effective a company's total asset management, the higher its total asset turnover, indicating a lower risk of financial distress. The results of research conducted by Fatmayuni et al., 2024; Gregova et al., 2020; Wu et al., 2021; Zhu et al., 2022) show that total asset turnover negatively impacts the probability of

a company experiencing financial distress. Therefore, the proposed hypothesis is:

H6: TATO has a negative effect on the company's financial distress.

There are inconsistent research findings regarding the relationship between inflation and financial distress, which can be used as a reference for determining the moderating role of inflation on the financial distress ratio. The results of research conducted by Msomi, 2022 and Opoku et al., 2024) show that high inflation increases the volatility of business profits because it directly affects pricing policies, which in turn increases the likelihood of losses for businesses and exacerbates financial distress. On the other hand, Chandio & Anwar (2020) state that In conditions of high inflation, companies are not always at risk of experiencing financial difficulties because fluctuating inflation rates can cause financial difficulties to tend to decrease significantly during the study period. The results of research conducted by Yirgu (2017) show that inflation does not affect financial distress. So, the proposed hypothesis is:

H7: ROE has a negative effect on the company's financial distress moderated by inflation.

H8: CR has a positive effect on the company's financial distress moderated by inflation.

H9: DTA has a positive effect on the company's financial distress moderated by inflation.

H10: TATO has a negative effect on the company's financial distress moderated by inflation.

3. RESEARCH METHOD

This descriptive research uses a quantitative approach and involves statistical data to test the proposed hypotheses. Descriptive research with a quantitative approach aims to provide explanations of current events in the form of meaningful numbers (Sekaran, 2021).

The population of this study is property and real estate sector companies listed on the Indonesia Stock Exchange from 2014 to 2023. The sampling technique used in this study is purposive sampling method. The criteria that must be met in sampling are as follows:

1. The companies used as research objects are property and real estate sector companies listed on the Indonesia Stock Exchange from 2014 to 2023.
2. Financial sector companies are not included in this study due to differences in the provisions for presenting financial reports between the financial sector and the non-financial sector as regulated in Bank Indonesia Regulations.
3. This study does not include companies that canceled their IPOs.
4. This study does not include companies that did not publish annual reports either on their website or on the Indonesia Stock Exchange from 2014 to 2023.

There are 36 companies or 360 observations selected based on the results of sampling using the purposive sampling method.

The independent variables used in this study are return on equity (ROE), current ratio (CR), debt to assets ratio (DTA), and total assets turnover ratio (TATO). The dependent variable used in this study is financial distress. Inflation serves as the moderating variable.

Table 1 Operational variable

Variable	Description
Financial distress	1 = financial distress 0 = non-financial distress The proxies used are negative earnings and negative equity (Luu Thu, 2023)
Survive time	the length of time a company can survive
ROE	net income divided by equity
CR	current assets divided by current liabilities
DTA	total debt divided by total assets
TATO	sales divided by total assets
Inflation	inflation in Indonesia

Note: CA: Current Assets; CR: Current Ratio; DTA: Debt to assets ratio; TATO: Total Assets Turnover ratio.

The statistical data processing technique used in this study is survival analysis using the STATA program. Survival analysis is a statistical method for measuring or analyzing events over time (Kleinbaum & Klein, 2020). In this study, the time of occurrence used is financial distress. Its components included the Kaplan-Meier survival function, the hazard function, and Cox regression using the Breslow method without and with moderators. The details are as follows:

1. The Kaplan-Maier survival function is part of survival analysis. This function is used to determine how long a healthy company in its initial stages (IPO) can survive a situation that could lead to financial distress in later stages. The survival function is defined as the probability that the company will survive longer.
2. The hazard function is used to determine how long it will take a company experiencing financial difficulties to recover from the situation. The hazard function is defined as the probability that the company will survive for more than t time units.
3. Cox regression with the Breslow method without a moderator. In this step, Cox regression with the Breslow method is used to determine the

relationship between the explanatory variables and the dependent variable. Because the Y variable is a binary dummy variable or non-metric variable, companies categorized as experiencing financial difficulties are given a value of 0 and companies categorized as healthy are given a value of 1. Companies experiencing financial difficulties use the Cox regression model with the Breslow method with the following regression model:

$$FD_{(1|0)} = h_0(t) \cdot \exp\left(\beta_1 ROE + \beta_2 CR + \beta_3 DTA + \beta_4 TATO\right)$$

4. Cox regression is used to analyze the relationship between independent and dependent variables with inflation as a mediator. In this step, the study analyzes the relationship between variables, with inflation as a mediator, to understand whether inflation modifies or explains the relationship between the independent and dependent variables. By including inflation as a mediator variable, researchers can explore the underlying mechanisms of the independent variable's influence on the dependent variable and measure the extent to which inflation strengthens or diminishes the influence of the independent variable on the dependent variable. The regression model is as follows:

$$FD_{(1|0)} = h_0(t) \cdot \exp\left(\beta_1 ROE + \beta_2 CR + \beta_3 DTA + \beta_4 TATO + \beta_5 Inflasi + \beta_6 (ROExInflasi) + \beta_7 (CRxInflasi) + \beta_8 (DTAxInflasi) + \beta_9 (TATOxInflasi)\right)$$

β In this study, the **hazard ratio** is used, and its interpretation is as follows:

- hazard ratio > 1 means that an increase in the independent variable is associated with an increased risk of the event occurring (financial distress).
- hazard ratio < 1 means that an increase in the independent variable is associated with a decreased risk of the event occurring (financial distress).
- Hazard ratio = 1 means that there is no change in risk associated with a change in the independent variable

4. DATA ANALYSIS AND DISCUSSION

Descriptive Statistical Analysis

Descriptive statistical analysis is used to determine the statistical description and explore the data. The descriptive analysis model includes the total sample analyzed, mean, standard deviation, minimum value and maximum value of the data that has been collected. The results of the descriptive statistical analysis are as follows:

Table 2. Descriptive Statistics

Variabel	Obs.	Mean	Std. Dev	Min	Max
FD	360	.3611	.4809	0	1
ROE	360	.0479	.1123	-.5762	.4801
CR	360	3.7043	6.1985	. 2077	65.5924
DTA	360	.3756	. 1722	. 0125	.7776
TATO	360	.1732	.1012	. 0042	.7237
Inflation	360	.0358	.0188	.0168	.0836

Source: Processed data STATA (2024)

Based on Table 2, the total data observed are 36 companies or 360 observations with a research period of 10 years. Descriptive statistics in this study are seen from the mean value compared to the standard deviation value. The mean value < the standard deviation value indicates that the data is heterogeneous. Conversely, the mean value > the standard deviation value indicates that the data tends to be homogeneous. In this study, the data on financial distress (Y), ROE, and CR are heterogeneous, while the data on DTA, TATO, and Inflation are homogeneous.

Survival Analysis – Kaplan Meier Survival Function

Kaplan - Meier survival function is used to determine how long it takes for the company to get out of financial distress.

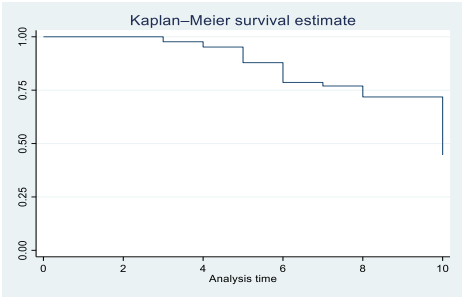

Figure 2 Kaplan – Meier Survival estimate

In the Kaplan-Meier survival estimate, from years 0 to 3, the probability of a company experiencing financial distress is very high, reaching 1, or 100%. In subsequent years, the probability of a company experiencing financial distress gradually decreases. At the end of the study, year 10, the probability of a company experiencing financial distress is 0.5% (50%) lower than when the company went public, when the probability of experiencing financial distress was 1, or 100%.

Survival Analysis – Hazard Function

The hazard function aims to analyze failure when experiencing an event (financial distress). This study uses smoothed hazard estimates to determine the probability that a company will not experience

financial distress.

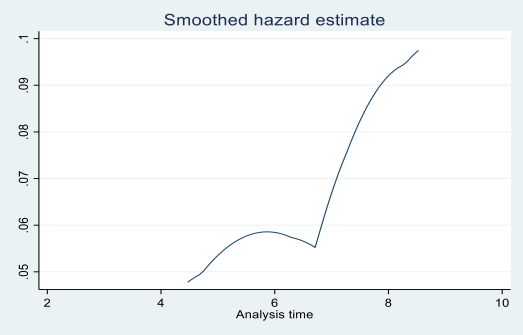

Figure 3 Smoothed hazard estimate

The results of using the smoothed hazard estimate indicate that the company's chances of not experiencing financial difficulties occur after the 7th year.

Survival Analysis - Cox Regression Breslow Method without Moderator

Proportional Cox Hazard is used to investigate the influence of various variables on the timing of a particular event. The results obtained are as follows:

Table 3 *Proportional Cox Regression without Mediator*

_t	Hazard	P>|z|	[95% interval]	
ROE	.0922	.001	.0239	.3551
CR	1.0205	.009	1.0051	1.0362
DTA	1.0529	.927	.36914	3.0036
TATO	2.8595	.229	.64093	12.7578

Source: Processed data STATA (2024)

The Proportional Cox Hazard regression equation is as follows:

$$FD_{(1|0)} = h_i(t) = \alpha - 0.092ROE + 1.020CR + 1{,}052DAR + 2{,}859TATO$$

Based on the analysis using Cox regression with the Breslow method and hazard ratios, several conclusions can be drawn. First, ROE has a significant negative effect on financial distress, with a hazard ratio of 0.092 and a P>|z| value of 0.001, indicating that a 1-unit increase in ROE reduces the risk of financial distress to 0.092 times its original level. Therefore, H1 is accepted.

Second, CR has a significant positive effect on financial distress, with a coefficient value of 0.0203293 and a P>|z| value of 0.045, suggesting that a 1-unit increase in CR increases the risk of financial distress to 1.02 times its original level. Thus, H2 is accepted.

However, DAR and TATO have no significant effects on financial distress, as indicated by their high P>|z| values of 0.927 and 0.229, respectively, leading to the rejection of H3 and H4.

In addition, the analysis also shows that healthy companies have a high probability of surviving financial distress for more than 10 years, and companies in financial distress have a significant chance of recovering after seven years, which means H5 and H6 are accepted.

Survival Analysis - Cox Regression Breslow Method with Moderator

In this study, inflation is used as a moderating variable to strengthen or weaken the effect of the independent variable on the dependent variable.

The Effect of Return on Equity on Financial Distress Moderated by Inflation

Table 4 *Proportional Cox Regression with Mediator*

_t	Hazard	Z	P>|z|
ROE	.3131	-.67	.503
Inflation	303544	1.88	.060
c.roe#inflation	2.8595	2.36	.018

Source: Processed data STATA (2024)

The Proportional Cox Hazard regression equation is as follows:

$$FD_{(1|0)} = \alpha - 0.313ROE + 303544Inflation + 1.649(ROEInflation)$$

Table 4 shows that ROE has no effect on financial distress moderated by inflation because the significance value between ROE and inflation is 0.018, or greater than 0.05. Based on this interaction, it is concluded that the type of moderation in the relationship between ROE and financial distress moderated by inflation is pure moderation. This explains that inflation moderation can directly influence the relationship between ROE and financial distress without the intervention of other variables. The hazard value of the inflation-ROE interaction is 1.649, meaning that each increase in inflation is associated with an approximately 1.649-fold increase in the risk of financial distress, given that this occurs in the context of an interaction with ROE. Inflation, as a moderator, exacerbates the effect of ROE in reducing the risk of financial distress. When inflation is high, the positive effect of ROE in reducing the risk of financial distress is reduced.

The Effect of Current Ratio on Financial Distress Moderated by Inflation

Table 5. *Proportional Cox Regression with Mediator*

_t	Hazard	Z	P>|z|
CR	1.0561	0.75	.452
inflation	1.02e+14	3.75	.000
c.cr#inflation	0.0971	-1.65	.099

Source: Processed data STATA (2024)

The Proportional Cox Hazard regression equation is as follows:

$$FD_{(1|0)} = \alpha + 1.056CR + 1.02e + 14Inflation - 0.097(CRInflation)$$

Table 5 shows that CR has no effect on financial distress moderated by inflation because the significance value between CR and inflation is 0.099, or greater than 0.05. Based on this interaction, it can be concluded that the type of moderation in the relationship between CR and financial difficulties moderated by inflation is predictor moderation. This explains that this moderation only strengthens the relationship between CR and financial difficulties. The significance value of the interaction between CR and financial difficulties moderated by inflation is 0.099, which is greater than the significance limit of 0.05. This shows that the interaction between CR and financial distress moderated by inflation is not significant, meaning that inflation does not statistically strengthen or change the relationship between CR and financial distress.

The Effect of Debt to Assets Ratio on Financial Distress Moderated by Inflation

Table 6 *Proportional Cox Regression with Mediator*

_t	Hazard	Z	P>|z|
DTA	3.9619	1.20	.229
Inflation	1.32e+09	1.51	.130
c.dta#inflation	1.3811	0.01	.991

Source: Processed data STATA (2024)

The Proportional Cox Hazard regression equation is as follows:

$$FD_{(1|0)} = \alpha + 3.961DTA + 1.32e + 09Inflation + 1.381(DTAInflation)$$

Table 6 shows that DTA has no effect on financial distress moderated by inflation because the significance value between DTA and inflation is 0.991, or greater than 0.05. Based on the interaction relationship, it can be concluded that the type of moderation in the relationship between DTA and inflation moderated financial distress is no moderation. The analysis shows that the debt-to-asset ratio (DTA) has no significant effect on financial distress. Although inflation is tested as a moderating variable for the relationship between DTA and financial distress, the interaction between DTA and inflation is not significant. Thus, inflation does not moderate the relationship between DTA and financial distress, indicating that fluctuations in inflation do not affect the strength or direction of the relationship between debt-to-asset ratio and financial distress risk.

The Effect of Total Assets Turnover Ratio on Financial Distress Moderated by Inflation

Table 7 *Proportional Cox Regression with Mediator*

_t	Hazard	Z	P>|z|
TATO	14.6239	1.35	.176
Inflation	3.40e+09	1.92	.055
c.cr#inflation	.0124	-0.10	.091

Source: Processed data STATA (2024)

Table 7 shows that TATO has no effect on financial distress moderated by inflation because the significance value between TATO and inflation is 0.918, or greater than 0.05. Based on the interaction relationship, it can be concluded that the type of moderation in the relationship between TATO and financial distress moderated by inflation is no moderation. The analysis shows that TATO has no significant effect on financial distress. Although inflation is tested as a moderating variable for the relationship between TATO and financial distress, the interaction between TATO and inflation is not significant. Thus, inflation cannot moderate the relationship between TATO and financial distress, indicating that fluctuations in inflation do not affect the strength or direction of the relationship between debt-to-asset ratio and financial distress risk

Discussion

According to the Kaplan-Meier survival estimation, real estate companies initially face a high risk of financial distress (100% in the first 3 years) due to market instability and financial management issues. However, this risk decreases over time, reflecting improved financial health and stability, with the probability of distress dropping to 50% by the 10th year. This trend suggests that long-term financial management, operational efficiency, and market stabilization play crucial roles in reducing financial distress risk for real estate companies.

For companies experiencing financial distress, the likelihood of recovery over seven years depends on various factors, including effective management strategies, debt restructuring, and operational improvements. Support from investors, innovation, and a favorable market environment can also enhance a company's ability to return to profitability and stability. Although recovery is often a prolonged process, the study suggests that companies with robust management and strategic interventions can recover from distress over time.

Return on equity (ROE) significantly reduces the probability of financial distress. A low ROE indicates poor profitability and weak capital returns, increasin the risk of financial distress by hindering a company's ability to meet its financial obligations. For example, in 2020, LPKR had low ROE due to ongoing losses, signaling deep-rooted issues in its business model and financial management. Conversely, a high ROE increases profitability, reduces financial distress, and enhances investor confidence. The results of this study are in line with the results of

research conducted by Wu et al. (2021) that ROE has a negative effect on financial distress. However, the results of this study are not in line with the results of research conducted by Abdioğlu, 2019; Chen, 2018 and Ibrahim & Azzam, 2023).

The study finds that a high current ratio can increase the likelihood of financial distress due to the inclusion of illiquid assets like unsold inventory and uncollectible receivables. For instance, in 2022, LPLI had a high current ratio, but its high current assets (largely unsold goods) did not indicate financial health, instead exacerbating liquidity problems. This finding aligns with the results of research by Ceylan, 2021 and Chen (2018) that the current ratio, while a liquidity measure, may not always be a reliable indicator of a company's ability to meet short-term obligations.

The debt-to-assets ratio alone does not necessarily predict financial distress. While high debt may signal investor confidence, companies that generate sufficient profits can manage high debt levels effectively. PUDP, for example, had a low debt-to-assets ratio but avoided financial distress due to strong profitability. This finding supports the results of research conducted by Luu Thu (2023). However, it contradicts the results of research conducted by Ceylan (2021) that debt-to-assets ratio has a significant effect on financial distress.

Total asset turnover, which measures a company's efficiency in utilizing assets to generate sales, does not have a significant direct effect on the probability of financial distress. Even though GWSA had a low asset turnover ratio in 2020, it avoided financial distress through effective management. This finding supports the results of research conducted by Amoa-Gyarteng (2021). However, it contradicts the results of research conducted by (Ceylan, 2021; Wu et al., 2021) that total asset turnover has an effect on financial distress.

Inflation negatively moderates the relationship between ROE and financial distress. Despite efforts to maximize ROE, inflation increases operating costs and erodes purchasing power, worsening profitability and accelerating financial distress. This is consistent with the results of research conducted by Msomi (2022) and Opoku et al. (2024) that inflation exacerbates the risks associated with financial distress by creating uncertainty in pricing and profit margins.

This study finds that inflation does not significantly influence the relationship between the current ratio and financial distress. Although inflation increases operating costs and reduces purchasing power, it does not appear to affect the company's ability to meet short-term obligations as measured by the current ratio. This finding aligns with the results of research conducted by Yirgu (2017) that inflation does not significantly alter the predictive value of the current ratio.

Inflation does not significantly moderate the effect of the debt-to-assets ratio on financial distress. While inflation can increase costs and reduce purchasing power, it does not directly impact a company's capital structure or debt management as indicated by the debt-to-assets ratio. This finding is consistent with the results of research conducted by Yirgu (2017) that inflation affects external factors more than internal capital structure.

Finally, inflation does not significantly moderate the relationship between total asset turnover and financial distress. Inflation primarily impacts costs and pricing, whereas asset turnover is a measure of operational efficiency in utilizing assets to generate sales. Therefore, inflation does not significantly influence the speed or likelihood of financial distress through asset turnover (Yirgu, 2017).

5. CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATION

In the long term, real estate companies can mitigate the risk of financial distress with a decreasing probability over time. By the 10th year, the probability of financial distress drops significantly to 50%. Companies experiencing financial distress have a significant chance of recovery after seven years, depending on the steps taken to improve their financial condition.

The influence of key financial ratios on a company's likelihood of financial distress varies. The return on equity (ROE) ratio has a significant negative effect on financial distress. A low ROE indicates a company's inability to generate sufficient returns on its capital, increasing the risk of financial distress, as was the case with LPKR. On the other hand, the current ratio has a significant positive effect on financial distress. Although current assets exceed current liabilities, this does not necessarily reflect good financial health. For example, LPLI's high current assets indicate unsold inventory, which reduces liquidity and increases the risk of financial distress. The debt-to-asset (DTA) ratio does not consistently predict financial distress because companies with low debt, such as PUDP, can remain stable if they generate sufficient profits to meet their obligations. Total asset turnover has no significant impact on financial distress. As in GWSA, despite its low turnover ratio, it remains resilient due to effective management even with stagnant revenues.

In the relationship between asset returns and financial distress, inflation, as a moderating variable, can accelerate the onset of financial distress. However, inflation cannot accelerate or slow down the

process of financial distress in the current ratio, debt-to-assets ratio, and total assets ratio variables because inflation does not have a significant direct impact on these three ratios in the context of corporate financial management.

It is necessary for companies to understand the strategies they should implement when facing a difficult financial situation. Companies also need to pay attention to the current ratio, as a low current ratio can help reduce the risk of financial distress. Furthermore, companies should consider return on equity, as a higher return on equity reduces the likelihood of a company experiencing financial distress. However, companies need to consider the inflation factor where high inflation will exacerbate financial distress by managing return on equity less optimally. In addition, companies should adopt strategies similar to those applied by companies such as PUDP and GWSA, focusing on efficient resource utilization, effective fund management, and operational efficiency to avoid financial distress.

This study focused solely on real estate companies, so the results may differ from those in other industries. Furthermore, other variables may also influence the probability of a company experiencing financial distress.

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