The Effect of Board Size, Institutional Ownership and Insolvency Risk on Financial Distress Before and During Covid-19

Ivena Natalia[1] and Felizia Arni Rudiawarni[2] ✉

[1,2]Faculty of Business and Economics, University of Surabaya
Raya Kalirungkut, Surabaya, East Java, 60293, Indonesia

Abstract

Purposes: This study investigates the effect of board size, institutional ownership, insolvency risk, and the COVID-19 pandemic on financial distress. This study differs from previous studies because it analyzes financial distress in COVID-19. This study also analyzes the impact of COVID-19 on financial distress for each sector on the Indonesia Stock Exchange.

Method: This research applies logistic regression analysis. This study uses data from the financial and annual reports of companies listed on the Indonesia Stock Exchange, which are non-financial sectors from 2018 to 2020. This research covers 1,310 firm years as the object of study.

Findings: This study finds that board size and institutional ownership can reduce financial distress risk by carrying out a monitoring function. Higher levels of debt increase the company's insolvency risk, resulting in a higher probability of the company experiencing financial distress. In addition, insolvency risk and the COVID-19 pandemic also influence financial distress, especially for property, real estate, construction building and trade, services, and investment sectors.

Novelty: This research enriched the literature by finding out about the impact of the COVID-19 pandemic on financial distress. This research provides new insight regarding the influence of board size, institutional ownership, and insolvency risk on the probability of financial distress by considering the COVID-19 pandemic – the recent conditions when this research was conducted. This study also complements a sector-by-sector analysis that has not been done in previous studies on financial distress during the crisis.

Keywords:
Board Size, Financial Distress; Institutional Ownership; Insolvency Risk; COVID-19.

INTRODUCTION

In 2019, WHO declared a COVID-19 pandemic that attacked all countries worldwide. The Coronavirus first entered Indonesia in March 2020. The Coronavirus has a high-speed transmission through physical contact, sneezing, and coughing. Due to the high-speed transmission, the number of patients infected with the Coronavirus has increased, causing the world to experience a COVID-19 pandemic. Health protocols have been implemented in all countries worldwide to

author (✉)
Corresponding author: felizia@staff.ubaya.ac.id

overcome the pandemic. According to the WHO (World Health Organization), health protocols include using masks, social distancing, washing hands, avoiding closed rooms and crowds, and involving close physical contact. The health protocol severely limits the company's operational activities, including Indonesia, resulting in macroeconomic problems at national and global levels and financial issues at the company level.

According to Purnanandam (2008), financial distress means the company has low cash flow because of experiencing several losses. According to Platt & Platt (2002), financial distress is the final stage of the decline in company performance before the event of bankruptcy or liquidation. Financial distress can be indicated by financial ratios such as insolvency ratio, which can describe financial risk in the form of credit risk.

Jensen & Meckling (1976) explain the agency relationship as an agreement between the principal by involving other people as agents, where the principal gives authority to the agent in making decisions. The principal is the owner of the company or shareholders who invests in a company, while the agent is the company's manager. Because the agent has the authority to make decisions, it does not rule out the possibility that the agent can take opportunistic actions for his/her own benefit. Agents or company managers who contribute directly to the company's business performance can select the information that will be informed to shareholders. The principal can limit the manager's opportunistic actions by monitoring the decisions and determining the incentives.

There are two models for the board structure: one-tier and two-tier. Indonesia adopts a two-tier system model (Kusmayadi et al., 2015), so each company has a board of directors and a board of commissioners with their respective obligations and duties. Based on International Finance Corporation (2018), it is explained that the board of commissioners is responsible and has the authority to supervise and provide advice to the board of directors, while the board of directors is responsible for the company's day-to-day operation.

Ownership structure can be used to control agency problems because the ownership structure is regarded as a critical governance system (Budiarti & Sulistyowati, 2014). Institutional ownership is shares owned by institutions (Ramadhan, 2019). The greater the institutional ownership, the more supervision shareholders will have regarding the company's performance so that it impacts the board of directors to make better and more careful decisions. Institutional investors are considered more effective than individual investors (Al-Najjar, 2010) because institutional investors have greater resources and access to information than individual investors.

Risk in economics has various meanings. One that is included in financial risk is insolvency risk that arises because of corporate debt. Insolvency risk is the risk of not or less fulfilling a company's obligation at the due date (Christoffersen, 2012). In addition, insolvency risk can also occur if the company fails to pay the interest on the loan. Insolvency risk is one of the factors that can cause a company to go bankrupt due to high liabilities. Insolvency risk is reflected in financial ratios since financial ratios can be used to show the limits of liabilities that can be borne by the company (Demerjian, 2007). One of the ratios to measure insolvency risk is the debt to asset ratio to determine how much the value of assets financed by debt is.

This study differs from previous studies related to financial distress. Research by Restianti & Agustina (2018) considers financial ratios influencing the probability of financial distress. They analyze by industry sub-sector, but they have not considered global conditions that may affect the financial distress of each industry. Research by Khoja et al. (2019) considers financial ratios and adds a country's macroeconomic variables as factors that affect financial distress. Their research finds solvency as a factor affecting financial distress, but they have not considered monitoring variables to prevent financial distress. Mariano et al. (2020) study corporate governance and corporate borrowing as factors influencing the probability of financial distress. Still, they do not consider macro factors, and they do not analyze the industrial level.

This study considers the monitoring role performed by the board of commissioners and institutional investors. Research by Mariano et al. (2020) and Mohd Ali & Mohd Nasir (2018)

proves that the board of commissioners has a vital role in reducing financial distress. Alshabibi (2021) states that institutional investors can influence company behaviour through monitoring activities. Proper monitoring will reduce the possibility of financial distress. This study also considers insolvency risk as a determinant factor of financial distress. Previous studies have highlighted the importance of the insolvency factor in influencing the company's ability to survive and be free from financial distress (Khoja et al., 2019; Mariano et al., 2020; Restianti & Agustina, 2018)

This research brings novelty to research in the field of financial distress. With the rapid flow of globalization, determining financial distress based on factors at the individual firm level is no longer adequate (Tinoco et al., 2018). Therefore, this research contributes by considering the company's internal and external factors. The company's external factor considered in this study is when a crisis hit the world due to COVID-19, which was a significant event when this research was carried out. The crisis due to COVID-19 is felt worldwide and has struck almost all aspects of the economy and business, including the individual firm level. Additional analysis conducted for each sector (except the financial sector) shows that COVID-19 has a different impact on the financial distress of each sector.

This study contributes to the development of financial distress research. First, this study combines the company's internal factors with the global condition setting, namely COVID-19. Understanding the influence of global conditions on financial distress at the individual firm level answers the limitations of internal factors as a determinant of financial distress in the current era of globalization. Second, a sector-by-sector analysis of the influence of internal and external factors on financial distress provides more complete information on financial distress studies. Although they generally have the same pattern, each industry has different characteristics, so the determinants of corporate distress can differ. Considering that this research was carried out during the COVID-19 pandemic sweeping the world, a sector-by-sector analysis will be very useful for decision-makers, especially the government, regarding which industrial sectors are most affected by COVID-19, so the policy of providing incentives and waivers can be more targeted to accelerate economic recovery.

HYPOTHESIS DEVELOPMENT

Financial distress is a stage of the declining financial condition experienced by a company prior to bankruptcy or liquidation (Platt & Platt, 2002). The main symptom of the company will experience financial distress is the failure of debt payments and the reduction or loss of dividend payments (Baldwin, C. Y., & Mason, 1983). Whitaker (1999) states that financial distress occurs when a company does not have sufficient financial resources to pay contractual debts. Factors causing financial distress can be in the company's internal and external aspects. One of the internal factors causing financial distress is poor management activities and company monitoring activities. External factors are obtained from outside the company and the country's macroeconomic conditions (Khoja et al., 2019). The management team and company stakeholders must immediately know the symptoms when the company experiences financial distress. If the symptoms of financial distress are detected too late, the company's condition will worsen and lead to bankruptcy.

Cases of COVID-19 were initially recognized in late 2019 and spread rapidly around the world. The rapid and fatal spread of COVID-19 has forced governments in all countries to implement various preventive measures to control its reach and impact. These measures include lockdowns, restrictions on mobility, social distancing policies and limiting other social activities (Khatib et al., 2021; Wenzel et al., 2020). The COVID-19 pandemic has brought a crisis in the health sector and all aspects of life, including the economic crisis. At the individual company level, COVID-19 threatens the company's survival and raises awareness of the importance of monitoring and managing company risk (Jebran & Chen, 2020).

The Effect of Board Size on Financial Distress

Board in this research includes the board of directors and the board of commissioners. In a two-tier corporate governance structure, there is a clear separation of functions between the board of directors and the board of commissioners. The board of commissioners has an essential role in determining the company's quality of management and performance (Mariano et al., 2020) because the board of commissioners has a role as a supervisor of the performance of the board of directors. The board of commissioners can reduce agency conflicts and information asymmetry in the company. The board of directors' duties are deciding the company's goals and implementing the necessary actions, while the board of commissioners carries out the function of monitoring the performance of the board of directors in running the company (Block & Gerstner, 2016).

The board of directors who play a direct role in the company's performance can make decisions that impact the company's financial health. The advantage of a large board of directors is that the number of opinions and points of view can provide the possibility to prevent the company from experiencing financial distress (Pfeffer, 1973). According to Fox (1998), a small board of directors has a greater chance of experiencing financial distress.

The board of commissioners plays an important role in preventing financial distress. According to Abdullah (2006), if the board of commissioners carries out their duties effectively, the company will avoid excessive debt. The right size of the board of commissioners will affect the effectiveness of the performance of the board of commissioners. According to Lamberto & Rath (2010), the larger the size of the board of commissioners, the lower the probability of company failure because the board's accountability is more guaranteed. Bedard et al. (2014) research also supports this statement. According to Khatib et al. (2021), the size of the board of commissioners is a monitoring mechanism that has a significant role in improving or maintaining the company's performance in times of crisis because the larger the size of the board of commissioners will accommodate different expertise.

During the COVID-19 crisis, the role of the board of directors and the board of commissioners is very important in reducing the risk of uncertainty posed by this crisis. Along with the widespread impact of COVID-19 on the company's overall operations, the board of directors needs to take various steps to address it, starting from restructuring capital, policies and organizational design to preparing for short-term and long-term emergencies (Foss, 2021; Shen et al., 2020). In this critical activity, the role of the board of commissioners is increased, not only in their usual monitoring role, but they also play a more critical role in providing policy input while maintaining independence and carrying out active oversight (Croci et al., 2020).

H$_1$: Board size has an effect on reducing the likelihood of distress

The Effect of Institutional Ownership on Financial Distress

Institutional investors play an important role in the global market with the increasing amount of funds they invest in many global capital markets (Alshabibi, 2021). The greater the funds they invest, the proportion of institutional investors' ownership also increases. This condition causes institutional investors to play an active role in monitoring and disciplining management behavior as well as increasing information efficiency in the capital market (Bushee, 2009; Charitou et al., 2007; El-Gazzar, 1998).

In line with this, Widhiadnyana & Ratnadi (2019) state that institutional ownership can reduce agency conflicts. The majority of institutional shareholders own many shares of a company in a fairly large proportion, causing institutional shareholders as investors to have control and supervision of the company's performance to fight for the rights. Institutional shareholders also have focus on the company's performance in the long term (Donker et al., 2009). Based on research by Ibrahim (2019), institutional ownership significantly affects financial distress. The greater the value of ownership can minimize the possibility of the company experiencing financial distress. Large ownership can give the right to control company management, improve performance, and

reduce agency problems and conflicts of interest (Mariano et al., 2020).

During the financial crisis, institutional investors have a positive effect on the company's performance because institutional investors can withdraw their funds if they find the management team is not truly fighting for the company's performance, and this will be bad for the company's sustainability in the future (Essen et al., 2013). Furthermore, Jebran & Chen (2020) state that institutional investors can improve disciplinary mechanisms through their monitoring role during the COVID-19 crisis. Therefore, institutional ownership is considered capable of reducing the risk of financial distress.

H$_2$: Institutional ownership has an effect on reducing the likelihood of financial distress.

The Influence of Insolvency Risk on Financial Distress

Every company must face financial risk in its business. However, the higher the level of debt, the higher the insolvency risk, which will lead the company to bankruptcy. The company's performance will be greatly affected by the condition of its capital structure. The greater the level of debt will reduce the flexibility of the company and its financial strength, preventing the company from achieving its goals (Mohd Ali & Mohd Nasir, 2018; Myers & Majluf, 1984). Based on research by Ramadani (2011), the debt-to-asset ratio influences the occurrence of financial distress. The higher the debt-to-asset ratio, the higher the assets financed by debt, which can lead the company to financial distress (Restianti & Agustina, 2018). Research by Jiming & Weiwei (2011) on manufacturing companies in China also proves that the higher the level of debt-financed assets, the higher the burden on the company, which leads to insolvency. This condition will increase the potential for financial distress and bankruptcy. Research by Khoja et al. (2019) on companies in the UK and US also shows that insolvency risk will increase financial distress in individual firms.

In times of crisis, many companies experience liquidity problems. During the COVID-19 shock, companies with liquidity problems increasingly depend on debt (Demmou et al., 2021). According to Archanskaia et al., (2022), companies in the non-financial industry experienced negative equity during the crisis, so insolvency risk increased. Two things cause this condition. First, with the COVID-19 shock, companies experienced a decline in revenue and profit, which eroded their equity and decreased the company's assets. Second, the injection of liquidity in the form of credit causes the company's leverage ratio to increase; thus, insolvency risk also increases.

Those facts show that although these companies are located in different countries with different characteristics of the business environment, the influence of insolvency risk leads to the same: financial distress. Based on these arguments, the third hypothesis in this study is:

H$_3$: Debt to asset ratio has an effect on reducing the likelihood of financial distress.

The Effect of the COVID-19 Pandemic on Financial Distress

Khoja et al., (2019) state that macroeconomic indicators affect the company's condition. The COVID-19 pandemic halted the world economic cycle, which caused a negative shock to the markets. The health crisis caused by the COVID-19 pandemic is suspected to be the cause of the financial crisis that hit the world Shehzad et al., (2020). Furthermore, the world financial crisis also impacts the company's economic health. This form of external factors can cause companies to experience financial distress. The context of the COVID-19 pandemic is similar to the global crisis that occurred in 2008. A study by Shehzad et al., (2020) explained that the COVID-19 pandemic caused a financial crisis that was more severe than the financial crisis during the global financial crisis in 2008.

H$_4$: The COVID-19 pandemic increases the probability of financial distress.

RESEARCH METHOD

Table 1. Sample Selection Criteria

Description	2018	2019	2020	Total firm years
Companies listed on the IDX	606	658	696	1,960
Excluded:				
Companies in the financial sector	(91)	(92)	(94)	(277)
The company's financial statements are presented in foreign currencies	(90)	(90)	(90)	(270)
Variables in the financial statements do not match the criteria	(24)	(34)	(45)	(103)
Total companies that meet the sampling criteria	**401**	**442**	**467**	**1,310**

Source: Data processed

This research is hypothesis testing with the positivism paradigm. Researchers made a research question using hypotheses to determine the effect of board size, institutional ownership and insolvency risk on financial distress before and during the COVID-19 pandemic. The source of the data used in this study is the annual financial statements that have been audited and published on the Indonesia Stock Exchange (IDX) for the period 2018 to 2020 for all non-financial industrial sectors. Details of sample selection are in Table 1, where the sample obtained is 1,310 firm years.

Financial Distress

Financial distress is the dependent variable in this study. We use dummy variables for financial distress. Dummy variable = 1 for distressed firms and 0 for non-distressed firms. To predict financial distress, this study uses the Altman Z-Score model. The first Altman Z-Score model was released in 1968 and modified in 1983. A company is categorized as a distressed firm (non-distressed firm) if the Z-Score is less (more) than 1.23. Financial distress in this study can

$$Z - Score = 0.717 \frac{\text{Net Working Capital}}{\text{Total Assets}} + 0.847 \frac{\text{Retained Earnings}}{\text{Total Assets}} + 3.107$$

$$\frac{\text{EBIT}}{\text{Total Assets}} + 0.42 \frac{\text{Book Value Equity}}{\text{Book Value Debt}} + 0.998 \frac{\text{Sales}}{\text{Total Asset}}$$

be calculated using the Altman Z-Score (1983) model:

Board Size

Board size is a representation of the management team and the monitoring board in the

$$\text{BOARD} = \Sigma \text{ director and commissioners}$$

company. Based on previous research by Ramadhan (2019), the board size is measured using the sum of the company's entire board of directors and board of commissioners.

Institutional Ownership

Institutional ownership is an independent variable that shows the level of monitoring in

$$\text{INSTOWN} = \frac{\text{Number of share owned by institution}}{\text{Total number of outstanding shares}}$$

the company. The greater the percentage of ownership owned by the institution, the more power to supervise management (Amalia, 2020). Institutional ownership can be measured using the following formula:

Insolvency Risk

Table 2. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
BOARD	1,310	4	22	8.074	3.093
INSTOWN	1,310	0.000	0.999	0.695	0.276
DAR	1,310	0.002	1.605	0.438	0.224
FSIZE	1,310	23.160	33.495	28.262	1.714
FAGE	1,310	2	99	30.021	16.389
RETA	1,310	-53.520	2.548	0.054	1.590
SGROW	1,310	-0.985	22.573	0.085	0.948

Source: Data processed

Insolvency risk in this study is an independent variable measured by debt-to-asset ratio. Previous research (Ramadani, 2011) shows that debt-to-asset ratio influences financial distress.

$$DAR = \frac{Total\ Liability}{Total\ Assets}$$

Debt-to-asset ratio (DAR) can determine the proportion of total assets funded by debt. The higher the debt-to-asset ratio, the greater the company's probability of experiencing financial distress. The debt-to-asset ratio is calculated using the formula below:

COVID-19

The COVID-19 pandemic (COVID19) is an independent variable that uses indicators from the annual financial reporting period. Financial reports for 2018 and 2019 are given a score of 0 (non-COVID-19 period), while financial reports for 2020 (COVID-19 period) are given a score of 1.

Company Size

$$FSIZE = Ln\ (Total\ Asset)$$

Company size (FSIZE) is a control variable measured by the number of total assets owned by the company. The larger the assets owned, the larger the company's size. The company's size can be used to assess its ability to face a crisis when carrying out its business activities (Amalia, 2020). Company size can be calculated using the formula below:

Company's Age

The company's age (FAGE) is a control variable that is measured using the difference between the year of company's establishment and the year of the sample data period.

Profitability Ratio

$$RETA = \frac{Retained\ Earnungs_{(t)}}{Total\ Asset_{(t-1)}}$$

Table 3. Frequency Statistics

Variable	Dummy Variable	Frequency	Percentage
	0	891	68
FD	1	419	32
	Total	**1310**	**100**
	0	843	64.4
COVID19	1	467	35.6
	Total	**1310**	**100**

Source: Data processed

Profitability ratio is a control variable that uses retained earnings to total assets as a proxy. In this case, the profitability ratio uses an investment approach. Retained earnings to total assets refer to the company's profitability from time to time Pindado et al., (2008). Retained earnings to total assets can be measured using the following formula:

$$SGROW = \frac{Sales_{(t)} - Sales_{(t-1)}}{Sales_{(t-1)}}$$

Sales Growth

Sales growth is a control variable that can assess revenue growth over time. If sales growth is high, it can attract the attention of investors to invest in the company. A company with good performance can open up good opportunities in the future (Giarto & Fachrurrozie, 2020)

$$FD = \beta_0 + \beta_1 BOARD + \beta_2 INSTOWN + \beta_3 DAR + \beta_4 COVOD19 + \beta_5 FSIZE + \beta_6 FAGE + \beta_7 RETA + \beta_8 SGROW + e \quad \text{...} (1)$$

Where:
β_0 = Constanta
$\beta_1 - \beta_8$ = Coefficient
FD = Financial Distress (1= distress firm; 0 = non- distress firm)
BOARD = Board Size
INSTOWN = Institutional Ownership
DAR = Debt to Asset Ratio
COVID19 = COVID-19 period (1(COVID-19 period) for 2020; 0 (non COVID-19 periode) for 2018 and 2019)
FSIZE = Company Size
FAGE = Company Age
RETA = Profitability Ratio
SGROW = Sales Growth
e = Error

Research Model

This study uses a logistic regression model to test the categorical dependent variable (Gujarati & Damodar, 2003). In this study, financial distress as the dependent variable is categorical. It categorizes a company as experiencing financial distress or not experiencing financial distress. The model used in this study is:

RESULT AND DISCUSSION

Tabel 4. Correlation matrix

	Constant	BOARD	INSTOWN	DAR	TIME	FSIZE	FAGE	RETA	SGROW
Constant	1.000	0.559	0.011	0.008	-0.075	-0.981	0.049	0.219	0.042
BOARD	0.559	1.000	-0.093	-0.009	0.041	-0.630	-0.218	-0.016	0.053
INSTOWN	0.011	-0.093	1.000	-0.158	-0.044	-0.084	0.082	-0.014	-0.038
DAR	0.008	-0.009	-0.158	1.000	0.101	-0.100	-0.160	0.143	-0.042
COVID19	-0.075	0.041	-0.044	0.101	1.000	0.023	-0.049	0.009	0.238
FSIZE	-0.981	-0.630	-0.084	-0.100	0.023	1.000	-0.078	-0.214	-0.048
FAGE	0.049	-0.218	0.082	-0.160	-0.049	-0.078	1.000	0.010	0.030
RETA	0.219	-0.016	-0.014	0.143	0.009	-0.214	0.010	1.000	-0.003
SGROW	0.042	0.053	-0.038	-0.042	0.238	-0.048	0.030	-0.003	1.000

Source: Data Processed

Table 5. Logistics Regression Test

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
BOARD	-0.128	0.036	12.720	1	0.000	0,879
INSTOWN	-1.187	0.273	18.963	1	0.000	0.305
DAR	6.421	0.430	223.316	1	0.000	614.314
COVID19	0.428	0.156	7.583	1	0.006	1.535
FSIZE	0.243	0.064	14.635	1	0.000	1.275
FAGE	-0.019	0.005	14.834	1	0.000	0.981
RETA	-0.440	0.147	8.997	1	0.003	0.644
SGROW	-0.502	0.170	8693	1	0.003	0.606
Constant	-8.425	1.603	27.608	1	0.000	0.000
-2 Log Likelihood	1,168.990					
Cox & Snell R Square	0.303					
Nagelkerke R Square	0.424					
Hosmer Test	Chi-square	Df	Sig,			
	7.230	8	0.512			

Source: Data processed

Descriptive statistics are used to provide an overview and description of the data from the variables. The descriptive statistics used by the researcher include the mean, standard deviation, minimum value, and maximum value. If the mean is greater than the standard deviation, it indicates that the variable is less varied. The results of the descriptive statistics for each variable are depicted in Table 2.

Frequency statistics describe the frequency nominal scale variables. Here are the results of the frequency statistics:

Table 3 shows that the firm years included in the non-distress category (dummy = 0) of 68% indicate that most of the sample data do not experience financial distress. Meanwhile, those who experienced financial distress (dummy = 1) are 32%. For COVID-19, the value 0 indicates the period before the COVID-19 pandemic, and it has a percentage of 64.4%, while in the COVID-19 period, it is 35.6%.

Table 4 shows the results of the correlation matrix to test the presence or absence of multicollinearity between independent variables.

Table 4 exhibits that the correlation between the independent variables does not exceed 80%, so it is concluded that there is no multicollinearity between variables.

Table 5 shows the results of hypothesis testing using binary logistic regression.

From the result of Table 5, it is known that the value of -2 Log Likelihood in Block 0 is 1,642.096. The results in Block 0 have not included the independent variables in the regression model. As for Block 1, these results already include the independent variables consisting of board size, institutional ownership, debt to asset ratio, period of the COVID-19 pandemic, company size, company age, profitability ratio, and sales growth which results in -2 Log Likelihood amounted to 1,168.990. After comparing the results of -2 Log Likelihood between Block 0 and Block 1, we will see that -2 Log L in Block 0 is greater than in Block 1. This means that the model used fits with the data in the study.

The Hosmer and Lemeshow test in Table 5 shows that the chi-square value is 7.230 with a significant value of 0.512. It means that the regression model in the study is feasible to use. This is because the significant value obtained from the Hosmer and Lemeshow test is greater than 5%.

The Nagelkerke R Square value in Table 5 is 0.424, which means that the independent

Table 6. Classification Accuracy Test

Observed		Predicted		Percentage Correct
		Financial Distress Classification		
		Non-Distress	*Distress*	
Financial Distress classification	*Non-Distress*	803	88	90.1
	Distress	179	240	57.3
Overall Percentage				79.6

Source: Data processed

variable in the research model can explain the dependent variable of 0.424 or 42.4% and the remaining 0.576 or 57.6% is explained by other independent variables outside the model. This value is indeed quite low, but the chi-square value indicates that the model is feasible.

Based on the results of the classification accuracy test in Table 6, we can see that the classification accuracy is on the diagonal of the table. The interpretation of the classification accuracy test results in this study is that 803 out of 891 are non-distressed samples, and 240 out of 419 are samples that experience distress. Thus, the research model's overall accuracy estimate or classification accuracy is 79.6%. Based on the results of the Wald test in Table 5 for hypothesis testing, it is found that all variables have a significant effect on financial distress since all variables are significant at the alpha of less than 5%.

The first hypothesis in this study states that board size decreases the chances of financial distress. This finding aligns with previous research by Mariano et al., (2020) and Younas et al., (2020). The board of directors and the board of commissioners work together to achieve goals and increase the company's value. The board of directors is pressured to make decisions, and the board of commissioners is pressured to carry out appropriate monitoring activities since the decisions taken will affect the company's value. Therefore, the more the number of the board of directors in the company can provide more consideration to produce higher quality decisions. Furthermore, the larger the size of the board of commissioners, the better supervision and control of the company's business activities so that the risk of financial distress is minimized.

Table 7. Test Results without Profitability Variables

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
BOARD	-0.127	0.036	12.806	1	0.000	0.88
INSTOWN	-1.191	0.271	19.322	1	0.000	0.304
DAR	6.609	0.419	248.494	1	0.000	741.523
TIME	0.428	0.154	7.708	1	0.005	1.535
FSIZE	0.19	0.062	9.529	1	0.002	1.21
FAGE	-0.018	0.005	14.279	1	0.000	0.982
SGROW	-0.49	0.17	8.333	1	0.004	0.613
Constant	-7.069	1.555	20.659	1	0.000	0.001
-2 Log Likelihood	1186.228					
Cox & Snell R Square	0.294					
Nagelkerke R Square	0.411					
Hosmer Test	Chi-square		Df	Sig,		
	6.299		8	0.614		

Source: Data processed

Table 8. Distribution of Research Objects between Sectors

Sectors in Indonesia Stock Exchange	Number of Firm-year	Percentage (%)
Sector 1: Agriculture	56	4.3
Sector 2: Mining	53	4
Sector 3: Basic industry & chemicals	167	12.7
Sector 4: Miscellaneous industry	89	6.8
Sector 5: Consumer goods industry	163	12.4
Sector 6: Property, real estate and building construction	234	17.9
Sector 7: Infrastructure, utility and transportation	145	11.1
Sector 8: Finance – excluded in this study	-	-
Sector 9: Trade, service and investment	403	30.8
Total	1,310	100

Source: idx.go.id

The second hypothesis in this study states that institutional ownership influences reducing the chances of financial distress. Our finding supports several previous studies by Younas et al., (2020) and Widhiadnyana & Ratnadi (2019). Institutional shareholders can act as supervisors in the company's business performance so that the agent or company manager does not act to the detriment of shareholders' interests or the company itself. Therefore, institutional ownership can influence the company's management's decision. Management will be more careful, and the decision will focus on the company's goals and reduce the management's fraudulent actions or opportunistic behavior.

The third hypothesis in this study states that the debt-to-asset ratio (DAR) significantly increases the chances of financial distress. Our result aligns with several previous studies by Younas et al. (2020) and Udin et al. (2017). Debt to asset ratio is a proxy for insolvency risk, which describes the amount of debt used to fund a company's assets—high amounts of debt burden the company's resources and cash flow for interest and principal payments. Insolvency conditions make companies inflexible in their strategic decisions, reducing financial strength and increasing financial distress risk (Mohd Ali & Mohd Nasir, 2018).

The fourth hypothesis in this study states that the COVID-19 pandemic significantly increases the chances of financial distress. Our finding is in line with previous research by Yazdanfar & Öhman (2019), Khan & Ullah (2021), and Shehzad et al. (2020). The global financial crisis that occurred in 2008 affected a country's macroeconomy. This is the same as the COVID-19 pandemic, which also affected the economic market situation in a country (Chen & Yeh, 2021), and even the impact of COVID-19 was more significant than the global financial crisis of 2008

Table 9. Hosmer and Lemeshow Test for Each Sector

Sector	Chi-square	df	Sig.	Description
Sector 1	5.023	8	0.657	Model is feasible
Sector 2	0.000	8	1.000	Model is feasible
Sector 3	2.761	8	0.948	Model is feasible
Sector 4	11.695	8	0.165	Model is feasible
Sector 5	8.864	8	0.354	Model is feasible
Sector 6	1.470	8	0.993	Model is feasible
Sector 7	34.681	8	0.000	Model is not feasible
Sector 9	6.054	8	0.641	Model is feasible

Source: Data processed

Table 10. Wald Test for Each Sector

	Sector 1		Sector 2		Sector 3		Sector 4		Sector 5		Sector 6		Sector 9	
	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.
BOARD	-0.206	0.243	-16.540	0.993	-0.013	0.909	-0.432	0.096	-0.361	0.026	-0.108	0.332	-0.165	0.023
INSTOWN	0.010	0.997	164.448	0.996	0.037	0.967	-3.290	0.136	-2.093	0.018	-3.390	0.002	-0.863	0.106
DAR	14.356	0.052	-21.247	1.000	5.870	0.000	3.954	0.248	4.967	0.005	17.598	0.000	4.406	0.000
COVID19	0.585	0.583	-7.009	0.999	0.176	0.753	-0.266	0.841	-0.189	0.739	1.322	0.042	0.704	0.010
FSIZE	1.411	0.021	-22.457	0.993	0.438	0.114	0.937	0.121	0.530	0.043	0.723	0.002	0.059	0.597
FAGE	-0.072	0.062	2.516	0.994	0.019	0.357	0.031	0.369	0.017	0.325	-0.053	0.030	-0.005	0.561
RETA	-8.398	0.051	-158.742	0.992	-3.903	0.002	-11.414	0.020	-4.051	0.001	-9.255	0.000	-0.050	0.188
SGROW	-2.945	0.142	-2.965	0.998	-3.053	0.033	-3.138	0.196	-2.136	0.060	-1.023	0.140	-0.393	0.106

Source: Data Processed

(Shehzad et al., 2020). The macro economy can also affect a company's business performance and value. If an entity does not have good fundamental performance, it will deteriorate business performance, leading to financial distress.

In this study, we include the element of profitability in the independent variable, namely RETA, in line with the research of Mariano et al. (2020). However, to ensure our results are robust, we also perform a test without a profitability variable (RETA). The results obtained are shown in Table 7.

Table 7 shows that the result of the chi-square value is 6.299, with a significance level above 5%, indicating that the model is feasible to use. The value of Nagelkerke R square is 41.1%, slightly lower than the model with profitability in Table 5. The test results for each variable show that all variables significantly affect the probability of financial distress. The results in Table 7 are the same as those obtained previously in Table 5, which shows that the test without the profitability variable (RETA) gives the same results as the test using the profitability variable. So it can be concluded that our test results are robust.

Additional Analysis by Industry Sector

This additional analysis is used to see and explain the effect of the COVID-19 pandemic on financial distress by the industry sector on the Indonesia Stock Exchange. The nine sectors on the Indonesia Stock Exchange and the distribution of research objects can be seen in Table 8.

Table 8 shows that Sector 9 dominates the distribution of research objects in this study (30.8%), followed by Sector 6 (17.9%). The third, fourth and fifth ranks are Sector 3, Sector 5 and Sector 7, respectively, with a range of 11% to 13% of the total research objects. Meanwhile, Sector 1, Sector 2 and Sector 4 have a percentage of less than 10%. This study will only discuss the non-financial sector, so it does not use data from Sector 8. To determine the effect of the COVID-19 pandemic on financial distress will be done by carrying out logistic regression in each sector.

Based on the Hosmer and Lemeshow test in Table 9, the research model is unsuitable in Sector 7: infrastructure, utilities, and transportation. The significance value in Sector 7 is less than 5% or 0.05. Other sectors have a significance value greater than 5%, so the model is feasible. Therefore, Sector 7 will be excluded from the following discussion.

Table 10 shows the effect of the COVID-19 pandemic on financial distress in each industrial sector. From the results, it can be seen that the impact of COVID-19 on financial distress is not the same for all sectors. This finding is in line with the findings of Demmou et al. (2021), Khatib et al. (2021) and Öztürk et al. (2020). Based on the results of hypothesis testing using logistic regression, it can be seen that the sectors experiencing financial distress as a result of the COVID-19 pandemic are Sectors 6 and 9. Sector 6 is the property, real estate, and construction. Sector 9 is the trade, services and investment. The impact of the COVID-19 pandemic on these two sectors can increase the chance of financial distress.

Companies engaged in the tourism sector experienced a decline in income because, during the COVID-19 pandemic, there were restrictions according to government policies, including social distancing, PPKM (Enforcement of Restrictions on Community Activities), and PSBB (Large-Scale Social Restrictions). Companies in the restaurant sector, especially those with tenants in a shopping centre, will also be affected because the operating hours of the shopping centre during the PPKM period are limited. This causes a significant decrease in the number of visitors to the shopping centre. Based on research by Coldwell Banker Commercial Indonesia in 2020, it was explained that the hotels' occupation rate in Greater Jakarta and other big cities in Indonesia, such as Bandung, Surabaya, Bali, and Medan decreased. Bali experienced the lowest decline, with a decline of 22.5% compared to 2019. The property and real estate sectors during the pandemic were also significantly affected. As a result of the drastic decline in operational levels, many parties, both companies and at the individual and family level, experienced financial difficulties so that high-value expenditures such as property purchases also decreased drastically.

On the other hand, many properties are being sold to meet the necessities of life during the

pandemic. As a result, property values took a massive hit during the COVID-19 period. These conditions restrain investors from investing in Sector 6. Therefore, investment in the property sector is not a top priority for investors to invest their capital during the pandemic.

The mining and agriculture sectors are the primary sectors in IDX. The primary sector provides basic materials to be reprocessed in the secondary sector to be used in various needs of human life. Therefore, the COVID-19 pandemic has no significant effect on the occurrence of financial distress in the primary sector (mining and agriculture) and the secondary sector (basic industry and chemicals, miscellaneous industries and consumer goods industry) because the demand for their output is always there. These sectors were only affected at the beginning of the pandemic, but these sectors can survive over time, supported by advances in digital marketing technology. Based on the development of sectoral indices on the Indonesia Stock Exchange, the health, industrial, and raw goods sectors have outperformed the Indonesia Composite Stock Price Index (IHSG) performance throughout 2020.

CONCLUSION

In this study, we find that the board size has an effect on reducing the probability of financial distress. Because the board has a role as an executive (monitoring), the greater the number of the board of directors (board of commissioners) in a company, the more they are able to reduce the chances of financial distress. Institutions that invest in companies have a role in monitoring business performance. The greater the number of institutional ownership, the greater the supervision provided and can reduce the chance of financial distress. The debt-to-asset ratio, a proxy for insolvency risk, increases the chances of financial distress. The COVID-19 pandemic also has an impact on increasing opportunities for financial distress. The COVID-19 pandemic has caused limited operational activities, which harm business performance, market performance and the national economy. The control variables used in this study: company size, company age, profitability ratio, and sales growth, have a significant effect on financial distress. Investigations in each sector show that the impact of the COVID-19 pandemic on financial distress is mainly felt in the property, real estate, construction services and trade, services, and investment sectors.

This study has limitations which are also recommendations for further research. First, this study uses only one stock exchange, so the results cannot be compared between one stock exchange with another. Further research can compare the internal and external factors that affect financial distress between developing and developed countries' stock exchanges. Second, this study only uses board size and institutional ownership as monitoring variables that can influence management behavior and decisions related to financial distress. Further research can add corporate governance variables because good corporate governance will be able to reduce the company's financial distress, especially in times of crisis. Third, this study discusses financial and economic variables that influence financial distress. Further research can include non-financial variables such as CEO characteristics that will affect the probability of financial distress.

REFERENCES
Ali, M. M., & Nasir, N. M. (2018). Corporate Governance and Financial Distress: Malaysian Perspective. Asian Journal of Accounting Perspectives, 11(1), 108-128.
Al-Najjar, B. (2010). Corporate Governance and Institutional Ownership: Evidence from Jordan. Corporate Governance: The international journal of business in society, 10(2), 176-190.
Alshabibi, B. (2021). The Role of Institutional Investors in Improving Board of Director Attributes around the World. Journal of Risk and Financial Management, 14(4), 1-33.
Altman, E. I. & Hotchkiss, E. (1993). Corporate Financial Distress and Bankruptcy: A Complete Guide to Predicting & Avoiding Distress and Profiting from Bankruptcy. New York: John Wiley & Sons.
Altman, E. I. (1983). Corporate Financial Distress: A Complete Guide to Predicting, Avoiding, and Dealing with Bankruptcy. (1st ed.). New York: John Wiley & Sons.
Amalia, P. (2020). Pengaruh Tata Kelola Perusahaan Terhadap Financial Distress Pada Perusahaan Ritel Di BEI 2014-2018. Thesis, Universitas Airlangga.

Archanskaia, L., Canton, E., Hobza, A., Nikolov, P., & Simons, W. (2022). The Sectoral Nature of the COVID-19 Shock A Novel Approach to Quantifying its Economic Impact. Directorate General Economic and Financial Affairs (DG ECFIN), European Commission. Discussion Papers No. 162.

Block, D. & Gerstner, A. (2016). One-Tier vs. Two-Tier Board Structure: A Comparison Between the United States and Germany. Comparative Corporate Governance and Financial Regulation. https:// scholarship.law.upenn.edu/fisch_2016/1. Diakses 28 Mei 2022.

Budiarti, E., & Sulistyowati, C. (2014). Struktur Kepemilikan dan Struktur Dewan Perusahaan. Jurnal Manajemen Teori dan Terapan. Journal of Theory and Applied Management, 7(3), 161-177.

Charitou, A., Lambertides, N., & Trigeorgis, L. (2007). Earnings Behaviour of Financially Distressed Firms: The Role of Institutional Ownership. ABACUS, 43(3), 271-296.

Chen, H. C., & Yeh, C. W. (2021). Global Financial Crisis and COVID-19: Industrial Reactions. Finance Research Letters,42, 101940.

Christoffersen, P. (2012). Elements of Financial Risk Management. Academic Press.

Croci, E., Hertig, G., Khoja, L., & Lan, L. L. (2020). The Advisory and Monitoring Roles of The Board: Evidence from Disruptive Events. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3581712

Demerjian, P. R. (2007). Financial Ratios and Credit Risk: The Selection of Financial Ratio Covenants in Debt Contracts. AAA 2007 Financial Accounting & Reporting Section (FARS) Meeting Paper, Available at SSRN: https://ssrn.com/abstract=929907 or http://dx.doi.org/10.2139/ssrn.929907.

Demmou, L., Calligaris, S., Franco, G., Dlugosch, D., McGowan, M. A., & Sakha, S. (2021). Insolvency and Debt Overhang Following the COVID-19 Outbreak: Assessment of Risks and Policy Responses. OECD Economics Department. Working Papers No. 1651

Donker, H., Santen, B., & Zahir, S. (2009). Ownership Structure and the Likelihood of Financial Distress in The Netherlands. Applied Financial Economics, 19(21), 1687-1696.

Foss, N. J. (2021). The Impact of the COVID-19 Pandemic on Firms' Organizational Designs. Journal of Management Studies, 58(1), 270-274.

Giarto, R. V. D., & Fachrurrozie, F. (2020). The Effect of Leverage, Sales Growth, Cash Flow on Financial Distress with Corporate Governance as a Moderating Variable. Accounting Analysis Journal, 9(1), 15-21.

Ibrahim, R. (2019). Corporate Governance Effect on Financial Distress: Evidence from Indonesian Public Listed Companies. Journal of Economics, Business & Accountancy Ventura (JEBAV), 21(3), 415-422.

International Finance Corporation. (2018). The Indonesia Corporate Governance Manual. World Bank.

Jebran, K., & Chen, S. (2021). Can We Learn Lessons from the Past? COVID-19 Crisis and Corporate Governance Responses. International Journal of Finance & Economics.1-9.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. Journal of financial economics, 3(4), 305-360.

Jiming, L., & Weiwei, D. (2011). An Empirical Study on the Corporate Financial Distress Prediction Based on Logistic Model: Evidence from China's Manufacturing Industry. International Journal of Digital Content Technology and its Applications, 5(6), 368-379.

Khan, K. M., & Ullah, N. (2021). Post COVID-19 Financial Distress in Pakistan: Prediction of Corporate Defaults at Pakistan Stock Exchange. Liberal Arts and Social Sciences International Journal (LASSIJ), 5(1), 386-400.

Khatib, S. F., & Nour, A. N. I. (2021). The Impact of Corporate Governance on Firm Performance During the COVID-19 Pandemic: Evidence from Malaysia. Journal of Asian Finance, Economics and Business, 8(2), 0943-0952.

Khoja, L., Chipulu, M., & Jayasekera, R. (2019). Analysis of Financial Distress Cross Countries: Using Macroeconomic, Industrial Indicators and Accounting Data. International Review of Financial Analysis, 66, 101379.

Kusmayadi, D., Rudiana, D., & Badruzaman, J. (2015). Good Corporate Governance. Tasikmalaya: LPPM Universitas Siliwangi.

Lee, T. S., & Yeh, Y. H. (2004). Corporate Governance and Financial Distress: Evidence from Taiwan. Corporate Governance: An International Review, 12(3), 378-388.

Liu, C., Uchida, K., & Yang, Y. (2012). Corporate Governance and Firm Value During the Global Financial Crisis: Evidence from China. International Review of Financial Analysis, 21, 70-80.

Mariano, S. S. G., Izadi, J., & Pratt, M. (2021). Can we predict the likelihood of financial distress in companies from their corporate governance and borrowing?. International Journal of Accounting

& Information Management, 29(2), 305-323.

Muhammad, S., & Ali, G. (2018). The Relationship Between Fundamental Analysis and Stock Returns Based on the Panel Data Analysis; Evidence from Karachi Stock Exchange (KSE). Research Journal of Finance and Accounting, 9(3), 84-96.

Myers, S., & Majluf, N. (1984), Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have. Journal of Financial Economics 13, 187-221.

Öztürk, Ö., Şişman, M.Y., Uslu, H., and Çıtak, F. (2020). Effect Of COVID-19 Outbreak on Turkish Stock Market: A Sectoral-Level Analysis. Hitit University Journal of Social Sciences Institute, 13(1), 56-68.

Pfeffer, J. (1973). Size, Composition, and Function of Hospital Boards Of Directors: A Study of Organization-Environment Linkage. Administrative science quarterly, 349-364.

Pindado, J., Rodrigues, L., & de la Torre, C. (2008). Estimating Financial Distress Likelihood. Journal of Business Research, 61(9), 995-1003.

Platt, H. D., & Platt, M. B. (2002). Predicting Corporate Financial Distress: Reflections on Choice-Based Sample Bias. Journal of economics and finance, 26(2), 184-199.

Purnanandam, A. (2008). Financial Distress and Corporate Risk Management: Theory and Evidence. Journal of Financial Economics, 87(3), 706-739.

Ramadani, I. H. (2011). Analisis Rasio Keuangan untuk Memprediksi Kondisi Financial Distress Perusahaan Manufaktur yang Go Public di Bursa Efek Indonesia. Doctoral dissertation, Universitas Airlangga.

Ramadhan, I. H. N. (2019). Efek Corporate Governance Terhadap Financial Distress pada Perusahaan Manufaktur yang Terdaftar di Bursa Efek Indonesia. Doctoral dissertation. Universitas Airlangga).

Restianti, T., & Agustina, L. (2018). The Effect of Financial Ratios on Financial Distress Conditions in Sub Industrial Sector Company. Accounting Analysis Journal, 7(1), 25-33.

Shehzad, K., Xiaoxing, L., & Kazouz, H. (2020). COVID-19's Disasters Are Perilous Than Global Financial Crisis: A Rumor or Fact?. Finance Research Letters, 36, 101669.

Shen, H., Fu, M., Pan, H., Yu, Z., & Chen, Y. (2020). The Impact of the COVID-19 Pandemic on Firm Performance. Emerging Markets Finance and Trade, 56(10), 2213-2230.

Tinoco, M. H., Holmes, P., & Wilson, N. (2018). Polytomous Response Financial Distress Models: The Role of Accounting, Market and Macroeconomic Variables. International Review of Financial Analysis, 59, 276-289.

Udin, S., Khan, M. A., & Javid, A. Y. (2017). The Effects of Ownership Structure on Likelihood of Financial Distress: Empirical Evidence. Corporate Governance, 17(4), 589-612.

Van Essen, M., Engelen, P. J., & Carney, M. (2013). Does "Good" Corporate Governance Help in a Crisis? The Impact of Country-and Firm-Level Governance Mechanisms in the E uropean Financial Crisis. Corporate Governance: An International Review, 21(3), 201-224.

Wenzel, M., Stanske, S., & Lieberman, M. B. (2020). Strategic Responses to Crisis. Strategic Management Journal, 41, 7-18.

Widhiadnyana, I. K., & Ratnadi, N. M. D. (2019). The Impact of Managerial Ownership, Institutional Ownership, Proportion of Independent Commissioner, and Intellectual Capital on Financial Distress. Journal of Economics, Business & Accountancy Ventura, 21(3), 351-360.

Yazdanfar, D., & Öhman, P. (2020). Financial Distress Determinants Among Smes: Empirical Evidence from Sweden. Journal of Economic Studies, 47(3), 547-560.

Younas, N., UdDin, S., Awan, T., & Khan, M. Y. (2021). Corporate Governance and Financial Distress: Asian Emerging Market Perspective. Corporate Governance, 21(4), 702-715.