



The Effect of Board of Directors' Diversity on Financial Distress in Energy Companies in Indonesia

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Received Jun 5, 2024
Revised Aug 8, 2024
Accepted Aug 12, 2024
Published Aug 13, 2024

DOI [10.35917/tb.v25i1.493](https://doi.org/10.35917/tb.v25i1.493)



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Abstract

The purpose of this study is to determine the role of board diversity in the form of the presence of female directors, the presence of foreign directors, the age of directors and the size of the board of directors against the risk of financial distress by conducting logistic regression testing on energy sector companies in Indonesia during 2018-2022. The results showed that the presence of female directors and the size of the board of directors negatively affected the risk of financial distress. Further research can test separately the period before the pandemic and after the pandemic so that the characteristics of each can be known in more detail. In addition, it can add cognitive diversity factors such as education, expertise and tenure of directors. This research can be used as a reference to determine non-financial factors that can affect the possibility of financial distress experienced by the company.

Keywords: financial distress, board diversity, gender, nationality, age, board size

Introduction

The discussion about financial distress has been going on for a long time by many scientists around the world, but lately efforts to predict financial distress have increased due to the adverse effects of the financial crisis that hit the global in the period 2007 to 2009 and then continued with the recent COVID-19 virus pandemic (Mehmood & De Luca, 2023). This condition causes disruption of the company's operational activities which can affect the condition and performance of the Company (Kurniawan et al., 2021). Many countries including Indonesia experienced operational and financial impacts due to the pandemic, 40.57% experienced changes and operational stops and 82.85% of companies experienced a decrease in revenue (Badan Pusat Statistik, 2020)

Financial distress measurement can be done with the Z-score method which considers several financial ratios that are considered capable of explaining the prediction of financial distress in companies (Altman, 1968). As research develops, factors that cause financial distress can be classified into financial and non-financial variables. The use of non-financial variables such as the role and diversity of the board of directors to predict the occurrence of financial distress has recently become the study interest of many researchers, especially after the global financial crisis and corporate financial scandals (Ali et al., 2023; Balasubramanian et al., 2019; Guizani & Abdalkrim, 2023).

Referring to previous research, corporate governance and diversity of the board of directors have a significant influence on the company's financial stability by assisting in the decision-making process and enacting appropriate policies (Aksoy & Yilmaz, 2023; Farooq et al., 2023). Several other studies describe board diversity using demographic diversity (gender, age and nationality), cognitive (education, financial expertise and tenure) and overall board diversity index (total demographic and cognitive diversity) (Ali et al., 2023; Bernile et al., 2018; Harjoto et al., 2018).

Referring to agency theory, there is a relationship between shareholders as principals of the company and the board of directors as agents to perform some services on their behalf (principals) in the form of delegation of some decision-making authority to the agent, but there will be inefficient agent management conditions so that agency problems arise (Jensen & Meckling, 1976). Previous literature has shown that board diversity can be used to control agency issues (Ain et al., 2020; Ali et al., 2023).

In addition, the study also uses resource dependency theory which emphasizes that more independent directors can contribute expertise that is not affected by internal company policies or sentiments. In addition, foreign directors can share more unique intercultural perspectives, improving the quality of board decision-making when voting on internationally relevant strategic decisions (Maier & Yurtoglu, 2022).

Discussions on board diversity are widely found in countries such as Malaysia, China, Pakistan and the European region (Ali et al., 2023; Guizani & Abdalkrim, 2023; Maier & Yurtoglu, 2022; Ud-Din et al., 2020). However, from the literature study, the discussion in Indonesia is still very limited. From the literature gap, a research topic was obtained on the effect of board of directors diversity on financial distress in the Indonesian energy sector. The choice of the energy sector is because several energy commodities such as oil, gas and coal have an important role as one of the country's largest export contributing sectors. In addition, the energy sector is one of the sectors that experienced a decline in financial performance during the financial crisis and covid 19 (Rizal et al., 2022).

Literature Review and Hypotheses

This research uses the theory of agency and resource dependence as the basis of research. The diversity of the board of directors can be explained through agency theory, an example is the presence of women on the board monitoring strategy implementation to ensure that shareholder interests are protected and aligned with the interests of managers (Guizani & Abdalkrim, 2023). Another point of view of the board of directors can be viewed using the theory of resource dependence. that it is important to highlight the independence and diversity of the board of directors as a source of uniqueness and enhancer of knowledge of the company's external environment (Pfeffer & Salancik, 2003).

Financial distress of a company must be an important concern for shareholders because it will affect business sustainability in the future. The discussion of financial distress includes financial and non-financial factors. Currently, many researchers are focusing on looking at non-financial factors such as board diversity that affect financial distress such as (Abbas & Frihatni, 2023; Ali et al., 2023; Guizani & Abdalkrim, 2023; Maier & Yurtoglu, 2022).

Gender diversity on the board of directors is often seen as a driver of corporate values and corporate performance through higher diversity and lower discrimination (Maier & Yurtoglu, 2022). According to the results of previous research, it was concluded that the presence of female directors on the board of directors can reduce the risk of financial distress (Ali et al., 2023; Guizani & Abdalkrim, 2023; Maier & Yurtoglu, 2022). From the description above, the hypothesis is formulated as follows:

H1: Gender diversity negatively affects financial distress

The presence of foreign directors provides a different experience and can represent the interests of international shareholders so that it will increase quality of board oversight (Lee et al., 2018). The presence of foreign directors can improve results strategic decisions that are the responsibility of the board of directors. Referring to previous research, it was found that the presence of foreign directors on the board of directors in a company will reduce the chances of financial distress experienced by the company (Maier & Yurtoglu, 2022). From these results, the researcher proposed a hypothesis with the following formulation:

H2: *Nationality diversity negatively affects financial distress*

Previous research has shown that the age diversity of the board of directors has a negative influence on the likelihood of financial distress in the company. Board of directors who have a more mature age are considered capable of making better decisions, this is due to experience, values and norms that are formed with age (Bhat et al., 2020; Fatima et al., 2023). Young boards of directors tend to make risky decisions, increasing the likelihood of financial distress in the company. The existence of age diversity can increase the ability to control the management of the company in all aspects including finance. This is due to the diversity of viewpoints, values and beliefs. A board of directors of mature age will strive to impart the values, views and beliefs they have in overseeing the activities companies to reduce the risk of financial failure (Ali et al., 2023; Bernile et al., 2018; Fatima et al., 2023). From the description above, the following research hypothesis is formulated:

H3: *Age diversity negatively affects financial distress*

The board of directors has the responsibility to oversee the management of the company carried out by agents. According to agency theory, the board of directors has the role of a principal who gives authority to agents to run the business. Therefore, the size of the board of directors is important to reduce the emergence of problems in policy making. A large board of directors will increase the ability to obtain greater information, so that decisions taken can be better supported by quality information (Ali et al., 2023; Fatima et al., 2023). In addition, a large number of board of directors can also be used as controllers of each other and of course agent controllers as company managers. The better the control and supervision carried out by the board of directors with adequate composition, the smaller the risk of financial distress (Maier & Yurtoglu, 2022). Based on the results of other studies, the larger the size of the board of directors is a factor that influences the risk of reducing the risk of financial distress (Bernile et al., 2018; Ud-Din et al., 2020). Based on the description above, the hypothesis is formulated as follows:

H4: *Board size negatively affects financial distress*

Research Method

This study used data from 46 energy sector companies listed on the Indonesia Stock Exchange (IDX) for the 2018-2022 observation period and produced 230 sample data. The sample criterion we used was that the energy sector company must publish annual reports consistently for a total of 5 years of observation. Hypothesis testing was performed using logistic regression analysis based on statistics application.

The variable financial distress is measured using the altman Z-score model (Altman, 1968). This model was chosen because it uses multiple discriminant analyses of comprehensive financial ratio vectors and thus provides a holistic view of a firm's financial strength (Aktas et al., 2012).

$$\text{Z-Score} = 1.2x1 + 1.4x2 + 3.3x3 + 0.6x4 + 1.0x5,$$

Where x_1 represents the ratio of working capital to total assets, x_2 the ratio of retained earnings to total assets, x_3 the ratio of EBIT to total assets, x_4 the ratio of book value of equity to total liabilities, and x_5 represents the ratio of sales to total assets. Companies with a Z-score below 1.81 are expected to experience financial distress, while companies with a Z-score above 2.99 are unlikely to experience financial distress. The range between 1.81 and 2.99 is defined as a gray zone. The dummy variable uses a value of 1 if the company is in financial distress and a value of 0 if not in financial distress.

As for the variable of diversity of the board of directors, with each variable being gender diversity measured based on the number of female directors to the total board of directors, national diversity is measured by comparing the number of foreign directors to the total board of directors, the age of the board of directors is measured based on the average age value of the board of directors, the size of the board of directors is measured using the total number of directors. In addition, this study uses control variables, namely debt to equity ratio and company size based on the natural logarithm of the company's total assets.

Results and Discussion

Regression Model Feasibility Test

Table 1. Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	6.761	8	.563

Source: Result of data processing (2024)

The feasibility test results of the regression model in table 1 show a chi square value of 6.761 and a significance level of 0.563. When compared with the standard value of significance of 0.05, it can be stated that $0.563 > 0.05$ so that it is concluded that the regression model is fit and matches the observation data, then this model is feasible to be used for further processes.

Overall Model Fit Test

Table 2. Goodness of Fit Test Result

-2 Log likelihood Block 0	-2 Log likelihood Block 1
313.803	232.390

Source: Result of data processing (2024)

The overall model test is one of the statistical tests to assess whether a model that we compile is good in accordance with the data that becomes research material. Based on the test results of the entire model in table 2, a value of -2 log likelihood block 0 was obtained of 313.803. After entering six independent variables (including two control variables), the value of -2 log likelihood block 1 decreased significantly to 232.390. The decrease in value is an indication that the hypothesized model is suitable and feasible for use.

Coefficient of determination Test

Table 3. Coefficient of determination Test Result

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	232.390 ^a	.298	.400

Source: Result of data processing (2024)

The coefficient of determination test is performed to find out the variability of the dependent variable that can be explained by the independent variable. From the results above, the nagelkerke R square value of 0.400 means that the variability of financial distress that can be explained by the variables gender diversity, nationality diversity, age diversity and board size is 40% while the other 60% is explained by independent variables outside this study.

Hypothesis Test

Table 4. Logistic Regression Test

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	GENDER DVST	-2.624	1.260	4.338	1	.037	.073
	NATIONALITY DVST	.128	.843	.023	1	.879	1.137
	AGE DVST	.047	.036	1.682	1	.195	1.048
	BOARD SIZE DVST	-1.044	.168	38.759	1	<.001	.352
	LEVERAGE	.061	.033	3.313	1	.069	1.063
	COMPANY SIZE	.060	.080	.567	1	.452	1.062
	Constant	.627	3.020	.043	1	.836	1.871

Source: Result of data processing (2024)

Table 4 above describes the test results of four hypotheses using logistic regression. The gender diversity variable shows a significance value of $0.037 < 0.05$ with a coefficient value of -2.624, meaning that gender diversity has a negative influence on financial distress, then H1 is accepted. Board size diversity has a significance value of $0.001 < 0.05$ with a coefficient of -1.044 which shows that board size diversity has a negative influence on financial distress so that H4 is accepted. In different situation, the variables nationality diversity and age diversity showed signification values of 0.879 and 0.155 respectively which means H2 and H3 were rejected.

The negative influence of gender diversity on financial distress in this study supports previous literature compiled by (Guizani & Abdalkrim, 2023; Maier & Yurtoglu, 2022) that the presence of female directors in the composition of the board of directors will reduce the possibility of a company experiencing financial distress. Judging from these conditions, to be able to survive the global financial crisis and also the pandemic that occurred for years, companies need to consider the presence of women on the board of directors. Women directors tend to have a strategic focus and the ability to detect financial reporting errors and tighter debt policies so as to keep companies away from possible financial distress (García & Herrero, 2021; Gupta et al., 2020).

The negative influence of board size on financial distress is in line with research conducted by (Fatima et al., 2023; Mariano et al., 2020; Marie et al., 2021; Ud-Din et al., 2020). A board of directors that has a larger size will perform better because there will be a diversity of knowledge and sharing of experiences and resources into the Company (Mariano et al., 2020). In addition, the large size of the board of directors will provide job optimization and avoid overlapping rights and responsibilities (Fatima et al., 2023).

The absence of an influence between nationality diversity on financial distress is in line with research (Fatima et al., 2023; Marie et al., 2021). which states that the involvement of foreign directors has no influence on reducing the risk of financial distress faced by the company. This is because the proportion of foreign directors is still small compared to the entire board of directors in the energy sector in Indonesia.

Meanwhile, the age diversity of the board of directors does not affect financial distress in line with (Fatima et al., 2023; Maier & Yurtoglu, 2022) which states that the greater age

diversity of the board of directors has no influence on the risk of financial distress experienced by the company. The lack of diversity in the age data of the board of directors makes it homogeneous.

Conclusion

This research article provides an explanation of how non-financial factors such as the diversity of the board of directors (consisting of gender diversity, nationality diversity, age diversity and board size) can affect the risk of financial distress experienced by energy sector companies in Indonesia tested through logistic regression models.

The result from this study can be summarized into three parts. First, gender diversity has a negative influence on the risk of financial distress. This condition means that a heterogeneous board of directors characterized by the participation of female directors will reduce the risk of financial distress of the Company. This is in accordance with agency theory, that heterogeneous gender diversity results in different viewpoints, better control and is less likely to interfere with shareholder interests thereby lowering agency costs (Loukil et al., 2019). Second, board size has a negative influence on financial distress, meaning that a board of directors that has more composition will be able to reduce and reduce the risk of financial distress of the company than the composition of a board of directors that is less. This condition is in line with the theory of resource dependence that the greater the composition of directors, the better the ability to control opportunistic behavior of managers and to access resources and information so that the risk of financial distress can decrease (Ud-Din et al., 2020). Third, the age diversity of the board of directors and the involvement of foreign directors do not affect the risk of financial distress of companies in the energy sector in Indonesia caused by low levels of diversity (data is homogeneous).

The implications of this study can be used by practitioners in managing the risk of financial distress in the energy sector by considering the diversity factor of the board of directors. In addition, it can be used by other researchers to develop future thoughts and ideas related to financial distress, especially during this time when external conditions can change dynamically. Resource dependency theory explains that companies depend on various resources they have, for example, people to be able to survive and thrive. From the results of this study, the diversity of the board of directors, namely gender diversity and the size of the board of directors, can be an important asset in obtaining and utilizing these resources. For example, to be able to improve strategic decision-making, companies can consider female gender board members who have a strategic focus and the ability to detect financial misstatements as well as strict debt policies. In addition, the larger the size of the board of directors with a mix of men and women can provide a broader perspective in strategic decision-making that can reduce the risk of financial distress of the company.

Further research can conduct logistic regression tests separately between the pre-pandemic and post-pandemic periods so that the characteristics of the influence of the independent variable on the dependent variable can be known in more detail. In addition, further research can add other diversity factors such as cognitive diversity consisting of educational background, expertise and length of service of the board of directors as independent variables.

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