Board Size and Leverage in Indonesian’s Pharmaceutical Companies. The Moderating Role of Profitability

Marianus Hendrilensio Sanga¹, Andrianantenaina Hajanirina²

¹Business Administration Department, Politeknik Negeri Kupang, ²Faculty of Business, President University, Jakarta

ABSTRACT

This empirical study examines the relationship between board size, leverage, and profitability in the pharmaceutical sector. Using a sample of pharmaceutical companies from 2019 to 2022, the study reveals that board size has a significant positive impact on leverage. Additionally, profitability acts as a moderator in the relationship between board size and leverage. This study employs the quantitative research category with the multiple linear regression analysis method. The sample data consists of pharmaceutical companies listed on the IDX (Indonesia Stock Exchange) during the period 2019-2022, with a total of 11 companies. The observational data are analyzed using STATA 17 for the data panel procedures. The results indicate a significant negative relationship between board size and leverage when considering profitability, suggesting that larger boards in pharmaceutical companies are associated with lower levels of leverage. These findings contribute to the existing literature on corporate governance and financial performance, highlighting the significance of board size in shaping leverage decisions and influencing profitability. The study suggests that larger boards in the pharmaceutical sector exercise caution in managing debt, leveraging their enhanced monitoring capabilities, diverse expertise, and increased accountability. Policymakers, industry practitioners, and investors can use these insights to make informed decisions regarding board composition, financing strategies, and evaluating the financial performance and risk profiles of pharmaceutical companies.

Keywords:
Board size
Leverage
Profitability
Pharmaceutical sector

INTRODUCTION

Previous research has found the important role of the board of directors in uncertain economic situations (Ongsakul et al., 2021). In times of uncertainty, corporate reduces board size to avoid the agency conflict between them. One of the common issues that often arises is regarding the use of external funding sources which is debt. Naturally, the leverage of company is decided more carefully. The board of directors has the responsibility to evaluate, determine, and oversee the appropriate level of leverage for the company. They also play a role in determining the permissible leverage policy and establishing limits or specific policies regarding debt-to-equity and asset ratios. They must ensure that decisions related to leverage are based on careful analysis and consider the risks and long-term interests of the company and its shareholders. Therefore, the number of board members is crucial in the effectiveness of the decision-making process. The more complex a business is, the greater the number of board members needed (Krisnadewi et al., 2020).

During the COVID-19 pandemic crisis, the healthcare services/products industry, including the pharmaceutical sector, has been one of the benefited industries. The demand for medicines, particularly those related to COVID-19 treatment, such as antiviral drugs and symptom relievers, has significantly increased. Additionally, there has been a demand for COVID-19 vaccines. This has led to an increase of production, sales,
and intensive research in drug and vaccine. This is evident in the average net income of the pharmaceutical sector, which has continued to grow since 2020 by 16% and reached 25% in 2021, except for 2022, which shows a reverse trend with a decline of -6%. However, the net income percentage in 2022 still remains above the average net income increase since 2019. Figure 1 displays the average net income of the pharmaceutical sector from 2019 to 2022.

Figure 1. Net income of the pharmaceutical sector periods 2019 – 2022

Previous research has found that there are differences in profitability before and after the pandemic (Sari & Dura, 2022). According to Sari and Dura, profitability ratios such as ROA (Return on Assets), ROE (Return on Equity), GPM (Gross Profit Margin), and NPM (Net Profit Margin) show significant differences between the pre-New Normal era and the post-New Normal era. This indicates that the utilization of equity assets supports the profitability of companies. However, this research also found that the OPM (Operating Profit Margin) ratio did not show any significant difference. This suggests that operationally, pharmaceutical companies did not experience significant gains from the presence of COVID-19 as many people initially expected. This is further supported by another prior research that found that while COVID-19 affected the pharmaceutical industry, the companies did not achieve significant profits (Mustikaningrum et al., 2022). They found that there were no significant differences in profitability before and during the pandemic in pharmaceutical companies in Indonesia. The research by Aliah (2022) further reinforces this, stating that there were no differences in profitability before and during the COVID-19 pandemic in pharmaceutical companies (Aliah, 2022).

Meanwhile, the leverage of the pharmaceutical sector decreased dramatically in 2022 by 47.79%. The decline in debt occurred due to the assumption that the pharmaceutical industry experienced significant profits during this pandemic situation. When the company generates sufficient profits, management may want to reduce debt levels to avoid the pressure of interest payments and high debt obligations. This helps the company in managing the risk of bankruptcy that can arise if profits suddenly decline. Figure 2 shows the level of leverage in the pharmaceutical sector during the COVID-19 pandemic.

The objective of this study is to determine the relationship between the size of the board and the leverage, with profitability as moderating variables. The results of this study can contribute theoretically to explaining the relationship between the size of the board and the total leverage of pharmaceutical companies. From a practical perspective, this study can provide information and insights to boards and investors regarding the influence of board size decisions on leverage in the pharmaceutical sector in Indonesia.
LITERATURE REVIEW

Board Size and Leverage

The board of directors plays a crucial role in decision-making, including financial decisions such as determining the company's capital structure and level of leverage (Krisnadewi et al., 2020). The size of the board can impact the diversity of expertise and perspectives available during these discussions. A larger board may have a wider range of skills and knowledge, which can lead to more comprehensive and informed decision-making regarding leverage.

In uncertain situations, the role of board size becomes even more important in relation to leverage. This is because a larger board with appropriate expertise and experience can play a significant role in analyzing risks, strengthening risk management, and ensuring that leverage decisions made in the face of uncertainty provide protection and long-term benefits for the company (Ongsakul et al., 2021).

H1. Board Size has positive effect on leverage

Moderating Role of Profitability

A larger board size can increase the opportunities to have members with diverse skills, knowledge, and experience. A board of directors composed of individuals who have a deep understanding of the industry, finance, strategy, or other crucial aspects can provide valuable advice to management. This can contribute to better decision-making, including strategic decisions that can impact the profitability of the company. Majeed et al. found that board size has a positive influence on ROA (Return on Assets) but a negative influence on ROE (Return on Equity) in the banking sector in Pakistan. Meanwhile, board size has a positive influence on both ROA and ROE in the banking sector in China (Majeed et al., 2020). Additionally, board size also has a positive and significant relationship with earnings management. This study clarifies the cases of Enron, Xerox, and WorldCom in the United States (Githaiga et al., 2022).

Capital structure and optimal leverage are greatly influenced by a company's ability to generate profits (Ezeani et al., 2021). This is related to the company's ability to pay interest and debt obligations and its perception of the risks it can bear. Several factors that influence the level of company leverage include institutional ownership, asset structure, profitability, and company growth (Tarigan et al., 2022). The easier a company can generate profits, the more risk-taker it becomes in using debt financing (Rostami et al., 2022).

H2. Profitability moderates the relationship between board size and leverage

METHODS

This study employs the quantitative research category with the multiple linear regression analysis method. The sample data consists of pharmaceutical companies listed on the IDX (Indonesia Stock Exchange).
during the period 2019-2022, with a total of 11 companies. The observational data are analyzed using panel data approach. The data is manually extracted from the annual reports of the selected firms, including assets, liabilities, and net profit. The dependent variable is book leverage (LEV), which represents the total debt to total assets ratio (Ezeani et al., 2022). The independent variable is board size (BSZ), calculated as the total number of directors on the board. This model is moderated by profitability (PRO), represented by return on assets.

This research employs descriptive analysis and regression analysis. Descriptive analysis is used to provide an overview of the data, including minimum, maximum, mean, and standard deviation values. Regression analysis complies with the data panel procedure to choose the appropriate method relate to our data characteristics. Following is the equation.

\[
LEV_{it} = \beta_0 + \beta_1BSZ_{it} + \beta_2PRO_{it} + \beta_3(BSZ*PRO)_{it} + \epsilon_{it}
\]

Where,

LEV_{it} is the leverage in period “t” for the cross-sectional unit “i”. BSZ_{it} is the board size in period “t” for the cross-sectional unit “i”. PRO_{it} is the profitability in period “t” for the cross-sectional unit “i”. to measure the moderating role of profitability between board size and leverage, the study created interactions variable: BSZ*PRO_{it} and \epsilon_{it} is the random error term.

Data were analyzed using STATA 17 for the data panel procedures. It enables the analysis of data from panels consisting of observation units measured repeatedly over different time periods. It provides advanced estimation methods, including fixed effects estimation and random effects estimation, in panel data analysis.

RESULTS AND DISCUSSION

Table 1 presents the descriptive statistics of the variables during 2019 to 2022. The mean value of LEV was 0.421 suggesting that some pharmaceutical companies in Indonesia may have stronger or weaker influence than others. Regarding board size, Table 1 shows the average proportion of number board size was 5.455% and the maximum number of 11 suggesting that pharmaceutical with the larger number board size companies may have stronger effect than others. Standard deviation on board size was 2.528 suggests high variability in it. This high variability may be caused by executive and independent board, by gender composition, by ethnic. The mean value of BSZ*PRO was 0.324 suggesting that moderating role may has stronger the model.

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>SD</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEV</td>
<td>44</td>
<td>0.205</td>
<td>0.421</td>
<td>0.132</td>
<td>0.944</td>
<td>0.341</td>
</tr>
<tr>
<td>BSZ</td>
<td>44</td>
<td>2.528</td>
<td>5.455</td>
<td>2.000</td>
<td>11.000</td>
<td>5.000</td>
</tr>
<tr>
<td>BSZ*PRO</td>
<td>44</td>
<td>0.622</td>
<td>0.324</td>
<td>-3.073</td>
<td>1.24</td>
<td>0.328</td>
</tr>
</tbody>
</table>

Source: data processed

Table 2 displays the regression results based on the estimation of random effect model (REM). The effect board size and moderate variable on leverage uses REM to accommodating unobserved heterogeneity among individuals or groups. This helps in capturing individual or group effects that are not captured by the OLS or fixed effects models (Brooks, 2008).

Based on table 2, the coefficient for “BSZ” has a value of 0.0226*. It means that board size had a positive and significant effect (\(\beta = 0.026, p\text{-value}<0.05\)) on leverage. Hence, hypothesis H1 is supported. It is indicating that an increase in the board size will contribute to an increase in leverage of pharmaceutical companies. This implies that the size of the board can impact the diversity of expertise and perspectives available. This finding supports the theory that a larger board may has a wider range of skills and knowledge leading to more comprehensive and informed decision-making regarding leverage (Krisnadewi et al., 2020). However, the result contradicts with those (Ezeani, et al., 2021). According to Ezeani et al., the size of the board reduces the use of leverage in a bank-based (stakeholder-oriented) economy. Although, the statistical significance of this coefficient is not provided in the given output. It means that others board factor impacted this model such as board gender, outside directors and board meeting. That is why some studies using board characteristics as a proxy covers board gender, outside directors, board meeting and board size (Ezeani et al., 2022; Githaiga et al., 2022; Krisnadewi et al., 2020; Majeed et al., 2020).
The coefficient for moderating variable "BSZ*PRO" had a value of -0.127***. The result suggests that the profitability moderates the relationship between board size and leverage ($\beta = -0.127, p<0.05$). Therefore, hypothesis H2 is supported. The negative coefficient (-0.127) indicates a negative relationship between board size and leverage. This means that an increase in the profitability as a moderate variable will contribute to a decrease in leverage of pharmaceutical companies. Otherwise, a decrease in the profitability as a moderate variable will contribute to an increase in leverage. The statistical significance of this coefficient suggests that it is statistically significant at the $p<0.01$ level. This finding support those (Githaiga et al., 2022) that large boards are less effective in preventing earnings manipulation compared to smaller boards. One possible explanation for this outcome is the increased difficulty in coordination and problem-solving as the board size grows. Furthermore, smaller boards are more likely to discourage individual board members from taking advantage without contributing, which enhances their accountability and oversight responsibilities. This finding also supports pecking order theory that companies with high profitability levels have low debt, because companies with high profitability have abundant internal funding. Rostami et al., 2022 also support this theory that corporates also have tendency to more employee own capital than outside resources if they can generate profitability more. This goal can be accepted if the board has smaller number to manage profitability and reduce the board cost about risk management (Faisal & Challen., 2021).

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>LEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSZ</td>
<td>0.0226*</td>
</tr>
<tr>
<td></td>
<td>(0.0136)</td>
</tr>
<tr>
<td>BSZ*PRO</td>
<td>-0.127***</td>
</tr>
<tr>
<td></td>
<td>(0.0351)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.339***</td>
</tr>
<tr>
<td></td>
<td>(0.0844)</td>
</tr>
</tbody>
</table>

Observations 44
Number of firm 11

Based on these regression results, we can conclude that board size of pharmaceutical in Indonesia has positive and significant impact against leverage. A board that is bigger in size but consists of qualified individuals with relevant expertise and experience can have a substantial impact in evaluating risks, enhancing risk management practices, and ensuring that decisions regarding leverage, made in uncertain circumstances, offer protection and long-term advantages to the company. (Ongsakul et al., 2021).

Profitability moderates the relationship between board size on leverage with negative value. This finding explains the phenomenon leverage of pharmaceutical sector in Indonesia period 2019 – 2022. The average liabilities of pharmaceutical sector in Indonesia were increased suddenly in 2022 by 11.21% compared to only 0.67% in 2021. This increase in liabilities was carried out to offset the shrinking profit which touched -6% in 2022 compared to 25% in 2021. Several reasons that support company to increase leverage when profitability decreasing is sources of funding, financial flexibility and business prospect. First, using debt can provide companies with additional sources of funding when profitability declines. In some cases, it may be difficult or expensive for companies to raise funds through equity or internal income. By taking on debt, companies can obtain the necessary funds to finance their operations, make investments, or fulfill other financial obligations (Legesse et al., 2021). Second, Debt can provide financial flexibility to companies in managing situations of declining profitability. By using debt, companies can avoid drastic measures such as operational reductions or asset liquidation that may have long-term negative consequences. Debt can provide breathing room for companies to make necessary changes or restructuring efforts to recover their financial performance (Kumar & Vergara-Alert, 2020). Lastly, the demand for medicine makes pharmaceutical companies optimistic that this business line will be profitable in the long run, despite the current decline in profitability. By using debt, companies can finance these projects and hope to generate future profits that can offset the current decline in profitability.
CONCLUSION

The study finds that board size has a positive and significant effect on leverage in pharmaceutical companies. A larger board with diverse skills and knowledge can lead to more comprehensive and informed decision-making regarding leverage. The result contradicts some previous studies, which suggest that board size reduces leverage in bank-based economies. Moderating Role of Profitability: The study reveals that profitability moderates the relationship between board size and leverage. An increase in profitability leads to a decrease in leverage, while a decrease in profitability leads to an increase in leverage. This suggests that companies with higher profitability levels have lower debt, as they have abundant internal funding. Smaller boards may be more effective in managing profitability and reducing board costs related to risk management. This finding aligns with the pecking order theory and supports previous research that indicates larger boards are less effective in preventing earnings manipulation.

Overall, the study suggests that a larger board size can contribute to increased leverage in pharmaceutical companies. However, the relationship between board size and leverage is moderated by profitability. Companies with higher profitability levels tend to have lower leverage, and smaller boards may be more effective in managing profitability. These findings have implications for board decision-making and highlight the importance of considering both board size and profitability in determining leverage goals.

Based on the conclusions drawn from the paper, here are some suggestions for future research. First, further investigate the impact of board characteristics: although this study focused on board size, it would be valuable to explore the influence of other board characteristics, such as board composition (gender diversity, independence), board meeting frequency, and the presence of outside directors. Examining how these factors interact with leverage and profitability could provide a more comprehensive understanding of corporate governance dynamics in the pharmaceutical sector.

Second, explore the relationship between leverage and other financial performance indicators: While this study examined the relationship between board size, leverage, and profitability, it would be beneficial to investigate how leverage relates to other financial performance indicators such as liquidity ratios, solvency ratios, and market-based measures (e.g., market value to book value ratio). Understanding the broader financial implications of leverage in the pharmaceutical sector can provide insights into its overall financial health.

Third, consider the impact of industry-specific factors: The pharmaceutical industry is unique in terms of its regulatory environment, research and development activities, and market dynamics. Future research could explore how industry-specific factors, such as intellectual property rights, government regulations, and market competition, influence the relationship between board size, leverage, and profitability. This would provide a more nuanced understanding of the pharmaceutical sector's dynamics.

Fourth, conduct comparative studies: To gain further insights, it would be interesting to compare the findings of this study with other countries or regions. Investigating whether the relationship between board size, leverage, and profitability holds true in different contexts can help identify any country-specific or regional variations. Comparative studies can shed light on the generalizability of the findings and provide a broader perspective on the topic.

Fifth, longitudinal analysis: This study analyzed data from 2019 to 2022, capturing the impact of the COVID-19 pandemic on the pharmaceutical sector. Conducting a longitudinal analysis over a longer period, including pre-pandemic data, would allow for a more comprehensive understanding of the trends and dynamics in the sector. This could help identify any long-term effects or changes in the relationship between board size, leverage, and profitability.

Sixth, consider alternative measures of leverage and profitability: This study used book leverage and return on assets as proxies for leverage and profitability, respectively. Future research could explore alternative measures or additional financial indicators to capture a more comprehensive view of leverage and profitability in the pharmaceutical sector. This could include measures such as interest coverage ratio, debt-to-equity ratio, net profit margin, or cash flow-based indicators.

References


