

EFFECT OF INTELLECTUAL CAPITAL, OWNERSHIP STRUCTURE, AND OPERATING CAPACITY ON FINANCIAL DISTRESS

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Abstract : Financial distress remains a critical issue for companies, particularly in capital-intensive industries such as the energy sector. The purpose of this study is to determine the effect of intellectual capital, ownership structure, and operating capacity on financial distress. The population of this study includes energy companies listed on the Indonesia Stocks Exchange (IDX) for the period 2021-2023. Employing a purposive sampling method, 177 data observations were analyzed using panel data regression.. The results of this study indicate that (1) the intellectual capital variable has a positive effect on financial distress, suggesting that higher intellectual capital alone does not necessarily enhance financial stability (2) the institutional ownership variable has a negative effect on financial distress, indicating that strong institutional investor presence can improve financial resilience. (3) managerial ownership has no effect on financial distress, implying that managerial stakes may not directly impact financial health. and (4) operating capacity has a positive effect on financial distress, highlighting the potential risks associated with higher operational intensity. The model's adjusted R² value of 0,1367 indicates that 13,67% of the variation in financial distress is explained by the tested variables. These results underscore the importance of effective corporate governance and financial management in mitigating financial distress. This study provides valuable insights for policymakers, investors, and corporate decision-makers in formulating strategies to enhance financial sustainability in the energy sector.

Keywords: Agency; Distress; Financial; Governance; Intellectual; Operating; Ownership; Performance; Sustainability

Code JEL: G30, G32, L72, O34

INTRODUCTION

Companies are established with various objectives, one of which is to generate profits to ensure business continuity and allow shareholders to enjoy the returns. To achieve this, a company's financial performance must be in a healthy and stable condition, measured by its ability to generate profits. Additionally, financial health can be assessed by comparing the proportion of assets to liabilities—the higher the proportion of assets relative to liabilities, the better the company's performance, and vice versa. When a company's financial condition is strong, it can attract more capital from investors, enabling business expansion and greater public recognition.

Conversely, poor financial conditions deter investor interest and make creditors reluctant to lend funds due to concerns about repayment. This situation inevitably worsens the company's financial state, potentially leading to an inability to meet its obligations, commonly referred to as financial distress.

Financial distress is a state where a company faces financial difficulties [1]. It becomes evident when a company struggles to fulfill its obligations, and if this persists over time, it may lead to bankruptcy [2]. Signs of financial distress include declining financial performance accompanied by recurring annual losses [3]. Financial distress remains a common phenomenon among companies worldwide, particularly in Indonesia. While it reflects poor management, it is not always solely the fault of management—both internal and external factors can contribute. For instance, during the COVID-19 pandemic, halted business transactions led many companies to face bankruptcy. Even those that survived struggled to recover their severely declining performance, with some eventually going bankrupt.

According to CNBC (2023), seven sectors experienced financial performance declines in 2023, as illustrated in Figure 1.

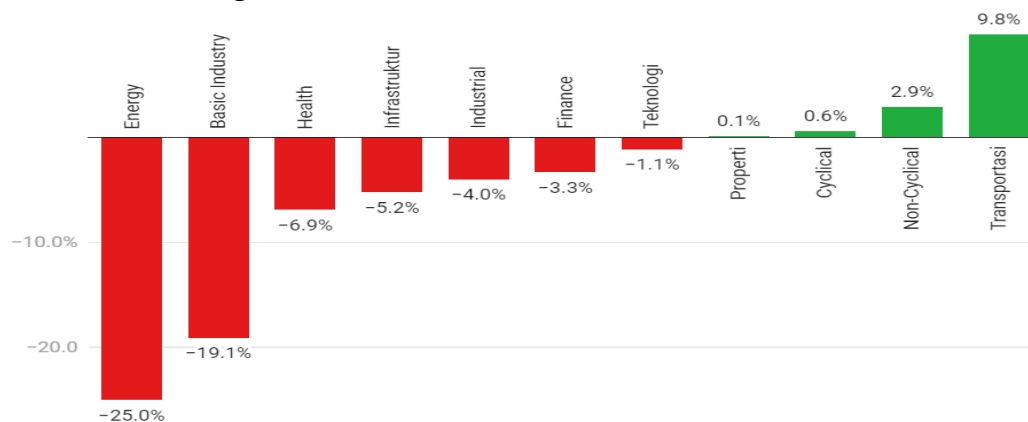


Figure 1. IDX Sectoral Performance

Source: CNBC (2023)

The technology sector saw the smallest decline at 1.1%, attributed to high interest rates that made it difficult for issuers to secure funding. The financial sector declined due to digital banking, which became a burden after a bullish phase that exceeded reasonable valuations. The energy sector experienced the largest decline at 25%. Financial distress poses a significant challenge for companies, especially in the energy sector, which faces both external and internal pressures. Previous research suggests that intellectual capital can help reduce financial distress risks [4], [5]. However, other studies argue that intellectual capital has no significant effect [6], indicating inconsistencies in how intangible assets impact financial stability. Similarly, ownership structure, particularly institutional ownership, is claimed to enhance long-term financial stability [7]. Yet, some studies suggest that high institutional ownership does not guarantee protection from financial distress [3]. Findings on managerial ownership are also mixed, with some studies showing its role

in mitigating financial distress while others find no significant relationship. The operating capacity variable also yields varied results. Some research indicates that efficient asset use reduces financial distress. While other studies argue that asset utilization does not necessarily reflect financial stability [1]. These discrepancies highlight the need for further research to clarify the role of these variables in influencing financial distress.

1. THE LITERATURE REVIEW

Agency relationship as a contract in which one or more persons (the principals) engage another person (the agent) to perform a service on their behalf, delegating decision-making authority to the agent [8]. Also state that directing the agent to act in accordance with the principal's interests entails costs [8]. The principal will also incur costs to limit the agent from engaging in actions that could harm the principal. In general, it is impossible for either the principal or the agent to avoid incurring costs to ensure that the agent's decisions align with the principal's expectations [8]. The problem, however, is that agents sometimes act contrary to the wishes of the principal [9]. This issue is known as an agency conflict. It typically arises because agents within a company may engage in opportunistic behavior—actions intended to benefit themselves by misusing authority and company resources [8]. Diverging interests between principals and agents can lead to agency conflict, especially if agents prioritize their own interests, resulting in motivations and goals that conflict with those of the principals. Such differences can negatively affect the company by creating agency costs. If these costs persist, the company risks entering a state of financial distress [10].

Signalling theory explains how a company conveys signals in the form of information to external parties [11]. The information is typically communicated through financial reports, which may convey either positive signals (good news) or negative signals (bad news) [12]. These signals reflect the company's financial condition—whether performance is good or poor—enabling outsiders to assess the firm's stability [13]. One example of a negative signal a company may send is the state of financial distress. Financial distress refers to a situation in which a company experiences financial difficulties that hinder its ability to meet obligations. This condition can be observed in financial reports when the company's debt exceeds its assets or when it reports continuous losses. A negative signal in the form of financial distress is useful for both management and investors [14]. When investors learn that a company is in financial distress, it influences their funding decisions, which in turn affects the company's sustainability.

Financial distress is a condition in which a company faces financial difficulties [2]. It is strongly associated with bankruptcy due to a significant deterioration in the company's financial condition [1]. Bankruptcy occurs when a company can no longer meet its obligations because its earnings are insufficient to cover financing and even operational costs [2]. Moreover, financial distress can lead shareholders and creditors to lose confidence, resulting in a lack of funds to operate the business and potentially causing bankruptcy [15]. In this study, financial distress is measured using the Altman Z-score as a proxy to project the likelihood of financial distress. This

measurement was chosen because research by [16]–[19] has shown that the Altman Z-score has a high accuracy rate—up to 95%—in predicting financial distress. Furthermore, the Altman Z-score incorporates more financial ratios than other distress models, yielding more accurate results [20].

Intellectual capital refers to human resources in the form of knowledge as well as an asset to the company [4]. Optimal management of intellectual capital can improve the company's efficiency and effectiveness [21]. Firms with strong resources, capabilities, and competencies can gain a competitive advantage, helping them avoid financial distress. The better a company manages its intellectual capital, the lower its risk of financial distress [22]. Within signalling theory, intellectual capital can strengthen the relationship with financial distress. A high level of intellectual capital can send a positive signal, suggesting that the company can improve performance through effective management of its intangible resources [23]. If financial performance is strong, it means the company is effectively leveraging its intellectual capital—evidenced by how well internal knowledge and expertise are used to address challenges. Resolving such issues can produce a positive signal, indicating that the company is not in financial distress.

Alignment of interests between principals and agents can be achieved through institutional ownership, which also reduces the likelihood of agency problems [24]. Institutional ownership allows monitoring and prevents management from engaging in self-serving actions contrary to the principal's interests [25]. An institutional ownership level above 5% can enhance the company's supervisory functions [7]. Moreover, institutional investors often pursue long-term goals, improving company performance and profitability to maximize dividends [26]. Therefore, higher institutional ownership can reduce the likelihood of financial distress by boosting financial performance. From an agency theory perspective, institutional ownership can minimize agency conflicts between agents and principals, thereby reducing agency costs. The larger the proportion of institutional ownership, the lower the risk of financial distress [3]. High institutional ownership can effectively monitor management performance to prevent opportunistic behavior, which could harm both shareholders and the company.

Higher managerial ownership can motivate management to improve company performance [25]. This is because management benefits directly—not only in their role as executives but also as investors—when performance improves. Such motivation can reduce the company's risk of financial distress. Furthermore, managers who own shares tend to be more cautious in decision-making, knowing that poor decisions will negatively affect both the company and themselves. From an agency theory perspective, managerial ownership can help reduce agency conflicts stemming from misaligned interests between agents and principals. As shareholders, managers are more motivated to increase profits, which raises the likelihood of dividend payouts. Consequently, managerial ownership can help mitigate agency problems within a company [27].

Operating capacity is a ratio measuring how efficiently a company uses its assets to generate profit [28]. The more optimally assets are used, the higher the company's performance and the lower its risk of financial distress. High operating capacity indicates that the company is effectively using its resources to maximize profits. If these resources are not utilized effectively, the assets—especially fixed assets that depreciate annually—may lose their value. In signalling theory,

operating capacity can influence financial distress by sending a performance signal. The more efficiently a company uses its assets, the higher its profits, which will be reflected in financial reports. According to signalling theory, these reports can act as either positive or negative signals. Higher operating capacity generally indicates higher profits, sending a positive signal to stakeholders, including investors. Positive signals can attract investors, increasing capital and improving performance, thereby reducing the likelihood of financial distress.

Research Framework

This study explores how intellectual capital, institutional ownership, managerial ownership, and operating capacity influence financial distress, using agency theory and signalling theory as the underlying concepts. Intellectual capital—representing knowledge-based human resources—acts as an intangible asset that improves efficiency and effectiveness; when well-managed, it strengthens company performance and sends positive signals to stakeholders, thereby lowering the risk of financial distress [21]–[23]. Institutional ownership aligns the interests of principals and agents by strengthening monitoring mechanisms, reducing opportunistic behavior, and improving long-term profitability, which ultimately decreases the likelihood of financial distress [3], [7], [25]. Similarly, managerial ownership motivates managers to act prudently and enhance performance because they directly benefit as shareholders, thus minimizing agency conflicts and supporting financial stability [27]. Meanwhile, operating capacity measures how effectively a company utilizes its assets to generate revenue; higher efficiency signals stronger financial performance, attracts investor confidence, and reduces the risk of financial distress. Overall, the framework positions these four independent variables such as intellectual capital, institutional ownership, managerial ownership, and operating capacity as key determinants of financial distress. Based on this framework the following hypotheses are:

H₁: Intellectual capital negatively affects financial distress.

H₂: Institutional ownership negatively affects financial distress

H₃: Managerial ownership negatively affects financial distress.

H₄: Operating capacity negatively affects financial distress.

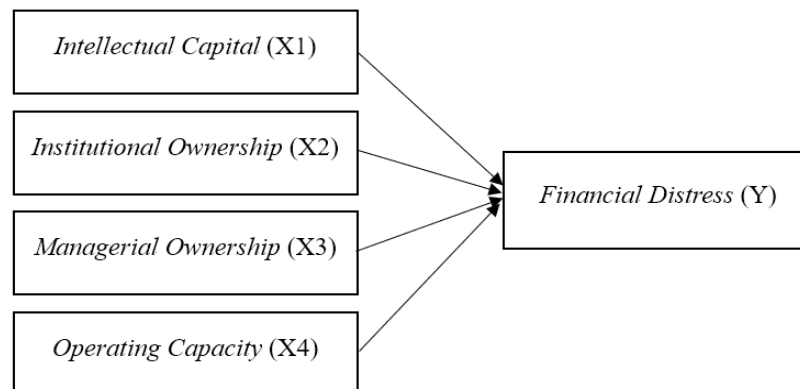


Figure 2. Framework

2. METHODS

This study is quantitative research using a panel data regression analysis method. The population consists of energy sector companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2023 period. The three-year period was chosen because, according to [10], financial distress in companies can be detected within a three-year timeframe. The total population for this study comprises 81 energy sector companies.

Table 1. Measurement Variables and Descriptions

Variables	Descriptions
Financial Distress (FD) [29][30]	The Altman Z-score model applies four financial ratios: liquidity, profitability, leverage, and solvency. The Altman Z-score is calculated using the following formula: $Z = 6,56X1 + 3,26X2 + 6,72X3 + 1,05X4$ Where: $X1 = \text{Working Capital/Total Assets}$ $X2 = \text{Retained Earnings/Total Assets}$ $X3 = \text{Earnings Before Interest and Taxes/Total Assets}$ $X4 = \text{Equity/Total Liabilities}$ Based on this measurement model, there are three zones to determine the company's condition: 1. Z-score > 2.99 = "Non-bankrupt" 2. Z-score between 1.81 – 2.99 = "Grey area" 3. Z-score < 1.81 = "Bankrupt"
Intellectual Capital (VAIC) [6]	The measurement for the intellectual capital variable uses the Value Added Intellectual Capital (VAIC) method. VAIC consists of three components: VAHU (Value Added Human Capital), VACA (Value Added Capital Employed), and STVA (Value Added Structural Capital).
Institutional Ownership (IOWN) [31]	The institutional ownership variable is measured by dividing the proportion of shares held by institutions by the total number of shares. Institutional ownership here refers to shares held by banks, insurance companies, investment companies, financial institutions, and the government. The formula is: $IOWN = \frac{\sum \text{Institutional Share}}{\sum \text{Total Share}}$
Managerial Ownership (MOWN) [32]	The managerial ownership variable is measured by dividing the proportion of shares held by management by the total number of shares. In this study, managerial ownership refers to shares owned by members of the board of directors and commissioners. The formula is: $MOWN = \frac{\sum \text{Managerial Share}}{\sum \text{Total Share}}$
Operating Capacity (OC) [33]	The operating capacity variable is measured using the Total Asset Turnover (TATO) ratio. TATO indicates how efficiently a company utilizes its assets to generate sales. The formula is

$$TATO = \frac{Net\ Sales}{Total\ Assets}$$

The sample in this study was determined using a purposive sampling method, which selects samples based on specific criteria. The criteria used are (1) Energy sector companies listed on the IDX continuously from 2021 to 2023, and (2) Companies that published both annual reports and financial statements for the 2021–2023 period without interruption. Data were analyzed using descriptive statistics and classical assumption tests, including normality and multicollinearity before performing hypothesis testing through t-tests within the panel data regression framework to determine the significance and direction of the relationships among the variables. The regression equation is:

$$FD_{it} = \alpha_{it} + \beta_1 VAIC_{it} + \beta_2 IOWN_{it} + \beta_3 MOWN_{it} + \beta_4 OC_{it} + e_{it} \dots \dots \dots (1)$$

3. RESULT AND DISCUSSION

RESULT

Descriptive Statistics Analysis

Table 2 Descriptive Statistic

Variabel	Obs	Mean	Std. dev	Min	Max
FD	177	3,55	9,11	-38,25	38,08
VAIC	177	9,15	23,72	-52,79	169,56
IOWN	177	0,01	0,03	0	0,15
MOWN	177	0,05	0,13	0	0,63
OC	177	0,77	0,65	0,0009	3,50

Source : Author's calculation (2024)

Based on the table above, it can be concluded that out of 81 companies listed on the IDX, during the 2021–2023 period, 11 companies did not publish their annual reports and financial statements. In addition, 11 companies were newly listed on the IDX in 2022 and 2023. Therefore, the final dataset consists of 59 companies observed over a three-year period, producing 177 data points. The descriptive statistics show that the financial distress (FD) level for energy companies listed on the IDX during 2021–2023 has an average of 3.55 with a standard deviation of 9.11, reflecting high variability. The minimum value of -38.25 indicates companies in severe financial difficulty, while the maximum value of 38.08 reflects relatively stable conditions.

Intellectual capital (VAIC) has an average of 9.15 with a standard deviation of 23.72, indicating significant differences in intellectual asset management across companies. Institutional ownership (IOWN) is very low, with an average of only 0.01, reflecting limited institutional holdings. Managerial ownership (MOWN) is also relatively small, averaging 0.05, indicating that managerial shareholding remains low. Meanwhile, operating capacity (OC) averages 0.77 with a

standard deviation of 0.65, showing variations in operational efficiency. The minimum value of 0.0009 reflects companies with extremely limited operational activity, while the maximum value of 3.50 indicates highly efficient companies. This variability highlights differences in strategies and financial conditions among the companies studied.

Table 3. Normality Test

Variable	Obs	Pr (Skewness)	Pr (Kurtosis)	Prob>chi2
e	177	0,2325	0,1067	0,1299

Source : Author's calculation (2024)

The normality test using skewness-kurtosis produced a probability value of $0.1299 > 0.05$ after applying a 4% winsorizing treatment. Therefore, the data is normally distributed.

Table 4. Multicollinearity Test

Variabel	VIF	1/VIF
VAIC	1,08	0,9255
IOWN	1,07	0,9360
MOWN	1,02	0,9760
OC	1,02	0,9823
Mean VIF	1,05	

Source : Author's calculation (2024)

The multicollinearity test shows a mean VIF of $1.05 < 10$. Thus, the research data is free from multicollinearity. Autocorrelation and heteroskedasticity tests are not required because the research model uses a Random Effect Model, which assumes the data is free from these issues [34]:

Hypothesis Testing

Table 5. T Test

Variabel	Coefficient	t	Prob>t
VAIC	0,470	3,28	0,001
IOWN	-26,335	-2,54	0,012
MOWN	2,132	0,89	0,373
OC	1,187	2,30	0,023
Adjusted R ²	0,1367		

Source : Author's calculation (2024)

The regression results indicate that intellectual capital and operating capacity have a positive and significant effect on financial distress. In contrast, institutional ownership has a negative and significant effect. Managerial ownership, however, shows no significant influence, implying that management's shareholding does not directly affect financial health. The model's adjusted R² value of 0.1367 indicates that approximately 13.67% of the variation in financial distress is

explained by the variables included, while the remaining variation is influenced by other factors not examined in this study.

4. DISCUSSION

The Effect of Intellectual Capital (VAIC) on Financial Distress

The t-test results show a probability value of 0.001 and a positive coefficient (0,470), indicating that intellectual capital has a positive effect on financial distress. Therefore, H_1 is rejected. This means that higher intellectual capital management is associated with higher financial distress. This contradicts signalling theory, which suggests that high intellectual capital should signal better company performance [23]. However, optimal intellectual capital use does not necessarily reflect a strong financial condition, as seen in energy sector companies with high intellectual capital but large liabilities and low assets—making them vulnerable in the event of liquidation. Over the past three years, from 2021 to 2023, the average energy sector company has experienced financial distress despite having a high VAIC value. The high VAIC value is generally driven by high human capital scores. Managing human capital or workforce resources can be done by increasing salaries or providing employee training, both of which require substantial operational funds. The funds obtained by companies to finance the utilization of intellectual capital can also come from debt. This is reflected in the relatively high corporate debt levels, which in turn cause the company's working capital ratio to be low. The working capital ratio reflects the company's financial ability to meet its short-term obligations and is also a key component in measuring financial distress. If working capital is low, the company's ability to pay its short-term liabilities will also be low, thereby increasing the likelihood of experiencing financial distress. These findings are consistent with previous research by [23], [35], [36] which concluded that intellectual capital has a positive effect on financial distress.

The Effect of Institutional Ownership (IOWN) on Financial Distress

The second hypothesis states that institutional ownership (IOWN) has a negative effect on financial distress. Based on the t-test results, the probability value obtained is 0.012 with a negative coefficient (-26,335), indicating that institutional ownership negatively affects financial distress. Thus, H_2 is accepted. This finding indicates that the higher a company's institutional share ownership, the lower the likelihood of experiencing financial distress. This result aligns with agency theory in this study, which explains that institutional ownership can reduce agency problems between principals and agents within a company, problems that could otherwise lead to poor internal conditions and potential financial distress [3]. High institutional ownership can reduce opportunistic behavior by management, as shareholders have the role of monitoring management's actions in running the company. Therefore, a larger number of institutional shareholders can ensure more effective oversight [37]. Institutional ownership also plays a crucial

role in increasing company profits, as shareholders naturally aim for maximum dividends. This is reflected in PT AKR Corporindo (AKRA), which experienced a significant increase in net profit from 2021 to 2023, with annual growth exceeding IDR 1 trillion. This improvement was accompanied by an increase in institutional ownership of more than 2%. This supports the hypothesis of this study, which states that institutional ownership functions to optimize a company's financial performance by increasing profits to maximize dividend distribution [26]. These results are consistent with previous findings [4], [5], [37] which also found that institutional ownership negatively affects financial distress.

The Effect of Managerial Ownership (MOWN) on Financial Distress

The third hypothesis states that managerial ownership (MOWN) has a negative effect on financial distress. Based on the t-test results, the probability value obtained is 0.373, which is higher than the significance threshold. This means that managerial ownership has no effect on financial distress, and thus H_3 is rejected. This finding does not align with agency theory in this study, which posits that managerial ownership can reduce conflicts of interest between agents and principals by motivating management to increase profits and maximize dividends. However, this theory may not be relevant here, as managerial ownership in Indonesian companies, particularly in the energy sector, tends to be low and is dominated by other shareholders. This is evidenced by the low mean value of 0.05, indicating that the impact of managerial ownership on the company is insignificant. Therefore, managerial ownership cannot be considered a reliable indicator of a company's likelihood of experiencing financial distress. This finding is consistent with research by [2], [15], [38] which also found no significant effect of managerial ownership on financial distress.

The Effect of Operating Capacity (OC) on Financial Distress

The fourth hypothesis states that operating capacity (OC) has a negative effect on financial distress. Based on the t-test results, the probability value obtained is 0.023 with a positive coefficient (1,187), indicating that operating capacity has a positive effect on financial distress. Thus, H_4 is rejected. This suggests that the higher a company's operating capacity, the greater the likelihood of experiencing financial distress. This result does not align with signalling theory used in this study, which argues that optimal asset utilization should increase profits and provide a positive signal in financial statements to stakeholders. However, optimal asset utilization does not necessarily mean a company is free from financial distress, as some companies may finance their assets through debt. Therefore, even if assets are used efficiently, the company may still struggle to cover its debts—an important factor in measuring financial distress. These results are consistent with studies by [12], [14], [39] which also found that operating capacity positively affects financial distress.

5. CONCLUSION

This study aims to analyze the influence of intellectual capital, ownership structure, and operating capacity on financial distress in energy sector companies listed on the Indonesia Stock Exchange (IDX) from 2021 to 2023. The energy industry, being highly capital-intensive, is vulnerable to financial pressures that threaten business sustainability. This study reveals that intellectual capital has a positive effect on financial distress, indicating that an increase in intellectual assets does not always enhance a company's financial stability but may instead increase the risk of financial distress if not managed properly. Meanwhile, institutional ownership is found to have a negative effect on financial distress, suggesting that institutional ownership can help companies face financial pressures more stably. On the other hand, managerial ownership shows no significant effect on financial distress, indicating that share ownership by management is not a key factor in determining a company's financial stability. In addition, operating capacity is found to have a positive effect on financial distress, meaning that high operational efficiency does not always guarantee financial stability and may increase risk if not accompanied by optimal financial management. The findings of this study provide insights for companies to pay greater attention to the factors that influence financial performance in order to reduce the risk of financial distress. For investors, this research can serve as a consideration in assessing investment feasibility based on ownership structure and operational efficiency. Future research is recommended to explore other variables and consider different industry sectors to obtain more comprehensive results.

Author contribution

Conceptualisation: M.R and A.S

Methodology: M.R and A.S

Investigation: M.R

Analysis: M.R

Original Draft Preparation: M.R

Editing: M.R and A.S

Supervision: A.S

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Conflicts of interest

The two authors do not have a conflict of interest

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