

Board structure and earning management: A comparative study between the pre-pandemic and during the COVID-19 pandemic periods

by Rizky Yударuddin

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BOARD STRUCTURE AND EARNING MANAGEMENT: A COMPARATIVE STUDY BETWEEN THE PRE-PANDEMIC AND DURING THE COVID-19 PANDEMIC PERIODS

Yana Ulfah^{*}, Nita Priska Ambarita^{*}, Hidayani^{*},
Rizky Yudaruddin^{**}, Dadang Lesmana^{***}

^{*} Faculty of Economics and Business, Mulawarman University, Samarinda, Indonesia

^{**} Corresponding author, Faculty of Economics and Business, Mulawarman University, Samarinda, Indonesia
Contact details: Mulawarman University, Jl. Tanah Grogot No. 1, Samarinda, Kalimantan Timur, 75117, Indonesia

^{***} Research and Development Agency, East Kutai, Indonesia



Abstract

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The agent is granted decision-making authority over the company's operations to achieve the principal's objectives (Jensen & Meckling, 1976). The economic crisis during the pandemic compelled managers to exert additional effort, such as earnings management. They aimed to achieve the desired profit and serve the principal's best interests. Board structure elements such as board size, independence, women membership, and chief executive officer (CEO) duality correlate with board governance. The elements improve the quality of financial reports and reduce earnings management practices. Therefore, this study aimed to investigate the board structure's influence on the earnings management of Indonesian firms before and during the pandemic. Covering a sample of 539 firms recorded on the Indonesia Stock Exchange (IDX) in Indonesia from 2019Q1 to 2020Q4, panel data regression is utilized to test the hypothesis. This study finds that only board size significantly impacted earnings management. The board size is less effective in overcoming earnings management in the normal period. However, the COVID-19 pandemic encouraged the board of directors to increase management monitoring. This means more board directors can reduce earning management effectively during the pandemic. It highlighted the significance of many board directors in reducing earnings management during the pandemic.

Keywords: Pandemic, Board Size, Earning Management

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1. INTRODUCTION

Earnings management is widely practiced and has become an important focus in finance studies. It is an intervention made by company managers in financial reporting for their personal gain (Schipper, 1989). Moreover, earnings management occurs when a manager utilizes opportunities to prepare financial statements (Healy & Wahlen, 1999). This is because financial statements contain profit information as a measuring tool used by the company's management to manipulate profits for the company and itself. The company's management regulates or manipulates the profits in the financial statements. This increasing or decreasing profits is known as earnings management practices and could mislead or deceive stakeholders.

In Indonesia, several companies practice earnings management. For instance, in 2001, PT Kimia Farma reported a higher net profit from overstated sales and inventories in 2001. Financial statements were also allegedly manipulated by PT Ancora Mining Service (AMS) in 2011. Furthermore, PT Bumi Resources Tbk (BUMI) was suspected of manipulating financial statements. The mining company and its subsidiaries incurred losses of US\$ 620.49 million to the state. Earnings management has also been practiced in transportation service companies, such as PT Garuda Indonesia Tbk. In 2018, PT Garuda Indonesia Tbk recorded a net profit of US\$ 809.85 thousand. Although this figure increased sharply, it is inversely proportional to the 2017 conditions, in which the company lost US\$ 216.58 million. The profit was obtained from an agreement transaction for cooperation with PT Mahata Aero Technology. PT Garuda Indonesia Tbk has not received payment from the cooperation but has recorded it in the financial statements.

Earnings management practices are predicted to increase due to the COVID-19 pandemic, which has negatively impacted industries in Indonesia (Lestari, Zainurossalamia, Maria, Wardhani, & Yudaruddin, 2021; Riadi et al., 2022b). The COVID-19 pandemic has also hit the financial sector (Maria, Yudaruddin, & Yudaruddin, 2022; Riadi, Hadjaat, & Yudaruddin, 2022a). According to Hsu and Yang (2022), the pandemic has caused a decline in companies' performance and the quality of financial reports. Ryu and Chae (2022) stated that distribution and service companies engaged in more earnings management during the post-COVID-19 period than before the pandemic. This indicates the companies' awareness of the uncertain future business performance as the pandemic persists. In contrast, Lassoued and Khanchel (2021) found that firms listed in 15 European countries managed earnings during the pandemic more than in the preceding period.

In agency theory, management is an agent that must fulfill the principal's interests, such as maintaining the company's condition and achieving profit targets during the pandemic period. The agent achieves the principal's interests by being given the decision-making authority in running the company (Jensen & Meckling, 1976). However, uncertain economic conditions during the pandemic forced managers as agents to make extra efforts, such as earnings management, to achieve

the targeted profits and fulfill the principal's interests. Other agents' efforts included opportunistic actions, information asymmetry, and discretion over certain accounting policies in the report. Managers use accrual earnings management techniques to achieve targeted profits. This is because earnings management could be used according to desired objectives, including income maximization (Scott, 2015).

Earnings management practices could be minimized by implementing good corporate governance (GCG). This involves building equality, transparency, accountability, fairness, and responsibility in company management. GCG also monitors management performance to reduce conflicts of interest and ensure the achievement of company goals. This concept emerged following the demands of the company's external parties to curb fraud to the public and ensure that financial statements are trusted for decision-making. Therefore, companies applying GCG consistently improve their financial reports and reduce their earnings management practices. Some of the GCG mechanisms are realized by a board of directors, an independent board of commissioners, a woman on board, and chief executive officer (CEO) duality.

This study aimed to examine the effectiveness of board size, board independence, women on board, and CEO duality in mitigating earnings management practice in pre-pandemic period (2019Q1-2019Q4) and during the pandemic (2020Q1-2020Q4). Purposive sampling was used to select samples of 539 Indonesia Stock Exchange (IDX) covered firms. The samples comprised eight non-finance industries from the IDX, the biggest stock market in Southeast Asia (Hadjaat et al., 2021) and financial development continues to increase (Lestari et al., 2022; Musviyanti et al., 2022). Data analysis was separated between the pre-pandemic period and during the pandemic. The results showed that only board size significantly impacts earnings management. The coefficient on board size in the pre-pandemic period and during the pandemic was positive and negative, respectively, and both are significant. These results indicate that board size is less effective in overcoming earnings management in the normal period. The COVID-19 condition promoted the board of directors to increase their management monitoring. Consequently, a large number of board directors effectively reduced earning management during the pandemic.

Sections 2 and 3 of this study discuss the effect of board structure on earnings management and methodology, respectively. Section 4 examines the econometric methodology and data. Section 5 focuses on empirical findings. Section 6 presents conclusions and policy recommendations.

2. LITERATURE REVIEW

Agency theory explained the relationship between the principal and the agent. This theory helps implement various monitoring mechanisms to control agents' actions in the company (Panda & Leepsa, 2017). There is an agency relationship between the principal and agent in business management. This arises when principals employ and delegate decision-making authority to other people to provide services as agents (Jensen & Meckling, 1976).

As part of the management, an agent knows more about the company's internal information and prospects than the owner or principal. This imbalance in the mastery of information creates information asymmetry between insiders and outsiders. Individuals within a firm rely on their control over financial reporting and their access to corporate financial information to overstate earnings or cover up unfavorable returns (Abbadi, Hijazi, & Al-Rahahleh, 2016).

Agency theory also stated that managers who act for their personal interests are selfish, and hardly consider the shareholders' interests (Al Azeez, Sukoharsono, Roekhudin, & Andayani, 2019). Since managers cannot be trusted, there is a need for a strict and effective monitoring mechanism for the company management to protect the shareholders' interests (Al Azeez et al., 2019). Furthermore, there is an imbalance and interest gap between a principal and an agent regarding information and actions in a company. This gives managers strong motivation and opportunities to practice earnings management, reducing the company's credibility. Therefore, a lack of supervision from the principal could allow the agent to manipulate the company's condition, specifically in the financial statements.

2.1. Board size

Jensen (1993) stated that board size is related to its effectiveness. The board of directors is formed to monitor management to avoid opportunistic behaviour, including earnings management (Kao & Chen, 2004). It is a board within the company assigned to ensure effective control mechanisms and advice the management (Park & Shin, 2004). A board of directors is expected to minimize agency problems between management (agent) and shareholders (principal). Furthermore, the board directs strategy, oversees the running of a company, and ensures that managers improve the company's performance as part of goal achievement. The size of the board of directors also affects its effectiveness in monitoring management (Jensen, 1993). The board monitors financial reporting and management actions to reduce company earnings management practices or irregularities.

The size of the board of directors impacts earnings management, and the effect varies depending on the company's board structure (Jamaludin, Sanusi, & Kamaluddin, 2015). Therefore, the board monitors financial reporting and management actions to reduce company earnings management practices or irregularities. Several studies found a negative relationship between board size and earnings management. For instance, Alareeni (2018) found that large boards provide superior oversight, reducing managers' likelihood to manipulate earnings. Vafeas (2000), Peasnell, Pope, and Young (2005), Ahmed, Hossain, and Adams (2006), Triki Damak (2018), Ebrahim (2007), Jamaludin et al. (2015), Mahrani and Soewarno (2018), and Orazalin (2020) found that smaller boards improve the quality of financial reporting, increasing information quality. A board with fewer members enhances earnings quality more effectively. Therefore, a larger board size is negatively associated with earnings management.

Several studies showed a positive relationship between board size and earnings management. Abdul Rahman and Haneem Mohamed Ali (2006) examined the relationship between the size of the board of directors and earnings management. The results showed that a larger board is less effective in addressing earnings management because responsibility monitoring is spread among various directors. This is because less personal responsibility is borne by each director. It means that a smaller board of directors prevents earnings management more effectively. According to Seng and Findlay (2013), the size of the board of commissioners significantly and positively relates to earnings management. A smaller board size is a more effective monitor than a larger board size. It reduces the likelihood of discretionary things, such as earnings management exercised by company management when the board increases. Additionally, Mansor, Che-Ahmad, Ahmad-Zaluki, and Osman (2013) also found a significant positive relationship between the size of the board of directors and earnings management. A larger board size increases the probability of earnings management. This supports Kao and Chen (2004) and Githaiga, Kabete, and Bonareri (2022), which found that larger boards reduce the monitoring efficiency. Larger boards make it difficult for members to monitor company management.

H1: Board size positively impacts earning management.

2.2. Board independence

Board independence or independent directors increase the transparency and integrity of the company's financial reporting (Kapoor & Goel, 2017). Independent directors must monitor and control managers' opportunistic behavior (Jensen & Meckling, 1976). From the agency's perspective, they are considered a tool for monitoring management actions regarding the disclosure of company information (Al Azeez et al., 2019). More stringent monitoring of management behaviour is provided, improving earnings quality (Jaggi, Leung, & Gul, 2009). Moreover, they have no direct interest in a company but act on behalf of shareholders in reducing agency problems (Mansor et al., 2013) and provide professional advice to management (Fama & Jensen, 1983).

Fama and Jensen (1983) stated that non-executive or independent directors are the best board positions that monitor and control the company management's decisions. They function as intermediaries to reduce conflicts of interest in disputes between stakeholders and internal managers. Independent directors withstand pressure from companies to manipulate earnings and are better at monitoring earnings processes. According to Kelton and Yang (2008), the board's capacity to execute the monitoring role depends on its independence from company management. This means that independent directors have a greater capacity to limit opportunistic managerial behavior and reduce management's ability to withhold information. Klein (2002) found that boards from independent parties carry out supervision more effectively. This reduces the possibility of fraud by management in presenting financial statements

because the supervision by the directors is better and free from internal interests in the company. Alijoyo and Sirait (2022), Abata and Migiro (2016), and Kostyuk (2003) stated that the company's board is responsible for monitoring management to protect the shareholders' interests. Therefore, higher independence of directors reduces the possibility of earnings management in the management.

Al Azeez et al. (2019) and Hapsari, Wijaya, and Umdiana (2022) showed that independent directors significantly and negatively affect earnings management. This means they reduce earnings management, supporting the agency theory that the separation of control and ownership by independent directors creates differences in interests between shareholders and managers. It ensures close monitoring of managerial decisions to create transparency in the company's finances. Therefore, independent directors monitor and discipline the company's management and ensure that the agent's goals are in line with the principal's interests.

Aleqab and Ighnaim (2021) emphasized the importance of independent board members and showed their significant effect on earnings management. The director's independence reduces earnings management through real monitoring activities (Xie, Davidson, & DaDalt, 2003; Chouaibi, Harres, & Brahim, 2018). In line with this, Jaggi et al. (2009) evaluated the relationship between independent directors and earnings management in Hong Kong companies. The results showed that higher independence is associated with more effective monitoring to constrain earnings management. This supports Klein (2002), which found that increasing independent directors reduces earnings management in the company. Therefore, higher company board independence prevents managers from manipulating reported earnings. This improves the quality of reported company earnings and reduces earnings management practices.

H2: Board independence positively impacts earning management.

2.3. Female board members

In the literature, there is no standard definition of gender, defined by Stoller (1984) as a socio-cultural characterization of the physical and biological human. Gul, Srinidhi, and Tsui (2008) stated that women exhibit greater risk aversion and ethical behavior and are better at obtaining voluntary information. This potentially reduces information asymmetry between female directors and managers. The presence of women on the board of directors is difficult because they face various challenges. Therefore, it becomes an honor for women in the ranks of the company (Krishnan & Park, 2005).

Dalton and Dalton (2010) stated that women's participation encourages more effective board communication with investors. This is explained through organizational theory, which states that gender-diverse boards have more consideration and discuss heavier issues often considered distasteful by all-male boards (Huse & Solberg, 2006). Furthermore, female directors are more diligent in monitoring and taking positions on committees charged with transparent reporting and earnings

quality, such as audit and corporate governance committees.

Srinidhi, Gul, and Tsui (2011) stated that female directors improve board governance and earnings quality. However, directors' effects on female participation, such as increased attendance or greater exposure, are observable characteristics. The effect of female board participation on earnings quality is absorbed by the directors' visible characteristics. Thiruvadi and Huang (2011) found a significant positive relationship between gender and earnings management. This is consistent with gender theory and previous literature, which showed that women are more conservative and unbiased than men in making ethical decisions.

Gul et al. (2008) stated that women's board participation improves earnings quality by increasing the board's supervisory function. This means that female directors should be involved in situations where greater board oversight is desired, and better earnings quality is demanded by investors. A study found that the higher inclusion of women on the board of directors reduces earnings management practices (Obigbemi, Omolehinwa, Mukoro, Ben-Caleb, & Olusanmi, 2016). Meanwhile, Rizki, Lubis, and Sidjabat (2021) discovered no statistically significant effect.

H3: Women on board negatively impact earning management.

2.4. CEO duality

CEO duality occurs when the CEO serves as chairman of the board of directors in one company, promoting strong and unified leadership. The board cannot function critically without direction from an independent leader (Lam & Lee, 2008; Brickley, Coles, & Jarrell, 1997). Therefore, it is important to separate the CEO and director seats for the board to function properly (Jensen, 1993). Krause and Semadeni (2013) showed that separating chief executive and chairman positions are more efficient for companies. In contrast, Baker, Lopez, Reitenga, and Ruch (2019) found that earnings management is higher in firms with CEO duality and that role segregation prevents accrual earnings management.

Based on agency theory, CEO duality reinforces CEO behavior and weakens the board of directors' general responsibilities (Krause & Semadeni, 2013). Worrell, Nemeč, and Davidson (1997), Lakhil (2005), and Yasser and Mamun (2015) found a negative relationship between CEO duality and earnings management. This contradicts Triki Damak (2018), which found a positive and significant relationship between CEO duality and discretionary accruals. Nuanpradit (2019) and Ahmad, Fasial, Riaz, and Rahman (2022) showed a positive relationship between CEO duality and sales-driven real earnings management. Similarly, Bouaziz, Salhi, and Jarboui (2020) found a positive and significant relationship between CEO duality and earnings management. This contradicted Moradi, Salehi, Bighi, and Najari (2012), which evaluated the impact of board features in lowering earnings management. The study found that gender diversity does not correlate with earnings management.

H4: CEO duality negatively impacts earning management.

3. METHODOLOGY

A total of 722 firms were recorded on the IDX as of December 31, 2020. This study concentrated on non-finance industries from 2019Q1 to 2020Q4. Data analysis was separated between the pre-pandemic period (2019Q1-2019Q4) and during the pandemic (2020Q1-2020Q4). Purposive sampling was used to select a sample of 539 IDX-covered firms using criteria based on available financial statement data, as shown in Table 1. The sample

firms were classified into several industries using eight non-finance industry classifications from the IDX. The firms were classified into 23 (4.27%) agriculture, 40 (7.42%) mining, 76 (14.1%) basic industry & chemicals, 47 (8.72%) miscellaneous, 51 (9.46%) consumer goods, 78 (14.47%) property real estate & building construction, 70 (12.99%) infrastructure utilities & transportation, and 154 (28.57%) trade services & investment industry companies.

Table 1. Sample selection

Sample selection	Total
Companies listed on IDX in 2020	722
Less: financial firms	(69)
Less: missing data	(89)
Final sample of firms for all variables	539

Dependent, independent, and control variables were used. The dependent variable is earnings management (*EM*). Discretionary accruals are commonly used as a proxy for earnings management, reflecting aggressive or conservative management reports earnings.

This study used discretionary accruals (*DA*) as a proxy to calculate earnings management measured using the modified Jones model formula (Jones, 1991) as follows:

Total accrual (*TA*)

$$TA_{i,t} = N_{i,t} - CFO_{i,t} \quad (1)$$

Furthermore, the total accrual value (*TA*) is estimated using the regression equation.

Regression equation with ordinary least square (*OLS*)

$$\frac{TA_{i,t}}{A_{i,t-1}} = \beta_1 \left(\frac{1}{A_{i,t-1}} \right) + \beta_2 \left(\frac{\Delta REV_{i,t}}{A_{i,t-1}} \right) + \beta_3 \left(\frac{PPE_{i,t}}{A_{i,t-1}} \right) + \varepsilon_{i,t} \quad (2)$$

Non-discretionary accruals (*NDA*)

$$NDA_{i,t} = \beta_1 \left(\frac{1}{A_{i,t-1}} \right) + \beta_2 \left(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}} \right) + \beta_3 \left(\frac{PPE_{i,t}}{A_{i,t-1}} \right) \quad (3)$$

Discretionary accruals (*DA*)

$$DA_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - NDA_{i,t} \quad (4)$$

where,

- *i*: firm;
- *t*: quarterly in the year;
- *N_{i,t}*: net profit of firm *i* in quarterly in the year *t*;
- *CFO_{i,t}*: cash flow from operations of firm *i* in quarterly in the year *t*;
- *A_{i,t-1}*: total assets of firm *i* in quarterly in the year *t*;

- *TA_{i,t}*: total accruals of firm *i* in quarterly in the year *t*;

- *DA_{i,t}*: discretionary accruals of firm *i* in quarterly in the year *t*;

- *NDA_{i,t}*: non-discretionary accruals of firm *i* in quarterly in the year *t*;

- *ΔREV_{i,t}*: changes in income from year *t* - 1 to quarterly in the year *t*;

- *ΔREC_{i,t}*: changes in accounts receivable from quarterly in the year *t* - 1 to year *t*;

- *PPE_{i,t}*: total fixed assets of firm *i* in quarterly in the year *t*;

- *β₁, β₂, β₃*: regression coefficient;

- *ε*: error.

The independent variable in this analysis was the board structure, including board size (*BSIZE*), board independence (*BIND*), women on boards (*BWOM*), and CEO duality (*DUAL*). Board size is the number of directors, and board independence is the proportion of independent directors to the total number of directors. Women on boards is the proportion of female directors to the total number of directors, and CEO duality is a dummy variable for 1 when the company has it.

The control variables in data analysis were profitability (*ROA*), leverage (*LEV*), firm size (*SIZE*), and firm age (*AGE*). Table 2 lists the independent and control variables representing the constructs. Companies with high profitability gain the trust of stakeholders, specifically creditors, in terms of lending. This increases leverage, enabling the company to expand its business and size. Therefore, greater profitability, firm size, and leverage increase earnings to show better performance to investors and creditors (Lee, Li, & Yue, 2006; Dimitropoulos & Asteriou, 2010; Alzoubi, 2016; Ghofir & Yusuf, 2020). Long-established companies always try to improve their market reputation and image. In this case, older companies are less to practice earnings management (Alsaeed, 2006; Alzoubi, 2016).

Table 2. Independent and control variables

Variables	Symbol	Definition and measure	Expected sign	Source
<i>Independent</i>				
Board size	<i>BSIZE</i>	The total number of board of directors members	+	Seng and Findlay (2013), Aleqab and Ighnaim (2021), Bouaziz et al. (2020), Ulfah, Yudaruddin, and Yudaruddin (2021), Kusumawardani, Wardhani, Maria, and Yudaruddin (2021), Musviyanti, Ulfah, and Yudaruddin (2021), Amalia, Lesmana, Yudaruddin, and Yudaruddin (2022)
Board independence	<i>BIND</i>	The percentage of independent directors relative to the total number of directors (percent)	+	
Women on boards	<i>BWOM</i>	The ratio of female board members to the total number of board members (percent)	+	
CEO duality	<i>DUAL</i>	Dummy variable with the value 1 if the company has dual CEOs	-	
<i>Control</i>				
Profitability	<i>ROA</i>	Ratio net profit to the total asset (%)	+	
Leverage	<i>LEV</i>	The ratio of total debt to total equity (%)	+	
Firms size	<i>SIZE</i>	Natural logarithm of total assets	+	
Age of firm	<i>AGE</i>	Natural logarithm of a company's age as of the day it was founded	-	

This study aims to examine the effectiveness of board size, board independence, women on board, and CEO duality in mitigating earnings management practice in the pre-pandemic period and during the pandemic. In achieving this goal, we carried out two steps in this study. First, we tested

the correlation matrix to see if there was no multicollinearity. Second, we regress between the board structure variables and earnings management in two periods, namely pre-pandemic (2019Q1-2019Q4) for equation (5) and during the pandemic (2020Q1-2020Q4) for equation (6).

$$Pre (EM_{i,t}) = \alpha_{i,t} + \beta_1 BSIZE_{i,t} + \beta_2 BIND_{i,t} + \beta_3 BWOM_{i,t} + \beta_4 DUAL_{i,t} + \beta_5 ROA_{i,t} + \beta_6 LEV_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 AGE_{i,t} + \varepsilon_{i,t} \quad (5)$$

$$During (EM_{i,t}) = \alpha_{i,t} + \beta_1 BSIZE_{i,t} + \beta_2 BIND_{i,t} + \beta_3 BWOM_{i,t} + \beta_4 DUAL_{i,t} + \beta_5 ROA_{i,t} + \beta_6 LEV_{i,t} + \beta_7 SIZE_{i,t} + \beta_8 AGE_{i,t} + \varepsilon_{i,t} \quad (6)$$

where,

- *i*: firm;
- *t*: quarterly in the year;
- α : constant;
- *During*: during pandemic period;
- *Pre*: pre-pandemic period;
- *EM*: earnings management;
- *BSIZE*: board size;
- *BIND*: board independence;
- *BWOM*: women on boards;
- *DUAL*: CEO duality;
- *ROA*: profitability;
- *LEV*: leverage;
- *SIZE*: firms size;
- *AGE*: age of firm;
- $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8$: regression coefficient;
- ε : error.

This study also used panel regression that combines time series and cross-section data. The method uses three approach models, including the common effect model (CEM), fixed effect model (FEM), and random effect model (REM). A fit model was selected to estimate the panel data regression parameters by performing the Chow and Hausman tests. Chow test was used to determine the best model between CEM and FEM with conditions. FEM is better selected than CEM when the Chow test or likelihood ratio test output results show that the F-test and Chi-square are significant (< 0.05 or less than < 0.05). However, when the results are insignificant, CEM becomes the best model for

interpretation without going to the next testing stage. Hausman test was used to determine the best model between FEM and REM. This test is conducted when the Chow test found significant results, meaning that FEM is better than CEM. The FEM model is better than REM when the Hausman test output shows that the F-test and Chi-square are significant (< 0.05 or less than < 0.05). When the results are insignificant, then the REM is better.

4. RESULTS

Table 3 displays descriptive statistics on employed variables. This study separated the sample between the pre-pandemic period (2019Q1-2019Q4) and during the pandemic (2020Q1-2020Q4). *EM* variables in the pre-pandemic period and during the pandemic had a mean of 0.020 and 0.090, with a standard deviation of 0.707 and 0.706, respectively. This shows that the sample companies' discretionary accruals are lower during the pandemic than before. The average number of directors (*BSIZE*) in the sample is 3 or 4 members, with 7 and 2 as the maximum and minimum, respectively. The average percentage of the proportion of independent and female directors to board size is 40% and 10%, respectively. Additionally, the average CEO duality is 0.371, with a standard deviation of 0.483. All variables have a higher average value than the standard deviation, meaning they have a low deviation.

Table 3. Descriptive statistics for all variables

Variables	Pre-pandemic (2019Q1-2019Q4)					During the pandemic (2020Q1-2020Q4)				
	Obs.	Mean	Std. dev.	Min.	Max.	Obs.	Mean	Std. dev.	Min.	Max.
EM	1943	0.020	0.707	-2.953	1.326	1917	-0.090	0.706	-2.962	1.414
B _{SIZE}	1943	3.827	1.534	2	7	1917	3.706	1.521	2	7
B _{IND}	1943	40.14	8.926	26.66	60	1917	40.55	9.387	25	66.66
B _{WOM}	1943	10.39	16.62	0	50	1917	11.05	17.11	0	50
D _{DUAL}	1943	0.371	0.483	0	1	1917	0.371	0.483	0	1
R _{OA}	1943	2.560	4.944	-10.51	19.21	1917	0.985	5.468	-18.03	20.53
L _{EV}	1943	45.86	21.89	9.677	89.05	1917	46.17	23.60	7.357	96.45
S _{IZE}	1943	23.54	4.922	14.92	29.78	1917	23.65	4.832	14.88	29.67
A _{GE}	1943	3.288	0.645	0.693	4.883	1917	3.290	0.632	1.099	4.890

Table 4 shows the relationship among the independent variables. According to Kennedy (2008), a correlation higher than 0.70 implies no multicollinearity within the data. Therefore, no multicollinearity problem exists in this circumstance.

Table 4. Matrix correlation of independent variables

	B _{SIZE}	B _{IND}	B _{WOM}	D _{DUAL}	R _{OA}	L _{EV}	S _{IZE}	A _{GE}
B _{SIZE}	1.0000							
B _{IND}	-0.1869	1.0000						
B _{WOM}	-0.0958	-0.0032	1.0000					
D _{DUAL}	0.0437	-0.1253	0.0548	1.0000				
R _{OA}	0.1029	0.0037	0.0256	0.0110	1.0000			
L _{EV}	0.0835	-0.0183	-0.0555	0.0102	-0.2685	1.0000		
S _{IZE}	-0.3191	-0.0033	0.1266	-0.0439	-0.0929	-0.1443	1.0000	
A _{GE}	0.2823	-0.0529	-0.0576	-0.0068	0.0130	0.1121	-0.1605	1.0000

Table 5 shows the results of the relationship between earning management and the explanatory variables. Before the panel data regression analysis, the Chow and the Hausman tests were conducted to determine the best model between CEM, FEM, or REM. The results showed that the best model is FEM. Furthermore, the R-squared was 0.1574 and 0.0385 in the pre-pandemic period and during the pandemic, respectively. This means that the independent variable influenced the dependent variable of earning management in the pre-pandemic period and during the pandemic by 15.74% and 3.85%, respectively. The probability of F (Prob > F) is 0.000 or less than 0.05, meaning the regression model is fit.

Table 5. The impact of board structure on earning management in the pre-pandemic period and during the COVID-19 pandemic

Variables	Pre-pandemic (2019Q1-2019Q4)				During the pandemic (2020Q1-2020Q4)			
	Coef.	Std. err.	t	p > t	Coef.	Std. err.	t	p > t
B _{SIZE}	0.1872**	0.0838	2.23	0.026	-0.1014**	0.0477	-2.12	0.034
B _{IND}	0.0061	0.0079	0.77	0.442	0.0057	0.0043	1.34	0.179
B _{WOM}	0.0010	0.0062	0.16	0.876	0.0023	0.0026	0.88	0.378
D _{DUAL}	-0.0995	0.1253	-0.79	0.427	0.0575	0.1478	0.39	0.697
R _{OA}	0.1092***	0.0069	15.7	0.000	0.0321***	0.0056	5.75	0.000
L _{EV}	0.0119***	0.0041	2.87	0.004	-0.0045	0.0034	-1.33	0.183
S _{IZE}	-0.0689	0.0548	-1.26	0.209	-0.0713*	0.0402	-1.77	0.077
A _{GE}	-8.3493	11.766	-0.71	0.478	-23.576	15.615	-1.51	0.131
Constant	27.335	38.408	0.71	0.477	79.429	51.348	1.55	0.122
F-statistic	33.11				6.94			
Prob > F	0.0000				0.0000			
R-squared	0.1574				0.0385			
Obs.	1943				1917			

Note: ** sig. at level 5%; *** sig. at level 1%.

The results in Table 5 also show the influence of board structure on earnings management. In the pre-pandemic (2019Q1-2019Q4) column, the coefficient on board size (B_{SIZE}) is positive ($\beta = 0.1872$) and significant (at 0.05), supporting H₁. However, there is no significant coefficient of board independence (B_{IND}), women on board (B_{WOM}), and CEO duality (D_{DUAL}). It indicates that board independence (B_{IND}) and CEO duality (D_{DUAL}) do not affect earnings management (EM), meaning H₂, H₃, and H₄ are rejected. In the during pandemic (2020Q1-2020Q4) column, the coefficient on board

size (B_{SIZE}) is negative ($\beta = -0.1014$) and significant (at 0.05), meaning H₁ is rejected. Similarly, board independence (B_{IND}), women on board (B_{WOM}), and CEO duality (D_{DUAL}) do not affect earnings management (EM), meaning H₂, H₃, and H₄ are rejected.

5. DISCUSSION

This study aimed to investigate the impact of board size (B_{SIZE}), board independence (B_{IND}), women on board (B_{WOM}), and CEO duality (D_{DUAL}) on earnings

management (*EM*) in the pre-pandemic period (2019Q1-2019Q4) and during pandemic (2020Q1-2020Q4). The results showed that only board size significantly impacts earnings management, while board independence (*BIND*), women on board (*BWOM*), and CEO duality (*DUAL*) do not.

Our result finding board size had a positive and significant coefficient in the pre-pandemic period, implying a larger number of board members and validating *H1*. The board of directors is a management system that implements GCG to achieve company goals. Board size negatively impacts earnings management by monitoring financial reporting and management actions. This reduces earnings management practices or irregularities within a company. However, it also positively impacts earnings management. Larger boards are less effective in earnings management because monitoring responsibilities are spread among directors, each with less personal accountability. This means large boards are ineffective in monitoring earnings management in the pre-pandemic period due to a lack of coordination, director free riding, and delayed decision-making. This finding supports Abdul Rahman and Haneem Mohamed Ali (2006), Seng and Findlay (2013), Mansor et al. (2013), Kao and Chen (2004), and Githaiga et al. (2019) that more directors increase the earning management.

However, we also document different evidence between before the pandemic and during the pandemic, our research contributes to showing board size had a negative and significant coefficient during the pandemic, a larger number of board members lowered the earning management (*EM*) meaning *H1* was rejected. The COVID-19 pandemic has put companies in a difficult and depressed position, putting pressure on managers for debt contracts, bonus incentives, and sales targets. This may force managers to use accrual policies aggressively in preparing financial statements to increase the discretionary value. The situation also warns the board of directors to increase effective management monitoring. Therefore, more board directors reduce earning management effectively during the COVID-19 pandemic. This result is in line with Alareeni (2018), Vafeas (2000), Peasnell et al. (2005), Ahmed et al. (2006), Triki Damak (2018), Ebrahim (2007), Jamaludin et al. (2015), and Orazalin (2020) that a board with fewer members enhances earnings quality more effectively.

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6. CONCLUSION

Uncertain economic conditions during the pandemic forced managers as agents to make extra efforts, including earnings management, to achieve the targeted profit. During the pandemic, management's opportunistic actions, asymmetric information, and managers' discretion over accounting policies in financial statements increased accrual earnings management practices. For this reason, board size (*BSIZE*), board independence (*BIND*), women on board (*BWOM*), and CEO duality (*DUAL*) have a relationship in realizing GCG and reducing earnings management. Therefore, this study aimed to investigate the role of board size (*BSIZE*), board independence (*BIND*), women on board (*BWOM*), and CEO duality (*DUAL*) on earnings management (*EM*) in the pre-pandemic period (2019Q1-2019Q4) and during pandemic (2020Q-2020Q4).

Purposive sampling was employed in selecting 539 IDX-covered firms using eight non-finance industry classifications from the IDX. Analysis was separated between the pre-pandemic period (2019Q1-2019Q4) and during the pandemic (2020Q1-2020Q4), while data were analyzed using panel data regression. The results showed that only board size (*BSIZE*) significantly impacted earnings management. The coefficient on board size (*BSIZE*) in the pre-pandemic period and during the pandemic is positive and negative, respectively, and both are significant for earning management. These results indicate that the board size is less effective in overcoming earnings management in the normal period. The COVID-19 condition promotes the board of directors to increase management monitoring. This means more board directors can reduce earning management effectively during the pandemic.

This study offers at least two policy implications regarding the role of the board director during the COVID-19 pandemic. First, it highlights the importance of more board directors during the pandemic. This could be realized by implementing GCG to reduce earning management. Second, it is necessary to optimize the board directors' role in effectively supervising and controlling the management. This study has several limitations, first, this study uses single country data. Second, in a sample that only focuses on non-financial companies. Therefore, further research can broaden the scope by using cross countries and financial companies.

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