

12-31-2023

THE EFFECT OF BOARD SIZE, BOARD INDEPENDENCE, AND THE COMPOSITION OF BOARD INDEPENDENCE ON ACCRUAL AND REAL EARNINGS MANAGEMENT

Rizkia Fitrasari

University of Leeds, United Kingdom, rizkia_mlover@yahoo.com

Follow this and additional works at: <https://scholarhub.ui.ac.id/jaki>

 Part of the [Accounting Commons](#)

Recommended Citation

Fitrasari, Rizkia (2023) "THE EFFECT OF BOARD SIZE, BOARD INDEPENDENCE, AND THE COMPOSITION OF BOARD INDEPENDENCE ON ACCRUAL AND REAL EARNINGS MANAGEMENT," *Jurnal Akuntansi dan Keuangan Indonesia*: Vol. 20: Iss. 2, Article 6.

DOI: 10.21002/jaki.2023.12

Available at: <https://scholarhub.ui.ac.id/jaki/vol20/iss2/6>

This Article is brought to you for free and open access by the Faculty of Economics & Business at UI Scholars Hub. It has been accepted for inclusion in Jurnal Akuntansi dan Keuangan Indonesia by an authorized editor of UI Scholars Hub.

Jurnal Akuntansi dan Keuangan Indonesia
Volume 20 Issue 2 December 2023

THE EFFECT OF BOARD SIZE, BOARD INDEPENDENCE, AND THE COMPOSITION OF BOARD INDEPENDENCE ON ACCRUAL AND REAL EARNINGS MANAGEMENT

Rizkia Fitrasari

MSc Accounting and Finance, University of Leeds, United Kingdom

rizkia_mlover@yahoo.com

Received: 10 July 2023; Revised: 4 September 2023, 14 November 2023; Accepted: 30 November 2023

Abstract

This paper examines the effect of board size, board independence, and the composition of board independence on mitigating accrual and real earnings management by using a sample from companies listed in the S&P 500 index from 2010 to 2019. The study uses random-effect regression analysis and finds evidence that large board size is an ineffective tool for reducing earnings management. In contrast, larger board independence proves to mitigate earnings manipulation. However, when board size interacts with board independence, the result becomes more positive indicating that board independence strengthens the positive effect of board size on earnings management. It can be suggested that a small board with small independent directors is more effective in reducing both accrual and real earnings management than a larger board with larger outside directors. The findings conclude that board characteristics are not separate individuals but complementary characters. Hence, companies should not only rely on the board's quantity but also pay attention to its quality to develop an effective board to reduce earnings management.

Keywords: *earnings management, board size, board independence*

INTRODUCTION

The US corporations became public attention during the late 1990s and early 2000s for many alleged financial scandals for instance, the Waste Management Scandal in 1998, the WorldCom Scandal in 2002, the Bernie Madoff Scandal in 2008, and Lehman Brothers in 2010. However, The most phenomenal and shocking scandal, Enron, awakened many financial scholars to the critical function of monitoring by the board members. The agency problem was suspected to be the leading actor in the financial drama at that time. In the Enron case, for instance, the

conflict of interest due to compensation rules using stock options led to the opportunity to manipulate the share price of Enron's management for the management's personal benefit (Healy and Palepu 2003). The situation worsened due to the board directors' lack of independence since they colluded with Enron's managers. Hence, they failed to guarantee the credibility of Enron's financial reports (US House, Committee On Governmental Affairs 2002). Regarding the unpleasant experience about the capability of the board to monitor managers, some shareholder advocates have started to develop some procedures to reduce financial manipulation by management. One of the recommendations

was drafted via the Sarbanes-Oxley Act (SOX) in 2002.

Some studies have evidence that SOX could reduce earnings management (Cohen and Lys 2008; Singer and You 2011; Brown et al. 2014; Kohlbeck et al. 2018; Kerstein and Rai. 2018; Rupp 2021; Pincus et al. 2022). On the other hand, Linck et al. (2009) argue that the SOX has an impact and resulted in elevated board size. El Diri (2017) states that the larger board size has two effects. On one side, it could reduce earnings management because more directors are associated with adequate monitoring (Fama and Jensen 1983). However, according to Jensen (1993), the effect of the increase in board size would make ineffective decision-making. In particular, a larger board leads to free-rider problems that cause a surge in costs due to bureaucratic problems and inefficient oversight (Yermack 1996).

Furthermore, the SOX recommendation also promotes board independence, indirectly increasing board size. Then a question appears about how the proportion of outside directors on the board size could elevate board supervision. One of the solutions is a company can replace a non-independent board with an independent board, thus not affecting board size. Fama and Jensen (1983) argue that more outside directors could limit the manager's opportunistic behaviour since they are independent and do not collide with managers. In addition, outside directors also have better positions to monitor and control managers (Dunn 1987). However, more independent directors also result in high communication costs because they are less well-informed about the company's strategies (Yermack 1996). Maug (1997) also argues that inviting outside directors for supervision leads to high transferring information costs due to high information asymmetry. In addition, Elnahass et al. (2022) found that in Islamic and conventional banks, large independent directors are negatively associated with earnings management. In this sense, some

empirical studies found mixed results. Yermack (1996) found that larger board sizes and independent boards are negatively associated with effective oversight. In comparison, Coles et al. (2008) and Upadhyay et al. (2014) found a positive association.

Overall, SOX's recommendation promotes the quality of the board but also increases its quantity. The side effect of this SOX recommendation is closely related to the board's supervisory ability to prevent the opportunistic behaviour of managers from manipulating earnings. However, empirical research has found inconsistent results; thus, the research question about the effect of quantity and quality of the board to mitigate earnings management needs further examination. This research uses the latest data from 2010 to 2019 from American companies listed in the S&P 500 index because this index presents the 500 largest companies listed in the United States and to show the relevance of whether the high-profile companies in America already have a decent monitoring system, mirroring in the Enron case and the associated with implementation of The SOX. This research uses two proxies for the dependent variable: accrual and real earnings management. Furthermore, besides examining board size and board independence as the independent variable, this paper also observes the interaction between those two variables, which is still rare to find in prior literature because of previous studies. Thus, this study fills the gap in the literature.

The study presents an empirical model that incorporates earnings management and board characteristics to answer the research question. This research uses the Modified Jones model (Dechow et al. 1995) to measure accrual earnings management (EMDACC), while real earnings management (EMREM) is measured by Roychowdhury's Model (2006). For board characteristics, board size (BS) is measured by the total number of the board, and board independence (BI) is measured as the number of outside directors

divided by the total directors. This research estimates the empirical model using random-effect regression analysis.

The research finds evidence that board size positively relates to accrual and real earnings management. When the board becomes larger, the communication cost also surges, causing slow decision-making and free-riding problems (Jensen 1993; Yermack 1996). Consequently, it leads to ineffective monitoring. In contrast, board independence negatively and significantly affects both earnings management. The result supports the notion that board independence could mitigate opportunistic manager behaviour to manipulate earnings. Nevertheless, when board independence interacted with the board size the effect became more positive indicating that board independence strengthens the positive effect of board size on earnings management. Even though more Independent directors can bring more expertise to corporate decision-making, when a company has high costs for transferring information, it is hard for outside directors to be involved in company strategies due to unbalanced information (Yermack 1996).

Thus, the unbalanced information could trigger the opportunistic behaviour of managers to engage in earnings management. The evidence extends the work of the prior research that studies the effect of board characteristics on earnings management (Kang and Kim 2012; Ge and Kim 2013; Hsu and Wen 2015; Lin 2017; Damak 2018; Orazalin 2019; Githaiga et al. 2022). Compared to previous studies, this research contributes to the earnings management literature by providing a result that a small board with small independent directors more effectively reduces both accrual and real earnings management than a larger board with larger outside directors. This paper also concludes that the quantity and quality of the board are complementary characteristics, not separate individuals. Thus, the findings help the company; they should not only be concerned with the

quantity but also pay attention to the board quality when developing an effective board to reduce earnings management.

The rest of the paper proceeds as follows. Section 2 reviews the relevant previous literature and develops the research's hypotheses. Section 3 explains the research methodology, including the data collection, variable definitions and their measurement, and descriptive statistics. Section 4 presents the empirical results and discussion. Lastly, Section 5 includes the research conclusions.

LITERATUR REVIEW AND HYPOTHESES DEVELOPMENT

Accrual and Real Earnings Management

According to Healy and Wahlen (1999), earnings management can be defined as an action by managers to manipulate the information in the financial report through various accounting judgments to mislead shareholders and investors about the company's performance. For example, the Enron scandal violated the accounting standard IFRS 10 on Consolidated Financial Statements to hide the loss by using special purpose entities (SPE) to avoid consolidation (Healy and Palepu 2003). As a result, Enron could increase its equity by minimizing liabilities. Hence, Enron's financial report provided misleading information to shareholders and investors (Healy and Palepu 2003).

Based on some literature, earnings management could be divided into accrual and real earnings management. Accrual earnings management is the manipulation of accruals in GAAP through the free choice of accounting. Consequently, accrual earnings management only involves changes in accounting presentation but does not affect the company's underlying economics (El Diri 2017). Since it only influences the presentation of financial reports, accrual earnings management is easier to detect because it has fixed regulations such as GAAP.

On the other hand, according to Roychowdhury (2006), real earnings management influences the company's operations through changes in management decisions rather than just changes in accounting methods. Therefore, it is harder to detect because no formal accounting regulations prohibit it (El Diri et al. 2020). Moreover, since real earnings management affects company policies, it could affect the company's wealth significantly but be more severely damaged (Cohen and Zarowin 2010).

Earnings Management and Corporate Governance

Despite the types of earnings management, the lead actors for those problems are because of agency problems. According to Jensen and Meckling (1976), the agency problem arises because of the separation of ownership and control that generates information asymmetries between principals and agents. Since managers have direct access to the company's operation, they have more information than the shareholders. This unbalanced information gives managers an opportunity for adverse selection and moral hazard for their private gain (El Diri 2017). On the other hand, Douma and Schreuder (2017) argued that the problem that leads managers to act opportunistically is because of conflicts of interest among principles and agents because managers are not always acting in the best interests of the shareholders. In this respect, according to Fama and Jensen (1983), a contract can be set as game rules between principles and agents to reduce conflict of interest. The contracts require the rights of the managers, how to evaluate agents' performance, and the incentive they will get. However, since there are distinct approaches in which levels of risk-bearing and risk-taking are acceptable by principals and agents (Wiseman and Gomez 1998), shareholders face difficulty setting a measurement or facing bounded rationality (El Diri 2017). Due to cognitive limitations and incomplete information, the

compensation contract will not be efficient, and managers may behave opportunistically. In this sense, agency problems occur as contracts are incomplete and not enforced (Fama and Jensen 1983).

Since ensuring managers work in the shareholder's interest is impossible at zero cost. Consequently, agency costs are incurred to solve the problems. Fama and Jensen (1983), in addition, explain that "the agency costs include the costs of structuring, monitoring, and bonding a set of contracts among agents with conflicting interests." In this sense, those mechanisms are the solutions to avoiding managers' opportunistic behaviour that tends to reduce the shareholder's value (Douma and Schreuder 2017). Effective corporate governance, based on Jones (2011), is needed for an organization to diminish earnings management. In this sense, Cohen et al. (2002) summarise corporate governance as a holistic concept comprising a range of actors and mechanisms.

Several governance mechanisms are recommended to reduce the agency problem, such as managerial ownership, a board of directors, incentive financial plans, a market for corporate control, a market for managerial labour, and other internal and external control systems. However, according to Brennan (2006), the BOD is an effective governance mechanism. This argument aligns with Baysinger and Butler (1985), who argue that a BOD is the only institutional arrangement to control agency costs. Zahra and Pearce (1989) define BOD as corporate leaders who are responsible to the company without actual interference in daily operations. They are responsible for representing shareholders' interests, providing consulting to top management, and controlling and monitoring company performance. One of the BOD's responsibilities is to monitor managers to ensure that the company follows the accounting principles and standards in preparing financial reports. Since incorrect financial information may affect shareholders' wealth (Xie et al. 2003), the

board's ability to guarantee credible accounting information becomes a crucial role. Therefore, board directors are essential characteristics in mitigating earnings manipulation (Githaiga et al. 2022).

On the other hand, many examples show that a high-profile company such as Enron could collapse, so the board director's capability to monitor management effectively becomes questioned. One cause of these failures, according to Healy and Palepu (2003), is suspected because of insufficient oversight. Ndofor et al. 2013 argue that ineffective supervision is because boards find it challenging to observe managers' behaviour due to the organization's complexity. Baysinger and Hoskisson (1990) suggest that monitoring is often ineffective because boards only rely on the available information, and management controls provide information to boards. Hence, boards are an informational disadvantage.

Due to board directors' supervision problems, some shareholder advocates have started to focus on expanding the board director's role to improve corporate governance. The institution that focuses on this area, such as the Council of Institutional Investors, the National Association of Corporate Directors, The Business Roundtable and Institutional Shareholders Services, Inc., and TIAA-CREF, has recommendations for US corporations on how to structure and run board directors (Boone et al. 2007). These recommendations were drafted via the Sarbanes-Oxley Act (SOX) in 2002.

Since the SOX was issued to increase management reporting and enhance the board's role, some research has shown that corporate governance tends to decrease earnings management. Cohen and Lys (2008) found evidence that US companies have lowered discretionary accrual after the SOX implementation compared with before the SOX. Additionally, Singer and You (2011), who researched "The effect of Section 404 of the Sarbanes-Oxley Act on Earnings Quality,"

found that the companies that implemented the SOX enhanced the reliability of their reported earnings more than companies that did not implement it. The results also suggest that SOX helped reduce financial report manipulation, which may improve earnings management.

Earnings Management and Board Size

Even though Cohen and Lys (2008) and Singer and You (2011) found a positive effect of SOX on reducing earnings management, Linck et al. (2009) argue that SOX's impact has resulted in elevated board size, and the increasing board size may have disadvantageous effects (El Diri 2017). Additionally, Boone et al. (2007) summarise the existing board size theories into three arguments. The first argument is about the scope of operations. Boone et al. (2007) argue that the board size is influenced by the complexity and the scope of the company's operations. This argument reflects the views of Fama and Jensen (1983), that point out that more complex organisational processes lead to more hierarchical ones. Ndofor et al. 2013 support Fama and Jensen (1983), and Boone et al. (2007) suggest that since the organization's board monitors and controls managers' decisions, the information necessities of more complex procedures tend to require larger boards to develop adequate supervision. Some empirical studies support those arguments, such as Dalton (1999), Lehn et al. (2005), Guest (2009), and Linck et al. (2009). They conclude that there is a positive relationship between the complexity and the scope of the company's operations and board size. Thus, the more complex a company's operations, the more advice and oversight it will require, and the larger its board of directors.

In the second argument, Boone et al. (2007) argue that board size reflects a tradeoff between the costs and benefits of supervision. According to Jensen (1993), a larger board is associated with an increase in incremental cost due to inferior communication and decision-making.

Yermack (1996) additionally states that, although a larger board can provide more effective monitoring, the costs of adding more directors outweigh the advantages of monitoring. Hence small boards are more efficient in supervising company performance. In contrast, Monks and Minow (1995), Klein (2002), and Reeb and Upadhyay (2010) imply that larger boards may be able to reduce costs by conveying directors to vital oversight committees.

The third argument is the negotiation role of board directors. This argument is based on Hermalin and Weisbach's (1998) and Baker and Gompers's (2003) papers suggesting that board size is influenced by the role of board directors as a negotiator between the management and its outside parties. Lipton and Lorsch (1992) argue that a larger board size is ineffective in meeting rooms due to many opinions from many boards making decision-making slow. As a result, directors hardly criticize managers' policies on corporate governance. In particular, large boards prevent the firm's ability to pledge strategic changes, whereas small boards are more likely to be engaged in strategic decision-making.

Based on Boone et al. (2007) arguments show that board size's effect on company performance depends on firm characteristics. When the company has complex operations, it needs a larger board. Meanwhile, small boards are needed concerning the costs of monitoring and an effective negotiation role. Therefore, according to the above approach, this research develops a hypothesis:

H₁: Companies with large board sizes positively affect earnings management.

Earnings Management and Board Independence

According to Rahman et al. (2006), when firms become more complex and increase their scope, board size also grows as they need more supervision. Hence, the role of boards becomes more critical.

Additionally, Coles et al. (2008) argued that complex firms have more benefits with a larger board size with a greater independent board because they bring more experience. Reflecting on the Enron case, the crucial role of independent directors is needed to avoid conflict of interest between internal directors and management. Some recent research agrees that more proportion of outside directors can reduce earnings management (Klein 2002; Xie et al. 2003; Osma 2008; Cornett et al. 2009; Jaggi et al. 2009; Farrell et al. 2013; Chen et al. 2015; Rashid 2015). These studies consistently find that board independence is associated with better oversight. In this respect, independent directors should also be linked with lower earnings management. Therefore, according to the above approach, this research develops a hypothesis:

H₂: The board independence has a negative effect on earnings management.

Earnings Management and Board Independence Composition

Based on the Enron case, SOX's recommendations encourage board independence to enhance supervision. Albeit, it also indirectly affects the board's size. A critical question then arises on how the proportion of outside directors on board size could elevate board supervision.

According to Klein (2002); Xie et al. (2003); Osma (2008); Cornett et al. (2009); Jaggi et al. (2009); Farrell et al. (2013); Chen et al. (2015); Rashid (2015), more independent directors are associated with better oversight. However, Maug (1997) argued that it is costly for companies with high information asymmetry to invite outside directors for monitoring due to transferring information costs. This argument aligns with Yermack's (1996) statement that it would result in high communication costs when outside directors are less well-informed about the company's strategies. In this sense, some empirical studies (Peasnell et al. 2005; Rahman et al. 2006) found that larger board

independence is associated with higher earnings management. Hence, a larger board and bigger outside directors are negatively associated with ineffective oversight (Yermack 1996).

It can be concluded that when the board is too large because companies invite more outside directors, communication costs are also increased hence high information asymmetry exists and could reduce the effectiveness of monitoring and increase earnings management (Yermack 1996; Maug 1997). In this case, the interaction by adding more independent boards indirectly elevates the board size which could affect the ineffective monitoring role to alleviate earnings management. Hence, this research develops a hypothesis:

H3: The interaction between board size and board independence has a positive effect on earnings management.

DATA AND METHODOLOGY

Data Collection Methods

This research uses financial data collected from COMPUSTAT and BoardEx to collect board information. This research uses recent data from 2010 until 2019 to have a relevant view. In addition, this study uses data from companies listed in the S&P 500 index. Since the S&P 500 index includes the 500 largest companies listed on stock exchanges in the United States, this research attempts to examine the hypotheses of whether the S&P 500 index, as an index that involves the largest and most complex companies in the US, has sufficient board size to reduce earnings management.

Variable Design

Variable Dependent

This study uses earnings management (EM) as a dependent variable. The research distinguishes between earnings management activities as accrual and real

earnings management. The study uses the Modified Jones model (Dechow et al. 1995) as a proxy for accrual earnings management because this model attempts to mitigate some of the prior limitations of the Jones model. According to Peek et al. (2013), the Jones Model was found more powerful in detecting earnings management in The British-American cluster than Dechow and Dichev's model. Since this research used samples from American companies listed in the S&P 500 index, The Jones Model would be fit for the research.

The model uses delta revenue and delta receivable adjustment to avoid discretion in credit sales while calculating normal accrual (Cohen and Lys 2008).

There are three steps to measure discretionary accrual as follows:

1. Calculating the total accrual (TACC)

$$\frac{TACC_{it}}{A_{avg}} = \alpha + \alpha_1 \frac{1}{A_{avg}} + \beta_1 \frac{\Delta REV_{it}}{A_{avg}} + \beta_2 \frac{PPE_{it}}{A_{avg}} + e_{it}$$

2. Calculate non-discretionary accrual (NACC)

$$NACC_{it} = \alpha + \alpha_1 \frac{1}{A_{avg}} + \beta_1 \frac{\Delta REV_{it} - \Delta REC_{it}}{A_{avg}} + \beta_2 \frac{PPE_{it}}{A_{avg}} + e_{it}$$

3. The final step in calculating discretionary accrual (DACC)

$$DACC_{it} = \beta_1 \frac{TACC_{it}}{A_{avg}} - NACC_{it}$$

Where:

- a) TACC is calculated by net income minus cash flow from the operation
- b) ΔREV is the revenue change for the company i in year t divided by the average total assets of the beginning and ending asset balances.
- c) ΔREC is the receivable change for the company i in year t divided by the average total assets of the beginning and ending asset balances.
- d) PPE is the property, plant, and equipment of the company, i in year

t, divided by the average total assets of the beginning and ending asset balances.

In comparison, the paper uses the Roychowdhury model (2006) as a proxy of real earnings management. This paper used the Roychowdhury model since this model is proven effective in detecting earnings management in most research (Gao and Wang 2017; Khunkaew and Qingxiang 2019a; Owusu et al. 2020). The model involves three components to measure real earnings management: operating cash flow, discretionary expenses, and production cost (Cohen and Lys 2008). There are seven steps to measure discretionary accrual as follows:

1. Calculate the normal level of operating cash flows (CFO) and all are scaled by average total assets (A_{avg}).

$$\frac{CFO_{it}}{A_{avg}} = \alpha + \alpha_1 \frac{1}{A_{avg}} + \beta_1 \frac{Sales_{it}}{A_{avg}} + \beta_2 \frac{\Delta Sales_{it}}{A_{avg}} + e_{it}$$

2. Calculate the abnormal operating cash flow (AbCFO) by the difference between normal and actual operating cash flows. The result is multiplied by -1 to indicate upward earnings management.
3. Calculate the normal discretionary expenses (DiscExp), and all are scaled by average total assets (A_{avg}).

$$\frac{DiscExp_{it}}{A_{avg}} = \alpha + \alpha_1 \frac{1}{A_{avg}} + \beta_1 \frac{Sales_{it-1}}{A_{avg}} + e_{it}$$

4. Calculate the abnormal discretionary expenses (AbDiscExp) by the difference between normal and actual discretionary expenses. The result is multiplied by -1 to signal rising earnings management.
5. Calculate the normal level of production cost (Prod) and all are scaled by average total assets (A_{avg}).

$$\frac{Prod_{it}}{A_{avg}} = \alpha + \alpha_1 \frac{1}{A_{avg}} + \beta_1 \frac{Sales_{it}}{A_{avg}} + \beta_2 \frac{\Delta Sales_{it}}{A_{avg}} + \beta_3 \frac{Sales_{it-1}}{A_{avg}} + e_{it}$$

6. Calculate the abnormal production cost (AbProd) by the difference between normal and actual production costs.
7. According to Cohen and Lys (2008), the total real earnings management (REM_{total}) is measured by the sum of abnormal production cost (AbProd), abnormal operating cash flows (AbCFO), and abnormal discretionary expenses (AbDiscExp).

$$REM_{total} = AbProd + AbCFO + AbDiscExp$$

Both models used signed DACC since unsigned discretionary accruals found a biased tendency (Wagener, 2023). According to Hribar and Nichols (2007), utilizing unsigned discretionary accruals as a measure of earnings management resulted in bias in favor of rejecting the null hypothesis of no earnings management. It happened because of the lack of fit in the estimation of discretionary accruals which raises the expected value of absolute discretionary accruals.

Variable Independent

The mixed result of the effect of SOX on board role draws the attention of some scholars to study the effect of board size on earnings management. Hence, this research uses Board Size (BS) as an independent variable by proxy as the total number of the board (Xie et al. 2003; Ghosh et al. 2010; Damak 2018; Orazalin 2019; Rahman et al. 2006; Oh and Jeon 2017; Githaiga et al. 2022).

SOX recommendations also require independent directors to enhance monitoring quality because outside directors are expected to be more objective and expert than internal directors (Braiotta 1999). This study uses a proxy of Board Independence (BI) as the percentage of outside directors divided by the total number of the board (Xie et al. 2003; Ghosh et al. 2010; Damak, 2018; Orazalin 2019; Rahman et al. 2006; Oh and Jeon 2017; Githaiga et al. 2022).

Variable Control

Earnings management can also be influenced by variables other than independent variables. Hence, this research uses controlled

variables that could increase the likelihood of earnings management. Following El Diri et al. (2020), firm size influences the opportunity for earnings management. Larger firms have more significant transactions and complicated operations. Thus, it gives their managers more extensive chances to manipulate earnings. In this respect, the firm size (FS) is used as a control variable. The research uses total assets as a proxy (Boone et al. 2007; Rashid 2015; Shi et al. 2017; El Diri et al. 2020; Kjærland et al. 2020; Xiao et al. 2021).

The following control variables that can affect earnings management are profitability. This research uses return on Assets (ROA) to measure profitability (Boone et al. 2007; Shi et al. 2017; Kjærland et al. 2020; Xiao et al. 2021). Gong et al. (2009) suggested that management's past performance seems to be over-extrapolated to forecast future earnings. Their study found a significant positive association between ROA and earnings management. In addition, Abbasi et al. (2016), Wolf et al. (2016), and Abbas et al. (2018) argued that ROA is associated with the ability of management to generate profits. Thus, when the company's profit is higher, investor confidence elevates to predict future income and estimate investment risk. In this respect, management is motivated to practice earnings management reports to obtain large bonuses.

Leverage, according to DeFond and Jiambalvo (1994), affects managing earnings. Furthermore, DeFond and Jiambalvo (1994) explained that leverage is used to measure the company's financial stress. In this sense, higher leverage leads to earnings management because management attempts to avoid debt covenant violations. In contrast, Park and Shin (2004) argue that higher leverage can reduce earnings management because lenders will increase their supervision of companies with high debt, so they are not flexible in accounting accrual.

This study also adds sales growth (SG), as it has been found to stimulate earnings management. Companies with higher growing sales have more growth prospects, and to meet shareholders' and investors' expectations, they may be involved in more earnings manipulation (Hribar and Nichols 2007). In comparison, according to Dechow et al. (2011), companies with greater sales growth might pressure management to reduce earnings management. This paper uses the proxy as the delta of sales in year observation and sales in one year before

(Ghosh et al. 2010; Dechow et al. 2011; Khunkaew and Qingxiang 2019b; El Diri et al. 2020). Lastly, the research added firm age (AGE) as a control variable following Orazalin (2019) and used the proxy of the number of years since the first trading date on the stock market (Coles et al. 2008).

Model Construction

The Regression Model is used to identify which variables are associated with earnings management. This paper uses the model below to examine the relation between board size, board independence, and the interaction between board size and board independence on earnings management to answer the hypotheses:

$$EM = \beta_0 + \beta_1(BS) + \beta_2(BI) + \beta_3(BS \times BI) + \beta_4(FS) + \beta_5(ROA) + \beta_6(LEV) + \beta_7(SG) + \beta_8(AGE) + e$$

Where:

EM	= Earnings management with its two proxies of accrual (EMDACC) and real (EMREM).
BS	= Board Size
BI	= Board Independence
BI x BS	= Interaction term between the Board Size and Board Independence.
FS	= Firm Size
ROA	= Return Of Assets
LEV	= Leverage
SG	= Sales Growth
AGE	= Firm Age

Sample Description

This research uses a sample from companies listed in the S&P 500 index in The US stock market from 2010 to 2019. The S&P 500 index was used because this index presents the 500 largest companies listed in the United States and to show the relevance of whether the high-profile companies in America already have a decent monitoring system, mirroring the Enron case and the associated implementation of The SOX.

Since there are frequent changes in the companies listed in the S&P 500 index,

Table 1
Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
EMDACC	3760	-0.013	0.056	-0.689	0.705
EMREM	3760	0.035	0.096	-0.818	0.758
BS	3760	9.032	2.693	2	29
BI	3760	0.917	0.112	0.143	1
FS	3760	50298.12	140542	163.576	1951158
ROA	3760	0.065	0.073	-1.227	0.503
LEV	3760	0.291	0.191	1.750	2.439
SG	3760	807.030	10354.06	-172892	105210
AGE	3760	32.1766	16.009	1	103

Source: Analyzed primary data

this study uses data based on the S&P Dow Jones Indices press release on 3 June 2022 that there are 505 companies included in the list. Hence, the initial sample contains 5.050 for ten-year observations. In order to have accurate and reliable time series data, this study only included data which not have a time gap. In other words, those data were excluded when they had a missing value in the middle of the time range. As a result, the 5.050 initial firm-year observations leave only the final sample of 3.760 firm-year observations because 1.290 observations do not have inadequate Compustat data that enabled to estimate of discretionary accrual or incomplete information from BoardEx on the proxy of board directors' structure and composition each year.

Descriptive Statistics

This study presents the descriptive statistics in Table 1. The descriptive statistics show that earnings management's means are around zero because accrual earnings management is calculated as the residuals from the related equations (El Diri et al. 2020). It is consistent with Klein (2002), Xie et al. (2003), and El Diri et al. (2020). In addition, the board size of S&P 500 companies is, on average, 9.03 directors, ranging from 2 to 29 directors. Additionally, 91.70% of the board directors were from outside. This result is higher than Xie et al. (2003), which only found 85% of board independence in the same sample of the S&P 500 index in 1992, 1994, and 1996.

Since Xie et al. (2003) sample was before the implementation of SOX. It could suggest that the board of directors of S&P 500 companies is more independent after the implementation of SOX. On the other hand, there is a significant difference in firm size, as indicated by the difference between the minimum (163.58) and the maximum (1,951,158), which may be due to extreme values. The same problem also occurs in the firm age variable and sales growth variable.

RESULT AND ANALYSIS

Correlation Analysis

Correlation analysis aims to recognize the nature and magnitude of the association among research variables (Githaiga et al. 2022). Table 2 presents the correlation matrix of all variables in this study: accrual and real earnings management, board size, board independence, firm size, ROA, leverage, sales growth, and firm age. The correlation between accrual and real earnings management shows positive significance. This result differs from El Diri et al. (2020), which found a negative correlation between accrual and real earnings management, reflecting the tradeoff of both types of earnings management. Similarly, board size positively and significantly correlates with accrual and real earnings management. It suggests that If the board's size rises, accrual earnings management and real

Table 2
Correlation Table

	EMDACC	EMREM	BS	BI	FS	ROA	LEV	SG	AGE
EMDACC									
EMREM	0.173****								
BS	0.086****	0.182****							
BI	-0.060****	-0.096****	-0.197****						
FS	0.011	0.151****	0.211****	-0.049***					
ROA	0.384****	-0.402****	-0.076****	0.064****	-0.129****				
LEV	-0.014	0.026	-0.095****	-0.020	-0.140****	-0.067****			
SG	0.022	0.019	-0.008	-0.019	0.009	0.031	-0.023		
AGE	0.069****	0.046***	-0.186****	0.082****	0.020	0.074****	-0.039**	0.005	

Source: Analyzed primary data

Table 3
The Regression Test

	(1) EMDACC	(2) EMREM
BS	0.001** (2.49)	0.002* (1.78)
BI	-0.067** (-2.32)	-0.290**** (-3.63)
BS x BI	0.004* (1.36)	0.027*** (3.07)
FS	3.731*** (2.97)	0.000**** (3.85)
ROA	0.479**** (39.47)	-0.997**** (-29.87)
LEV	0.021**** (3.47)	0.172**** (9.28)
SG	0.000* (1.83)	-0.000**** (-3.69)
AGE	0.000 (0.58)	-0.000 (-0.52)
_cons	-0.064**** (-11.71)	-0.331**** (-9.58)
N	3760	3760

Source: Analyzed primary data

activities manipulation increase. This result is consistent with Rahman et al. (2006), Bao and Lewellyn (2017), and Githaiga et al. (2022). Board independence, on the other hand, shows a significant negative correlation with accrual and real earnings activities, which means that when board independence surges, accrual earnings management and real earnings manipulation reduce. It aligns with Kang and Kim (2012), Young et al. 2012, El Diri et al. (2020), and Githaiga et al. (2022) and reflects the importance of board independence in mitigating both accrual and real earnings management.

As for the proxies of board characteristics, Table 2 shows a significant negative correlation between board size and board independence, which implies that when board size enlarges, the composition of board independence declines. Rahman et al. (2006), Damak (2018), and Githaiga et al. (2022) also found the same result. It reflects that the increase in board size is not accompanied by an increase in the composition of board independence. Lastly, to oversee multicollinearity, the research

examines the VIF between all variables and confirms that all VIF factors are less than 10.

Regression Analysis

In order to create a valid panel data model, regression models were subjected to the Breusch and Pagan Lagrangian Multiplier test to decide whether random-effects (RE) or ordinary least squares (OLS) is the best estimation method for this panel data. The result shows that all models have Prob > chibar2 less than 0.05, so rejected H₀. Therefore, RE is the best model rather than OLS. After that, this paper used the Hausman test to decide the best estimation method between random-effects (RE) and fixed-effects (FE). The result shows that all models have Prob > chibar2 less than 0.05. Therefore, H₀ accepted that RE is the best model rather than FE. Overall it presents that RE estimation is the best technique for both models.

Table 3 provides the regression results for the effect of board characteristics on accrual and real earnings management. The evidence found that board size

positively and significantly affected both accrual and real earnings management at the significance level of 0.05 and 0.1, respectively. Thus this study accepts hypothesis H₁ that larger boards positively affect earnings management. This result aligns with Boone et al. (2007) second argument that board size reflects a tradeoff between the costs and benefits of monitoring. So, when the board becomes larger, it surges incremental costs due to ineffective communication and decision-making (Jensen 1993). A larger board also suffers from the free-rider problem because directors tend to depend on each other because of the distributed responsibility (Yermack 1996). Furthermore, the finding also aligns with Boone et al. (2007) third argument that board size is influenced by the role of board directors as negotiators. A larger board size leads to slow decision-making in meeting rooms due to many board opinions (Lipton and Lorsch 1992). In particular, large boards prevent the firm's ability to pledge strategic changes and engage in strategic decision-making. Therefore, their capability to mitigate earnings management becomes weak due to the high communication cost and slow decision-making, leading to ineffective monitoring.

The empirical findings on board size's effect on earnings management have varied in the literature. Some prior studies document a positive effect of board size on earnings management (Ge and Kim 2013; Lin 2017; Damak 2018; Al-Okaily et al. 2020; and Githaiga et al. 2022). Albeit, Chtourou et al. (2001), Xie et al. (2003), Kang and Kim (2012), Hsu and Wen (2015), and Orazalin (2019) find a negative influence of board size on earnings management. Within this mixed result, our evidence documents that both accrual and real earnings management are more likely to occur in larger board sizes.

In addition, the results further indicated that board independence had a negative and significant effect on both types of earnings management at a significant

0.05 level of accrual earnings management and 0.001 level for real activities manipulation. It reflects that board independence could mitigate earnings manipulation. Therefore this study accepts hypothesis H₂ that larger board independence negatively affects earnings management. This finding aligns with Klein 2002; Xie et al. 2003; Osma, 2008; Cornett et al. 2009; Jaggi et al. 2009; Farrell et al. 2013; Chen et al. 2015; Rashid 2015.

However, when board size interacts with board independence, the result becomes positive. Moreover, the positive effect becomes stronger (BS and BS x BI are 0.001 + 0.004 for EMDACC, and BS and BS x BI are 0.002 + 0.027 for EMREM). It indicates that board independence strengthens the positive effect of board size on earnings management. Therefore this paper accepts hypothesis H₃ and supports the notion that a larger board with a larger independent directors is not an effective tool to mitigate earnings management.

Independent directors can bring more expertise to corporate decision-making in complex companies (Weisbach and Hermalin 2001; Fich 2005). In addition, outside directors are in a better position to monitor and control managers because they are independent and do not clash with managers (Fama and Jensen 1983; Dunn 1987). However, when a company has high costs for transferring information, more board independence will make monitoring ineffective because they are less informed about its strategy. As a result, it causes slow decision-making and makes it difficult for directors to criticize managers' policies. Thus, it can trigger the opportunistic behaviour of managers to improve earnings management (Yermack 1996; Maug 1997). Therefore, according to Yermack (1996), having a smaller board with small outside directors is more optimal than a larger board with a larger independent board. In contrast, the finding is against the argument that the larger boards are associated with better monitoring through an independent board

Table 4
Robust Test

	(1) EMDACC	(2) EMDACC
BS	0.001** (2.49)	0.001** (2.24)
BI	-0.067** (-2.32)	-0.067** (-2.19)
BS x BI	0.004* (1.36)	0.004* (1.43)
FS	3.731*** (2.97)	3.731*** (3.51)
ROA	0.479**** (39.47)	0.479**** (12.49)
LEV	0.021**** (3.47)	0.021* (1.95)
SG	0.000* (1.83)	0.000** (2.16)
AGE	0.000 (0.58)	0.000 (0.53)
_cons	-0.064**** (-11.71)	-0.064**** (-7.96)
<i>N</i>	3760	3760

Source: Analyzed primary data

because they help avoid interlocking in board responsibilities that would lead to effective supervision (Coles et al. 2008; Upadhyay et al. 2014).

Robust Test

This research conducted the Breusch–Pagan/Cook–Weisberg test for heteroskedasticity. The result shows that $\text{Prob} > \chi^2$ is more than 0,05 for model (2). Thus the models are free from heteroskedasticity. Meanwhile, for model (1), the result shows that $\text{Prob} > \chi^2$ is less than 0,05. Due to the models' heteroskedasticity, this paper conducted the robustness test of the model (1) to check the findings' reliability.

Table 4 shows that the estimated coefficients remain qualitatively similar to

the regression test. Therefore, the result is still accurate in measuring the actual standard error of a regression coefficient.

CONCLUSION

Research Conclusion

This study examines the effect of board size, board independence, and the composition of board independence on accrual and real earnings management from companies listed in the S&P 500 index from 2010 to 2019. While the prior research has focused chiefly on the effect of board characteristics on either accrual or real earnings management, we observe both accrual and real earnings management and document that both types of earnings

management likely happen in large board sizes. This finding supports the argument that a larger board size suffers from high communication costs and free-riders problems (Jensen 1993; Yermack 1996). It leads to inefficient monitoring that fails to reduce earnings management. Furthermore, this research also found that larger board independence has a negative effect on accrual and real earnings management. Hence, board independence is an effective tool to mitigate earnings management. However, when board independence interacts with board size, the effect becomes positive, reflecting that board independence strengthens the positive effect of board size on earnings management. Even though more Independent directors can bring more expertise to corporate decision-making (Weisbach and Hermalin 2001; Fich 2005), when a company has high costs for transferring information, it is hard for outside directors to be involved in company strategies due to unbalanced information (Yermack 1996). The unbalanced information could trigger the opportunistic behaviour of managers to engage in earnings management. Thus, these results doubt the arguments of Coles et al. (2008) and Upadhyay et al. (2014) that larger boards with more outsider directors are certainly value-enhancing. In contrast, this paper supports Yermack (1996) that small boards with small outside directors are effective tools to mitigate accrual and real earnings management. Overall, this paper concludes that to develop an effective board to reduce earnings management, companies should not only rely on the quantity of the board but also have to pay attention to its quality because those characteristics of the board do not stand as an individual but as complementary characters.

Research Implication and Limitations

This research found that a small board with small independent directors more effectively reduces both accrual and real earnings management than a larger board with larger outside directors. The

findings implication to the industry especially the companies that when developing an effective board to reduce earnings management they should not only be concerned with the quantity but also pay attention to the board quality since the quantity and quality of the board are complementary characteristics, not separate individuals.

In addition, the paper could not find evidence of a tradeoff between accrual and real earnings management. It might happen because of the limitation of variables to distinguish between strong and weak monitoring since management tends to shift from accrual to real earnings management because the cost of real activities manipulation is lower than accrual earnings management when the company tightens supervision (Graham et al. 2005; Cohen and Lys 2008). Therefore, future research could add more variables such as audit committee, board meeting frequencies, or auditor tenure to distinguish between strong and weak oversight, so the subsequent studies could provide evidence that management uses accrual and real earnings management as a substitute depending on the strength of supervision.

REFERENCES

- Abbas, F. J., et al. 2018. The Impact of Practices in Working Capital Management and Supply Chain Management on Corporate Performance. *International Journal of Business*, 23 (4), 383.
- Abbasi, S., R. Abbasi, and H. Foghi. 2016. Examining the Relationship Between Social Responsibility and Financial Performance Regarding The Mitigating Variable of Organizational Risk in The Companies Admitted in Tehran Stock Market. *International Business Management*, 10 (11), 2124–2129.

- Al-Okaily, N. Ben Youssef, and S. Chahine. 2020. Economic Bonding, Corporate Governance And Earnings Management: Evidence from UK Publicly Traded Family Firms. *International Journal of Auditing*, 24 (2), 185–204.
- Baker, M., and P. A. Gompers. 2003. The Determinants of Board Structure at The Initial Public Offering. *The Journal of Law and Economics*, 46 (2), 569–598.
- Bao, S. R., and K. B. Lewellyn. 2017. Ownership Structure and Earnings Management in Emerging Markets- An Institutionalized Agency Perspective. *International Business Review*, 26 (5), 828–838.
- Baysinger, B. D., and H. Butler. 1985. Corporate Governance and the Board of Directors: Performance Effects of Changes in Board Composition. *Journal of Law, Economics, and Organizations*, 1 (1), 101–124
- Baysinger, B. D., and R. E. Hoskisson. 1990. The Composition of Board Directors and Strategic Control: Effects on Corporate Strategy. *Academy of Management Review*, 15, 72–87
- Boone, A. L., et al. 2007. The Determinants of Corporate Board Size and Composition: An Empirical Analysis. *Journal of Financial Economics*, 85 (1), 66–101.
- Brennan, N. 2006. Boards of Directors and Firm Performance: Is There an Expectations Gap? *Corporate Governance: An International Review*, 14 (6), 577–593.
- Braiotta, L. Jr. 1999. *The Audit Committee Handbook*. New York: Wiley.
- Brown, N. C., C. Pott, and A. Wömpener. 2014. The Effect of Internal Control and Risk Management Regulation on Earnings Quality: Evidence from Germany. *Journal of Accounting and Public Policy*, 33 (1), 1–31.
- Chen, X., Q. Cheng, and X. Wang. 2015. Does Increased Board Independence Reduce Earnings Management? Evidence from Recent Regulatory Reforms. *Review of Accounting Studies*, 20 (2), 899–933.
- Chtourou, S. M., J. Bédard, and L. Courteau. 2001. Corporate Governance and Earnings Management. *SSRN eLibrary*. Available at SSRN: <https://ssrn.com/abstract=275053>.
- Cohen, J., G. Krishnamoorthy, A. M. Wright. 2002. Corporate Governance and the Audit Process. *Contemporary Accounting Research*, 19 (4), 573–94.
- Cohen, D. A., and T. Z. Lys. 2008. Real and Accrual-Based Earnings Management in the Pre- and Post-Sarbanes-Oxley Periods. *The Accounting Review*, 83 (3), 757–787.
- Cohen, D. A., and P. Zarowin. 2010. Accrual-Based and Real Earnings Management Activities Around Seasoned Equity Offerings. *Journal of Accounting and Economics*, 50 (1), 2–19.
- Coles, N. D. Daniel, and L. Naveen. 2008. Boards: Does One Size Fit All? *Journal of Financial Economics*, 87 (2), 329–356.
- Cornett, J. J. McNutt, and H. Tehranian. 2009. Corporate Governance and Earnings Management at Large U.S. Bank Holding Companies. *Journal of Corporate Finance*, 15 (4), 412–430.
- Dalton, D. R., et al. 1999. Number of Directors and Financial Performance: A Meta-Analysis. *Academy of Management Journal*, 42, 674–686.
- Damak, S. T. 2018. Gender Diverse Board and Earnings Management: Evidence from French Listed Companies. *Sustainability Accounting, Management, and Policy Journal*, 9 (3), 289–312.

- Dechow, R. Sloan, and A. Sweeney. 1995. Detecting Earnings Management. *The Accounting Review*, 70 (2), 193–225.
- Dechow, P. M., et al. 2011. Predicting Material Accounting Misstatements. *Contemporary Accounting Research*, 28 (1), 17–82.
- DeFond, M. L. and J. Jiambalvo. 1994. Debt Covenant Violation and Manipulation of Accruals. *Journal of Accounting & Economics*, 17 (1), 145–176.
- Douma, and H. Schreuder. 2017. *Economic Approaches to Organisations*, 6th ed., Pearson Education.
- Dunn, D. 1987. Directors aren't Doing Their Jobs, *Fortune*, 117–119.
- El Diri, M. 2017. *Introduction to Earnings Management*. Cham: Springer International Publishing AG.
- El Diri, M., C. Lambrinoudakis, and M. Alhadab. 2020. Corporate Governance and Earnings Management in Concentrated Markets. *Journal of Business Research*, 108, 291–306.
- Elnahass, A. Salama, and N. Yusuf. 2022. Earnings Management and Internal Governance Mechanisms: The Role of Religiosity. *Research in International Business and Finance*, 59, 101565.
- Fama, and M. C. Jensen. 1983. Separation of Ownership and Control. *The Journal of Law and Economics*, 26 (2), 301–325.
- Farrell, J. Yu, and Y. Zhang. 2013. What are The Characteristics of Firms that Engage in Earnings Per Share Management Through Share Repurchases? *Corporate Governance: an International Review*, 21 (4), 334–350.
- Fich, E. M. 2005. Are Some Outside Directors Better than Others? Evidence from Director Appointments by Fortune 1000 Firms. *Journal of Business*, 78, 1943–1972.
- Gao, B. Gao, and X. Wang. 2017. Trade-off between Real Activities Earnings Management and Accrual-Based Manipulation-Evidence from China. *Journal of International Accounting, Auditing and Taxation*, 29, 66–80.
- Ge, W., and J. B. Kim. 2013. Boards, Takeover Protection, and Real Earnings Management. *Review of Quantitative Finance and Accounting*, 43 (4), 651–682.
- Ghosh, A., A. Marra, D. Moon. 2010. Corporate Boards, Audit Committees, and Earnings Management: Pre and Post-SOX Evidence. *Journal of Business Finance and Accounting*, 37 (9-10), 1145–1176.
- Githaiga, P. N., M. K. Paul, and C. B. Tirisa. 2022. Board Characteristics and Earnings Management. Does Firm Size Matter? *Cogent Business and Management*, 9 (1).
- Gong, G., H. Li, and H. Xie. 2009. The Association between Management Earnings Forecast Errors and Accruals. *The Accounting Review*, 84 (2), 497–530.
- Graham. J. R., C. H. Harvey, and S. Rajgopal. 2005. The Economic Implications of Corporate Financial Reporting. *Journal of Accounting and Economics*, 40 (1), 3–73.
- Guest. P. M. 2009. The Impact of Board Size on Firm Performance: Evidence from the UK. *The European Journal of Finance*, 15 (4), 385–404.
- Healy, P. M., and K. G. Palepu. 2003. The Fall of Enron. *The Journal of Economic Perspectives*, 17 (2), 3–26.
- Healy, P. M., and J. M. Wahlen. 1999. A Review of the Earnings Management Literature and Its Implications for Standard

- Setting. *Accounting Horizons*, 13 (4), 365–383.
- Hermalin, and M. S. Weisbach. 1998. Endogenously Chosen Boards of Directors and Their Monitoring of the CEO. *The American Economic Review*, 88 (1), 96–118.
- Hribar, P., and D. Nichols. 2007. The Use of Unsigned Earnings Quality Measures in Tests of Earnings Management. *Journal of Accounting Research*, 45 (5), 1017–1053.
- Hsu, M. F., and S. Y. Wen. 2015. The Influence of Corporate Governance in Chinese Companies on Discretionary Accruals and Real Earnings Management. *Asian Economic and Financial Review*, 5 (3), 391–406.
- Jaggi, S. Leung, and F. Gul. 2009. Family Control, Board Independence, and Earnings Management: Evidence-Based on Hong Kong Firms. *Journal of Accounting and Public Policy*, 28 (4), 281–300.
- Jensen, M. C. 1993. The Modern Industrial Revolution, Exit, and The Failure of Internal Control Systems. *The Journal of Finance*, 48 (3), 831–880.
- Jensen, M. C., and W. H. Meckling. 1976. Theory of The Firm: Managerial Behaviour, Agency Costs, and Ownership Structure. *Journal of Financial Economics*, 3 (4), 305–360.
- Jones, J. 1991. Earnings Management During Import Relief Investigations. *Journal of Accounting Research*, 29 (2), 193–228.
- Jones, M. 2011. *Creative Accounting, Fraud, and International Accounting Scandals*. Chichester: Wiley.
- Kang, S. A., and Y. S. Kim. 2012. Effect of Corporate Governance on Real Activity-Based Earnings Management: Evidence from Korea. *Journal of Business Economics and Management*, 13 (1).
- Kerstein, and A. Rai. 2018. Reexamination of Earnings Management Before and After SOX: Evidence from SEC Staff Accounting Bulletins 99-100. *Journal of Accounting and Public Policy*, 37 (2), 146–166.
- Khunkaew R., and Y. Qingxiang. 2019a. Substitution Between Accruals-Based and Real Activities Earnings Management of Listed Thai Firms. *The Journal of Corporate Accounting and Finance*, 30 (4), 99–110.
- Khunkaew R., and Y. Qingxiang. 2019b. The Characteristics of Top Management and Firm's Earnings Management: The Evidence Form Thailand. *Copernican Journal of Finance and Accounting*, 8 (3), 47.
- Kjærland, et al. 2020. Corporate Governance and Earnings Management in a Nordic Perspective: Evidence from The Oslo Stock Exchange. *Journal of Risk and Financial Management*, 13 (11), 256.
- Klein. 2002. Audit Committee, Board of Director Characteristics, and Earnings Management. *Journal of Accounting and Economics*, 33 (3), 375–400.
- Kohlbeck, J. Sankara, and E. G. Stewart. 2018. Are Earnings Strings Restrained After SOX? *Review of Accounting and Finance*, 17 (1), 18–40.
- Lehn, K., S. Patro, and M. Zhao. 2005. *Determinants of The Size and Structure of Corporate Boards: 1935–2000*. Unpublished Working Paper, University of Pittsburgh.
- Lin, F. 2017. An Analysis and Evaluation of The Real Earnings Management Constraint Mechanism from the Perspective of Corporate Governance. *Littera Scripta*, (2), 49–72.

- Linck, J. M. Netter, and T. Yang. 2009. The Effects and Unintended Consequences of The Sarbanes-Oxley Act on the Supply and Demand for Directors. *The Review of Financial Studies*, 22 (8), 3287–3328.
- Lipton, and J. W. Lorsch. 1992. A Modest Proposal for Improved Corporate Governance. *The Business Lawyer*, 48 (1), 59–77.
- Maug, Ernst. 1997. Boards of Directors and Capital Structure: Alternative Forms of Corporate Restructuring. *Journal of Corporate Finance*, 3 (2), 113–139.
- Monks, R. A. G., and N. Minow. 1995. *Corporate Governance*. Basil Blackwell: Oxford.
- Ndofor, H. A., C. Wesley, and R. L. Priem. 2013. Providing CEOs with Opportunities to Cheat: The Effects of Complexity-Based Information Asymmetries on Financial Reporting Fraud. *Journal of Management*, 41, 1774–1797.
- Oh, H. M., and H. J. Jeon. 2017. Does Board Characteristics Constrain Real Earnings Management? Evidence From Korea. *Journal of Applied Business Research*, 33 (6), 1251–1262.
- Orazalin, N. 2019. Board Gender Diversity, Corporate Governance, and Earnings Management: Evidence from an Emerging Market. *Gender in Management*, 35 (1), 37–60.
- Osma. 2008. Board Independence and Real Earnings Management: The Case of R&D Expenditure. *Corporate Governance: An International Review*, 16 (2), 116–131.
- Owusu, et al. 2022. Is There a Trade-Off Between Accrual-Based and Real Earnings Management Activities in the Presence of (fe) Male Auditors? *Journal of Business Ethics*, 175 (4), 815–836.
- Park, Y. W., and H. Shin. 2004. Board Composition and Earnings Management in Canada. *Journal of Corporate Finance*, 10 (3), 431–57.
- Peasnell, P. F. Pope, and S. Young. 2005. Board Monitoring and Earnings Management: Do Outside Directors Influence Abnormal Accruals? *Journal of Business Finance and Accounting*, 32 (7-8), 1311–1346.
- Peek, et al. 2013. Comparing Abnormal Accruals Estimates Across Samples: An International Test. *The European Accounting Review*, 22 (3), 533–572.
- Pincus, Wu, S., and J. Hwang. 2022. Did Accrual Earnings Management Decline and Real Earnings Management Increase Post-SOX? A Re-Examination Over an Extended Post-SOX Period and A Closer Look at REM-AEM Substitution. *Journal of Financial Reporting (Sarasota, Fla.)*, 7 (2), 179–205.
- Rahman, R. A., F. H. M. Ali, and R. Haniffa. 2006. Board, Audit Committee, Culture, and Earnings Management: Malaysian Evidence. *Managerial Auditing Journal*, 21 (7), 783–804.
- Rashid. 2015. Revisiting Agency Theory: Evidence of Board Independence and Agency Cost from Bangladesh. *Journal of Business Ethics*, 130 (1), 181–198.
- Reeb, and A. Upadhyay. 2010. Subordinate Board Structures. *Journal of Corporate Finance*, 16 (4), 469–486.
- Roychowdhury, S. 2006. Earnings Management Through Real Activities Manipulation. *Journal of Accounting and Economics*, 42 (3), 335–370.
- Rupp. 2021. Securitization and Earnings Management: Evidence from The Sarbanes–Oxley act. *Journal of Financial Regulation and Compliance*, 29 (1), 44–62.

- S&P Dow Jones Indices. 2022. Keurig Dr Pepper, VICI Properties and ON Semiconductor Set to Join S&P 500; Others to Join S&P MidCap 400, and S&P SmallCap 600. [Press release]. Accessed 22 July 2022, <https://www.spglobal.com>.
- Shi, B. L. Connelly, and R. E. Hoskisson. 2017. External Corporate Governance and Financial Fraud: Cognitive Evaluation Theory Insights on Agency Theory Prescriptions. *Strategic Management Journal*, 38 (6), 1268–1286.
- Singer, Z. and H. You. 2011. The effect of Section 404 of the Sarbanes-Oxley Act on Earnings Quality. *Journal of Accounting, Auditing, and Finance*, 26 (3), 556–589.
- Upadhyay, R. Bhargava, and S. D. Faircloth. 2014. Board Structure and Role of Monitoring Committees. *Journal of Business Research*, 67 (7), 1486–1492.
- US House. Committee On Governmental Affairs. 2002. *The Role of The Board of Directors in Enron's Collapse*. 8 July. Washington: Government Printing Office.
- Yermack, D. 1996. Higher Market Valuation of Companies with A Small Board of Directors. *Journal of Financial Economics*, 40 (2), 185–211.
- Young, C. S., et al. 2012. Board Characteristics and Real Earnings Management. *Tai Da Guan Li Lun Cong*, 23 (1), 363.
- Wagener, S. 2023. Accounting for The Middle: Motivations, Extent, and Limitations of Middle Managers' Earnings Management. *Journal of Business Economics*.
- Weisbach, M. S., and B. Hermalin. 2001. Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature. *NBER Working Paper Series*, 8161.
- Wiseman, R. M., and L. R. Gomez-Mejia. 1998. A Behavioural Agency Model of Managerial Risk-Taking. *Academy of Management Review*, 23 (1), 133–153.
- Wolf, C. A., et al. 2016. Dairy Farm Financial Performance: Firm, Year, and Size Effects. *Agricultural Finance Review*, 76 (4), 532–543.
- Xiao, S. L. Sun, and D. H. Weng. 2021. The Unfriendly Board: Antecedents And Consequences Of Board Dissent. *European Management Journal*, 39 (1), 135–146.
- Xie, W. N., Davidson, and P. J. DaDalt. 2003. Earnings Management and Corporate Governance: The Role of The Board and The Audit Committee. *Journal of Corporate Finance*, 9 (3), 295–316.
- Zahra, and J. A. Pearce. 1989. Boards of Directors and Corporate Financial Performance: A Review and Integrative Model. *Journal of Management*, 15 (2), 291–334.