UNVEILING THE ALLIANCE BETWEEN CORPORATE BOARD COMPOSITION AND EARNINGS MANAGEMENT THROUGH META-ANALYSIS

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Abstract

Misconduct in the financial sector, such as earnings management, has garnered significant attention from researchers due to the peculiarities of managers in financial reporting. Effective corporate boards have the potential to limit managerial opportunism in this regard. However, the existing literature yielded inconclusive results. Therefore, the present study aims to examine the influence of corporate board characteristics on earnings management through meta-analysis. The dataset comprises 72 published empirical studies with 3,66,417 firm-year observations. A two-step methodology is adopted following the PRISMA guidelines proposed by Moher et al. (2009) and the meta-analytic technique propounded by Hedges and Olkin (2014). The major findings of the study uncover that active, gender-diverse and larger corporate boards are most influential in controlling earnings management practices. Furthermore, different discretionary accrual measures, corporate governance systems, and the International Financial Reporting Standards (IFRS) adoption moderate the association between earnings management and board composition. The study provides a quantitative generalization to the inconclusive outcomes of published empirical studies from different timeframes and jurisdictions. The findings may help academicians and researchers to develop a holistic understanding of the impact of corporate boards on earnings management. This is one of the first studies to undertake a meta-analytic review of the association of board gender diversity and board activity as board characteristics with earnings management.

Keywords: Earnings Management, Discretionary Accruals, PRISMA, Board of Directors, Corporate Governance, CG, Meta-Analysis

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1. INTRODUCTION

The unraveling of corporate wrongdoings, such as WorldCom, Enron, and Satyam, has attracted significant attention to the accounting discretion of managers in preparing financial statements. Such opportunistic behavior is triggered by the lack of effective corporate governance (CG) mechanisms (Claessens & Yurtoglu, 2013). The concept of CG has enticed the interest of researchers as a potential

solution to agency problems (Abdou et al., 2021). Prior research reinforces the notion that the corporate board plays an active role in CG in aligning the interests of managers and stakeholders (Fama & Jensen, 1983). The board of directors is considered an apex CG mechanism, responsible for monitoring, directing, and safeguarding the shareholders' interest and producing high-quality financial statements (Hundal et al., 2022; Nagar & Raithatha, 2022). Several studies also talk about the role played by the board of directors in mitigating earnings management (EM) through accruals (Abdou et al., 2021; Feng & Huang, 2021; Waweru & Prot, 2018). Earnings management occurs when managers' judgment in reporting financial statements aims to mislead stakeholders or to impact contractual outcomes that depend on the earnings reported by the firm (Healy & Wahlen, 1999).

The literature assessing the role played by corporate board composition in curtailing EM practices stands non-convergent. For instance, some studies report reduced EM practices in the presence of independent boards (Saona et al., 2020; Xie et al., 2003), while Waweru and Prot (2018) concluded a significantly positive association between manipulation of earnings through accruals and board independence. Similarly, Xie et al. (2003), posit constrained EM practices in the presence of large boards, whereas Abbott et al. (2000) reported an insignificant association. Further, Saona et al. (2020) find reduced managerial opportunistic behavior as exemplified in EM in a gender-diverse board. Conversely, Waweru and Prot (2018) reported higher discretionary accruals in the presence of female directors. Such inconclusiveness reveals that the impact of board composition in EM is still an open question. Therefore, the present study aims to examine board composition's effect on corporates' EM practices through meta-analysis.

A meta-analysis helps to reconcile inconsistent findings due to variations in methodologies or heterogeneity in literature (Borenstein et al., 2010). Therefore, to review, synthesize and assess the current literature, it becomes imperative to employ a meta-analysis for the following reasons. First, most studies examined only specific dimensions of governance mechanisms. Second, analyses occur in varying legal and regulatory settings, with a probable exogenous impact on the concluding findings. Third, studies were subject to varied research designs, inconsistent definitions, sample size, and timeframe (Leonidou et al., 2002). The objective of the current study is to attain quantitative generalizability and validity of current studies. Thus, the following research questions are proposed:

RQ1: How do board characteristics impact EM practices?

RQ2: What different measures of discretionary accruals cause variation in findings?

RQ3: Do different CG mechanisms moderate the findings?

RQ4: How does IFRS adoption impact EM?

The findings highlight the most influential characteristics of board composition and resolve non-convergent results in extant literature. Further, the exploration of different measures of discretionary accruals, CG systems, and the International Financial Reporting Standards (IFRS) adoption as moderators aid in understanding the role played by antecedents due to differences in methodology, particular governance mechanisms, and timeframe. The study will help researchers to accumulate a holistic understanding of EM practices adopted by corporate boards and indicates an opportunity by identifying existing gaps in the literature. Also, market leaders and policymakers will benefit by understanding the crucial dynamics of corporates.

To the best of the authors' knowledge, this is the first attempt to undertake a meta-analytic review of the relationship between EM and board gender diversity and board activity as board characteristics. The literature examining the association of EM with these variables has produced fragmented evidence and serves as a good test platform for meta-analysis. Further, the included articles in the current meta-analysis (72) have significantly outnumbered the samples of previous meta-analytic studies (García-Meca & Sánchez-Ballesta, 2009; Lin & Hwang, 2010) of 35 and 48, respectively. Thus, rendering the study different from the meta-analyses of these authors.

The remainder of the study is structured as follows. Section 2 contains hypotheses development and a literature review. Section 3 presents the methodology, including the PRISMA framework and meta-analytic technique. Results are provided in Section 4. A discussion of the findings is presented in Section 5. Section 6 presents future research directions and concludes the paper.

2. LITERATURE REVIEW

Corporate boards are considered an apex of decision control systems having the authority to employ, remove, and reward top-level decision-makers (Fama & Jensen, 1983). Empirical evidence states that the board of directors is vital in monitoring and controlling a firm's financial performance (Xie et al., 2003) and protecting shareholders' interests (Saona et al., 2020). Prior literature demonstrates that EM is a common practice in corporate bodies and is influenced by the board's characteristics (Chen & Zhang, 2014). This section advances hypotheses assessing the interface of board composition with EM. The conceptual framework of the study is shown in Figure 1.

2.1. Board independence

A corporate board plays a crucial role in controlling agency costs (García-Meca & Sánchez-Ballesta, 2009). Prior literature reinforces the notion that independent directors on board monitor managers more effectively and are motivated to act in the best interests of shareholders (Fama & Jensen, 1983). Proponents of agency theory assert that an independent corporate board enhances investors' confidence in reported financial statements, and suppresses EM practices (Chen & Zhang, 2014; Kapoor & Goel, 2017; Suyono & Farooque, 2018; Wu et al., 2016). Such a finding is in unity with the meta-analytic findings of García-Meca and Sánchez-Ballesta (2009). However, Orazalin (2020) and Khalil and Ozkan (2016) doubt the inverse relationship between board independence and EM in Kazakhstan and Egypt, respectively. Conversely, from the stewardship theory perspective, internal

members should dominate a board for effective decision-making since they are more familiar with the firm than outsiders (Ramdani & Witteloostuijn, 2010). Stewards believe that utilities from pro-organizational behavior are more significant than individualistic, self-serving behavior (Davis et al., 1997). Thus, based on the non-convergent propositions, the following hypothesis is advanced:

H1: Board independence and EM are significantly associated.

2.2. Board size

The theoretical and empirical literature shows that board size significantly drives CG effectiveness (Lee & Chen, 2011). Findings are inconclusive on the effectiveness of board size in curtailing EM practices. From the agency theory perspective, small boards may provide better financial performance than large boards. An increased board size becomes less effective as the coordination and communication issues outweigh the benefits of having more individuals (Jensen, 1993; Sáenz González & García-Meca, 2014). Conversely, few empirical studies report that larger boards effectively mitigate EM practices because they can draw from the rich experiences, knowledge, and skills of different board members, ensuring the reliability of financial statements. Such findings unite with the resource dependency theory (Chouaibi et al., 2018; Orazalin, 2020; Xie et al., 2003). Based on conflicting evidence, the study does not extend any directional expectations. As a result, the following hypothesis is advanced:

H2: Board size and EM are significantly associated.

2.3. CEO duality

Chief executive officer (CEO) duality implies board chairperson also serves as the CEO of the company. Proponents of agency theory assert that executives' opportunistic behavior compels them to derive inordinate benefits at the cost of shareholders' interests. Therefore, a combined authority is disagreeable as the single person holds excess power. Thus, separating the roles of CEO and board chairperson improves monitoring effectiveness and reduces agency costs (Fama & Jensen, 1983). Contrary to this, the defenders of stewardship theory propose that CEO duality may intensify a firm's financial performance and shareholder returns since CEOs have exhaustive information on the systems and tasks of the firm (Davis et al., 1997). In line with this argument, Chee and Tham (2020) empirically report a significantly negative correlation between CEO duality and discretionary accruals. Given this discussion, the following hypothesis is proposed:

H3: CEO duality and EM are associated.

2.4. Board gender diversity

Monitoring, risk tolerance, decision-making, communication, and leadership styles reflect a substantial gender-based variation. Female directors tend to be more risk-averse and committed to ethics, which reduces the likelihood of reporting financial fraud (Lenard et al., 2017). Additionally, the advocates of critical mass theory assert that when there are enough women directors on the board to reach a critical mass, gender diversity is positively associated with earnings quality (Harakeh et al., 2019; Strydom et al., 2017). Similarly, Kim et al. (2017) report that firms with a female presence in top management were associated with less discretionary accruals than firms without female executives in the Korean context. Such findings align with the results of Chee and Tham (2020), Gull et al. (2018), Orazalin (2020), and Zalata et al. (2021). Thus, the following hypothesis is proposed:

H4: Female directors on boards influence EM practices negatively.

2.5. Board activity

An active board will have more time to attend to issues, such as EM, than a board that meets infrequently (Xie et al., 2003). Vafeas (1999) suggests directors' monitoring efforts can be proxied using board activity. The study demonstrates that high-frequency board meetings are often followed by improved financial performance. In line with this assertion, Anglin et al. (2013) and Sáenz González and García-Meca (2014) have also demonstrated the role of board meetings in constraining EM practices. Conversely, board meetings are not always beneficial as routine assignments absorb much of the limited time directors spend together, as CEOs often prepare the agenda for board meetings (Lorca et al., 2011). Based on this, a negative relationship between EM and board activity is advanced:

H5: Board activity influences EM negatively.

2.6. Sub-group analysis

2.6.1. Discretionary accrual models

The selected articles estimate EM using total, working capital and current accruals using the most frequently employed models such as the Jones (1991) model, the modified Jones model (Dechow et al., 1995), the performance-matched model (Kothari et al., 2005), the McNichols (2002) model, the Kasznik (1999) model, and the Dechow and Dichev (2002) model. Managers adopt accounting procedures and provisions that influence earnings and do not directly affect cash flows (Dechow et al., 2010). The total accrual model controls long-term accruals, i.e., property plant and equipment, and computes non-discretionary accruals. On the other hand, short-term accruals remain the focal point of a working capital accrual model. It emphasizes that depreciation and amortization expenses for the relevant period offer limited potential for EM, considering depreciation policy changes cannot be done routinely. Accrual quality is estimated based on the previous year's, current, and next year's cash flows. In comparison, the current accrual model excludes growth in trade receivables from the generated revenue, as this difference might account for revenue management manipulations. Sub-group analysis facilitates us to determine if the heterogeneity in the included articles is attributable to the different measures of discretionary accruals. Thus, the following hypothesis is advanced:

H6: The discretionary accruals model moderates the board composition and EM relationship.

2.6.2. Corporate governance systems

The quality of reported earnings is endogenously associated with CG (Leuz et al., 2003). Millar et al. (2005) classify CG mechanisms into three business systems: the Anglo-American business system, the Communitarian system, and the Emerging business system. The Anglo-American business system promotes shareholders' interest, high institutional transparency, and investor reliance. It describes the rights and responsibilities of three essential players: shareholders, management, and directors. On the other hand, a Communitarian business system is associated with a lack of institutional transparency and concentrated ownership. Holding companies and institutional investors monitor investment decisions and the firm's performance. While in emerging economies, business systems are distinguished by relationship-based institutions with a lack of transparency, family control, concentrated ownership, and weak investor protection. Thereby, in line with García-Meca and Sánchez-Ballesta (2009), the moderating role played by governance mechanisms in EM has been assessed in the following hypothesis:

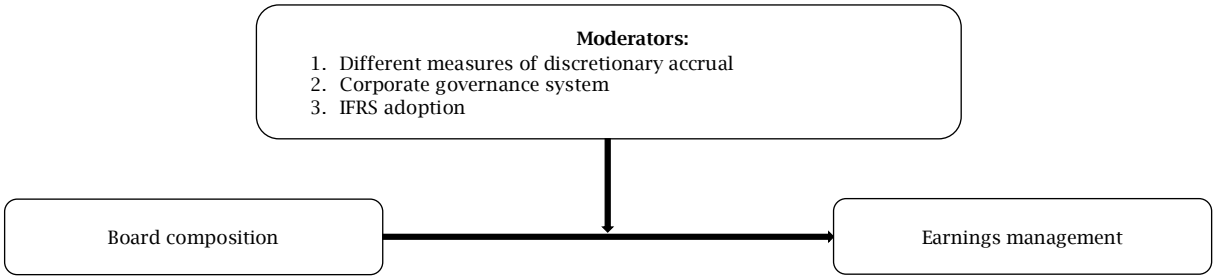
H7: The CG mechanism moderates the relationship between board composition and EM.

2.6.3. IFRS adoption

Collective empirical evidence provides inconclusive findings on the transition to the IFRS (Bassemir & Novotny-Farkas, 2018; Daske & Gebhardt, 2006; Gray et al., 2015). One stream of research states that IFRS adoption exhibits accounting amounts of higher quality, resulting in less opportunistic reporting behaviors (Barth et al., 2008), and promotes the credibility of management forecasts. Conversely, it is not certain that IFRS adoption will result in enhanced reporting practices in every jurisdiction. Managers may engage in EM using accounting discretions embedded in principle-based standards (Capkun et al., 2016). Hence, the following is proposed:

H8: The association between EM and board composition is moderated by IFRS adoption.

Figure 1. Conceptual framework of the study



Source: Authors' compilation.

3. RESEARCH METHODOLOGY

The study employs PRISMA guidelines (Moher et al., 2009) to identify relevant articles systematically. In the second stage, the rigorous findings of previous empirical studies were consolidated using the meta-analytic technique propounded by Hedges and Olkin (2014) to assess the overall impact.

3.1. The PRISMA protocol

3.1.1. Identification

The first phase in the protocol is identifying and selecting articles. The study uses the following combination of keywords to find relevant articles: "earnings quality" OR "earnings management" OR "financial reporting quality" OR "earnings manipulation" OR "accounting manipulation" AND "corporate governance" OR "CG" OR "board of directors" OR "board" OR "CEO duality". The articles were extracted from the following editorial sources and databases: ScienceDirect, ISI Web of Science, Taylor and Francis, Sage, and Wiley. These platforms enable a wider coverage of the academic literature on CG and EM. Also, they typically have rigorous peer-review processes, ensuring the published articles meet academic standards. This further ensures the likelihood of obtaining reliable and credible articles for the current study. In addition, the following academic journals that publish studies in CG are consulted: *Corporate Governance: An International Review, International Journal of Disclosure and Governance, Journal of Financial Economics,* and *Journal of Business Ethics*. Further, the reference list of the selected articles was also checked to find other relevant studies. This approach aids to broaden the search beyond the initial set of articles and find additional research papers that the authors of the chosen articles have cited. By keeping the time parameter open-ended, the study aims to include a substantial number of relevant research articles across a significant timeframe in the field of CG and EM. The above identification process yielded 128 research articles across 16 years (2006–2022).

3.1.2. Screening

The second stage of the PRISMA protocol involves establishing specific criteria for assessing the chosen articles in their original form. The screening procedure involves analyzing titles, keywords, abstracts, and in certain instances, introduction (as needed). Further, the duplicate records were removed, funneling the selected articles to 85.

3.1.3. Eligibility

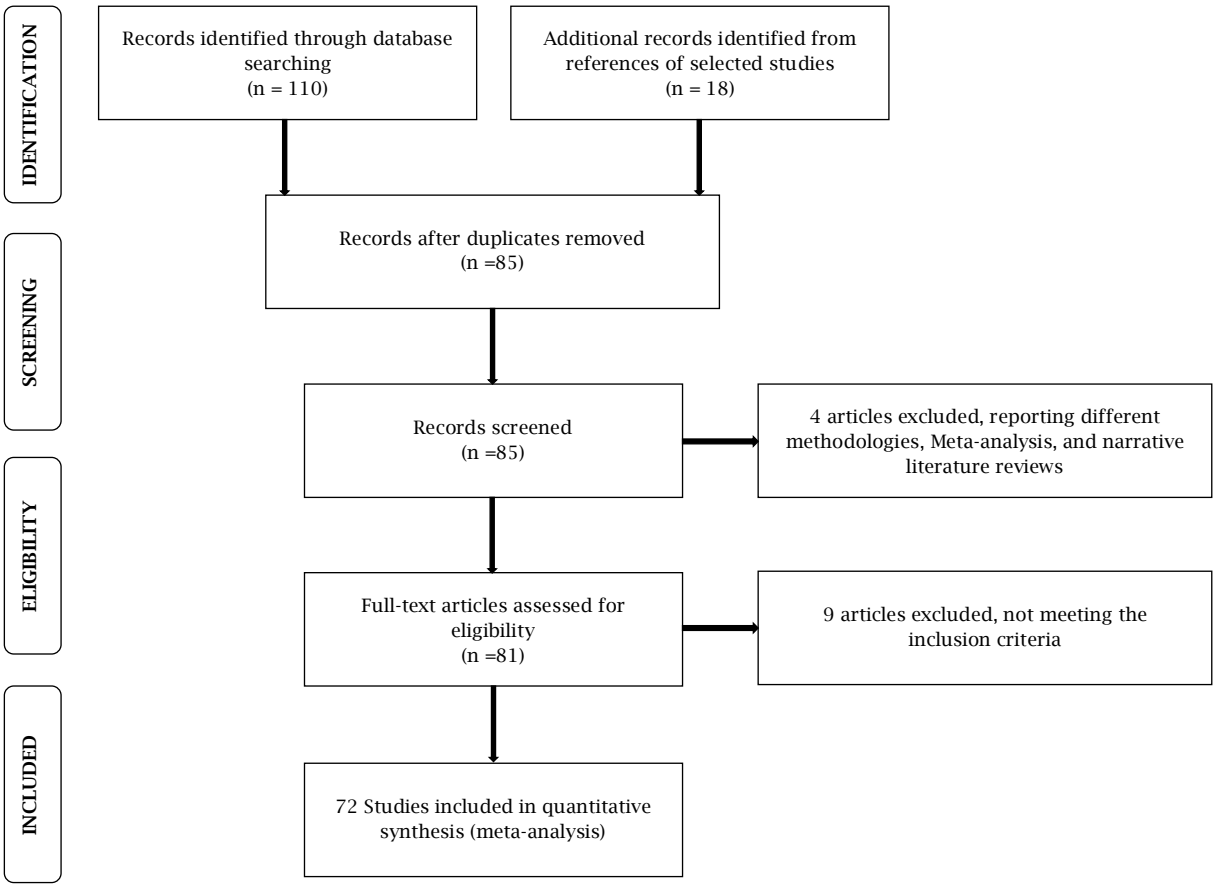
The third phase pertains to formulating eligibility criteria to include studies in the final sample. The current study incorporates the inclusion criteria mentioned below:

- Published empirical studies examining the relationship between discretionary accruals and measures of board composition;
- The correlation coefficient (r) required to evaluate the effect size must be reported.

3.1.4. Included

The fourth phase includes the final sample identified and filtered using the abovementioned three phases. The final selection resulted in 72 studies comprising 3,66,417 firm-year observations, as shown in Figure 2. The chosen studies, sample sizes, timeframe, countries, dependent variables, independent variables, and findings are exhibited in the Appendix.

Figure 2. The study selection procedure, adapted from Moher et al. (2009)



Source: Authors' compilation.

3.2. Meta-analytic procedure

The study employs the meta-analytic technique of Hedges and Olkin (2014). The average correlation coefficient has been computed using the weighted average of the observed correlations, which is further transformed to Fisher's z using the following expression:

$$z_{r_i} = \frac{1}{2} log_e\left(\frac{1+ r_i}{1- r_i}\right) \quad (1)$$

where, r_i denotes the correlation coefficient in study *i*. The weighted average of the transformed effects is computed using Eq. (2).

$$\bar{z}_r = \frac{\sum_{i=1}^{K} w_i z_r}{\sum_{i=1}^{K} w_i} \quad (2)$$

where, K signifies the number of studies and w_i refers to the weight of each study *i*. The hypothesis testing is done by transforming the average effect (Fisher's z values) back to correlation using the following equation:

$$\bar{r} = \frac{e^{2\bar{z}} - 1}{e^{2\bar{z}} + 1} \quad (3)$$

The study uses one correlation coefficient (weighted average correlation) per study to ensure independence between observations in the overall meta-analytic results. The original correlation coefficients reported in the studies are used in the subgroup analysis, maintaining one correlation per study. Resultantly, the total effect sizes on the subgroups do not correspond to the total included studies. This procedure follows Bilal et al. (2018) and García-Meca and Sánchez-Ballesta (2009).

Further, Q-statistic is computed using Eq. (4) to examine homogeneity in the articles. It follows the chi-square distribution, having *K-1* degrees of freedom, where *K* is the number of studies. The fundamental limitation of this approach is that it does not quantify heterogeneity in the analyzed correlations, despite giving evidence of its existence (Ortas et al., 2017). To quantify heterogeneity in percentage terms, I^2 statistic is computed using Eq. (5):

$$Q = \sum_{i=1}^{K} w_i \left(z_{r_i} - \bar{z}_r\right) \quad (4)$$

$$I^2 = \frac{Q - (K-1)}{Q} \quad (5)$$

According to the fixed-effects model, observed heterogeneity is solely due to sampling error. It is more appropriate when there is low heterogeneity. The random-effects model assumes studies are heterogeneous and considers the characteristics that influence the association between variables. This may distinguish between subgroups with varying effect sizes (Neyeloff et al., 2012; Ortas et al., 2017). Considering the differences in studies are not merely attributed to sampling error, this study adopts a random-effects model. Further, in case of high heterogeneity, the individual meta-analysis is applied to specific sub-groups in each board composition variable using the abovementioned procedure.

One of the critical concerns is the representativeness of the studies included in a meta-analysis. This is referred to as publication bias (Hunter & Schmidt, 2004). Studies with statistically insignificant findings are more challenging to publish than the ones producing significant results due to the purported tendency of both editors not to publish studies reporting insignificant results (Hedges, 1984) and the inactions of presentation of results by researchers (Dickersin et al., 1992). The fail-safe number (FSN) proposed by Rosenthal (1991) is used to control for publication bias. This number reveals the total studies failed to present statistically significant findings, thereby controlling for the file-drawer problem. An *FSN* is computed using the formula in the following expression:

$$FSN = \frac{k(k * z^2 - 2.706)}{2.706} \quad (6)$$

The total included studies are represented by *k*, and the combined standard z-value is represented by *z*. When FSN does not surpass the critical value (*CV*), the file drawer issue becomes a problem. The *CV* is computed using Eq. (7).

$$CV = (k * 5) + 10 \quad (7)$$

where, *k* denotes the total number of included studies.

4. RESEARCH RESULTS

The current section provides meta-analytic findings of the hypotheses proposed in Section 2. Table 1 shows the overall results.

4.1. Board independence

The average correlation coefficient examining the relationship between EM and board independence provides a negative and statistically insignificant association. The confidence intervals [-0.03, 0.01] indicate the absence of a true correlation, thus rejecting *H1*. The results suggest that the weak association probably attributes to the presence of "grey" directors (Mangena & Chamisa, 2008), and the information asymmetries between managers and independent directors prohibit the effective monitoring of financial statements (Yusof & Atef, 2010). The *FSN* at 11975 exceeds the *CV* at 240, indicating reliable findings. The I^2 statistic at 87.50% and a statistically significant Q-statistic value at 359.87 signify heterogeneous results, thereby rejecting the null hypothesis (i.e., studies are homogeneous). Therefore, sub-group analysis is required to examine the heterogeneity.

4.2. Board size

The overall meta-analytic result reveals a significantly negative association between board size and EM ($\bar{r}$ = -0.05, $p < 0.01$), signifying that larger boards can effectively constrain EM practices owing to the board members' rich experience, skills, and knowledge. Thereby strongly supporting *H2*. Such a finding is consistent with the perspective of resource dependency theory. Further, the *FSN* of this variable is 11910, far greater than the critical number of 250, indicating the reliability of meta-analytic findings. Additionally, the Q-test value and I^2 statistic at 1319.71 and 96.44%, respectively, show heterogeneity in the studies. Thereby rejecting the homogeneity test; hence we perform subgroup analysis.

4.3. CEO duality

The average correlation coefficient of 40 studies assessing the relationship between EM and the dual role played by the CEO and board chairperson conveys an insignificant relationship, as there is no evidence of true non-zero correlation (confidence intervals [-0.01, 0.02]). Thus, rejecting *H3*. Further, the *FSN* at 395 exceeds the critical value of 215, indicating reliable findings.

4.4. Board-gender diversity

The association between gender-diverse boards and EM is negative and statistically significant ($\bar{r}$ = -0.03, $p < 0.10$). Such a finding is consistent with the conception that female directors are more risk cautious and devoted to ethics, providing greater oversight of the firm's disclosures. Thus, improving

board quality. The *FSN* at 1547 is more than the critical number of 70. Thereby, the possibility of publication bias rules out. Further, the Q-test value and I^2 statistic at 133.94 and 91.79%, respectively, portray heterogeneity across studies.

4.5. Board activity

The average correlation coefficient reports a negative and statistically significant association between board activity and EM ($\bar{r}$ = -0.03, $p < 0.05$) therefore accepting *H5*. The findings signify the monitoring ability of directors to detect opportunistic managerial behavior. Further, the *FSN* at 2875 is greater than the *CV* of 65, ruling out publication bias concerns. The Q-test value and I^2 statistic at 293.38 and 96.59%, respectively, show heterogeneity in the studies. Thereby rejecting the homogeneity test; hence, we perform subgroup analysis.

4.6. Sub-group analysis

Since the selected articles reported a high level of heterogeneity, the following sub-sections provide the sub-group analysis based on different measures of discretionary accruals, CG systems, and IFRS adoption. The findings are presented in Table 2.

4.6.1. Discretionary accrual models

The selected articles are categorized into total accruals, working capital accruals, and current accruals. The association between working capital accruals and board independence is negative and statistically significant ($\bar{r}$ = -0.03, $p < 0.05$). However, the findings are insignificant for total and current accruals, signifying that corporates with independent directors do not consider routine changes in depreciation and amortization policies, thereby limiting the potential for EM. While firms with gender-diverse and larger boards effectively control total accruals ($\bar{r}$ = -0.04, $p < 0.10$; $\bar{r}$ = -0.04, $p < 0.01$, respectively) and working capital accruals ($\bar{r}$ = -0.05, $p < 0.10$; $\bar{r}$ = -0.09, $p < 0.01$, respectively). Such an association signifies that female directors are more reluctant to adjust short-term accruals, depreciation, and amortization expenses since it garners the attention of stakeholders. Additionally, in studies exploring the relationship between CEO duality and EM, only current accrual reports a negative and statistically significant association ($\bar{r}$ = -0.03, $p < 0.05$). These results suggest that companies with a chairperson acquiring combined authority emphasize short-term accruals. Lastly, the variations in heterogeneity and the magnitude of the average correlation coefficient indicate that different discretionary accrual measures moderate the relationship between board composition and EM, thereby accepting *H6*.

4.6.2. Corporate governance systems

CG systems are classified into Anglo-American, Communitarian, and Emerging economies (Millar et al., 2005). Such classification enables broad coverage of different CG systems present throughout the world. The Communitarian model reflects the stakeholder-oriented approach prevalent in Continental European countries, while the Anglo-American model represents the shareholder-oriented approach followed in common law countries. Emerging economies recognize the distinctive governance structures present in developing or transitioning economies. The results reveal that the association of EM with CEO duality and independent boards is negative and statistically insignificant in the Anglo-American and Communitarian systems. Such findings correlate with stewardship theory and signify the presence of higher institutional transparency and a developed legislative body that outlines directors, management, and shareholders' rights and responsibilities. However, emerging economies highlight a lack of vigilance, transparency, and investor protection in the presence of independent directors and CEO duality. Further, the inverse association with gender-diverse boards in emerging economies implies that female directors are diligent, supportive, and effective monitors. The results corroborate regulators' efforts to strengthen gender-diverse boards in emerging economies.

Conversely, the study reports a negative and statistically significant association between board size and EM in Anglo-Americans ($\bar{r}$ = -0.05, $p < 0.05$), Communitarian countries ($\bar{r}$ = -0.11, $p < 0.05$), and emerging economies ($\bar{r}$ = -0.04, $p < 0.05$). Further, the average correlation coefficient assessing the relationship between board activity and EM in Anglo-American countries is negative and statistically significant, implying a higher number of board meetings enhances earnings quality. Differences in the heterogeneity levels and magnitude of the average correlation coefficient in different CG mechanisms compared with the overall findings suggest that CG mechanisms moderate the relationship between board composition and earnings quality, strongly supporting *H7*.

4.6.3. IFRS adoption

Last, the selected articles are categorized based on IFRS adoption. Sixteen articles are from nations that have not adopted IFRS, including Vietnam and the USA; 27 cover the pre-IFRS adoption timeframe, and 11 studies cover the post-IFRS adoption timeframe. The average correlation coefficient of the studies extending across pre-and post-IFRS adoption is estimated using the methodology given by Bilal et al. (2018).

The reported average correlation coefficient between board size and EM shows an inverse and statistically significant relationship. Similarly, studies assessing the impact of gender-diverse boards on EM exhibit a significant association in the post-IFRS adoption timeframe ($\bar{r}$ = -0.03, $p < 0.05$). However, studies that examine the association of EM with board activity and CEO duality do not show any significant findings. Further, the differences in the magnitude of heterogeneity levels and average correlation coefficients in the pre and post-IFRS periods compared with overall results signify that IFRS adoption moderates the relationship between board composition and earnings management, thus supporting *H8*.

Table 1. Meta-analytic results

Results	*Board independence*	*Board size*	*CEO duality*	*Board gender diversity*	*Board activity*
$\bar{r}$	-0.01	-0.05***	0.01	-0.03*	-0.03**
Confidence interval (Lower limit)	-0.03	-0.08	-0.01	-0.05	-0.05
Confidence interval (Upper limit)	0.01	-0.01	0.02	-0.002	-0.01
Q	453.41	1319.71**	261.57**	133.94**	293.38**
I^2	90.08%	96.44%	84.71%	91.79%	96.59%
N	236748	236658	245112	81987	81470
K	46	46	40	11	9
FSN	11975	11910	395	1547	2875
CV	240	250	215	70	65

Note: $\bar{r}$ signifies the average correlation coefficient; N denotes the total firm-year observations; K signifies the total number of studies included in the meta-analysis; FSN refers to the fail-safe number; CV indicates critical value.
**** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.*
Source: Authors' calculations.

Table 2. Sub-group analysis

Board characteristics	*Results*	*Corporate governance systems*			*IFRS adoption*		*Discretionary accrual models*		
		Anglo-American	*Communitarian*	*Emerging economies*	*Pre*	*Post*	*TA*	*WCA*	*CA*
Board independence	$\bar{r}$	-0.02	-0.02	0.01	-0.01	-0.03	-0.02	-0.03**	-0.02
	LL	-0.05	-0.08	-0.03	-0.02	-0.08	-0.04	-0.07	-0.07
	UL	0.02	0.03	0.04	0.01	0.03	0.01	0.00	0.03
	Q	142.26**	3.97	77.98**	125.78**	218.29**	343.60**	10.70	15.80**
	I^2	79.65%	7.62%	80.34%	77.17%	80.46%	71.21%	34.60%	74.69%
	N	87086	6589	133403	195815	30844	218613	9622	13065
	K	20	5	16	29	13	40	8	5
Board size	$\bar{r}$	-0.05**	-0.11**	-0.04**	-0.06**	-0.05**	-0.04***	-0.09***	-0.05
	LL	-0.09	-0.17	-0.08	-0.08	-0.10	-0.08	-0.15	-0.23
	UL	0.00	-0.05	0.00	-0.03	0.00	0.00	-0.03	0.13
	Q	1049.01**	53.47**	233.18**	903.35	597.31**	765.844**	32.43**	38.06**
	I^2	78.28%	68.78%	63.14%	66.68%	67.15%	50.37%	66.08%	78.49%
	N	82787	29967	130912	194432	52163	238024	15121	7609
	K	23	7	15	33	18	40	12	5
CEO-duality	$\bar{r}$	-0.01	-0.01	0.03**	0.01	0.01	0.01	0.02	-0.03**
	LL	-0.03	-0.18	0.00	-0.01	-0.03	-0.01	-0.03	-0.06
	UL	0.01	0.17	0.05	0.02	0.05	0.02	0.08	0.00
	Q	119.27**	10.78	31.42**	187.19**	80.35**	138.36**	7.89	2.05
	I^2	59.95%	2.59%	61.81%	76.31%	78.80%	56.16%	36.62%	10.89%
	N	125620	3958	114188	197222	51513	234559	5245	10248
	K	17	2	13	28	10	34	6	4
Board gender diversity	$\bar{r}$	-0.04	-0.04	-0.04***	-0.04	-0.03**	-0.04*	-0.05*	-0.02
	LL	-0.14	-0.10	-0.05	-0.09	-0.06	-0.08	-0.08	-0.07
	UL	0.06	0.02	-0.01	0.01	0.00	-0.01	-0.01	0.04
	Q	127.13**	12.64	5.02	66.20**	17.15	160.01**	2.73	8.62
	I^2	65.28%	60.43%	12.23%	74.88%	59.18%	54.38%	10.01%	65.20%
	N	28143	13565	47031	74842	16176	80722	2763	7533
	K	7	6	3	9	8	10	3	4
Board activity	$\bar{r}$	-0.02**	-	-0.02	-0.01	0.02	-0.02	0.01	-
	LL	-0.03	-	-0.13	-0.06	-0.06	-0.06	-0.03	-
	UL	-0.01	-	0.09	0.04	0.06	0.02	0.06	-
	Q	9.62	-	145.52	50.70**	36.81**	182.71**	193.52**	-
	I^2	5.06%	-	68.37%	74.20%	77.28%	76.82%	76.25%	-
	N	14792	-	60735	61611	15336	80393	1318	-
	K	5	-	5	8	2	10	2	-

Note: $\bar{r}$ signifies the average correlation coefficient; LL refers to the lower limit; UL refers to the upper limit; N denotes the total firm-year observations; K signifies the total studies included in the meta-analysis; TA denotes total accruals; WCA signifies working capital accruals; CA refers to current accruals.
**** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.*
Source: Authors' calculations.

5. DISCUSSION

Drawing on the PRISMA guidelines (Moher et al., 2009) and the meta-analytic technique propounded by Hedges and Olkin (2014), the current study examines the role played by corporate board composition in earnings management. The findings reveal that EM is not significantly associated with corporate board independence and CEO duality, implying that information asymmetries and the presence of "grey" directors on the board may create hindrances in effectively overseeing financial disclosures. The findings are consistent with the results of Mangena and Chamisa (2008) and Yusof and Atef (2010). However, concerning the size of the board, gender diversity, and board meetings, findings reveal a negatively significant association with EM. The results are in congruence with resource dependency theory (Chouaibi et al., 2018; Orazalin, 2020; Xie et al., 2003), and critical mass theory (Harakeh et al., 2019; Strydom et al., 2017). This suggests that the diverse skills, knowledge, and experience of board members can provide better oversight and control of EM. Also, female directors are perceived to be more risk cautious and devoted to ethics, thereby, contributing to the improved

board quality and enhanced oversight of the firm's disclosures. Furthermore, the findings signify the monitoring ability of directors who meet frequently can detect opportunistic managerial behavior efficiently. In line with this assertion, Anglin et al. (2013) and Sáenz González and García-Meca (2014) have also demonstrated the role of board meetings in constraining EM practices.

Additionally, the study assesses the moderating influence of different measures of discretionary accruals, CG systems, and IFRS adoption. The analysis reveals that the association of EM with board independence and CEO duality is insignificant in Anglo-American and Communitarian systems. Conversely, the association is higher in emerging economies whereas, gender-diverse boards are associated with reduced EM in emerging economies. Concerning, IFRS adoption, the board size, and gender-diverse boards have a significant association with EM in the post-IFRS adoption period. However, the association between board activity, CEO duality, and EM is insignificant. These results indicate that the adoption of IFRS can influence the effectiveness of board composition in managing earnings. Also, working capital, total, and current accruals have different relationships with board independence, gender-diverse boards, board size, and CEO duality. Such findings suggest that different types of discretionary accrual models may be moderated differently by board composition.

6. CONCLUSION

The research undertakes a meta-analytic review to reconcile the fragmented evidence of previous empirical studies examining the impact of board characteristics on EM practices. Following the PRISMA guidelines of Moher et al. (2009), 72 empirical articles were selected and analyzed from 2006–2022 using the meta-analytic technique of Hedges and Olkin (2014). Such analysis enables the unwrapping of the most influential characteristics of board composition in EM practices, the moderating impact of discretionary accrual measures, CG systems, and IFRS adoption. The study addresses four research questions. To answer *RQ1*, active, gender-diverse, and larger corporate boards are more likely to report true economic performance. For *RQ2*, larger and gender-diverse boards curb earnings manipulation through total and working capital accruals, while independent boards are effective in restraining manipulation through working capital accruals only. The finding implies that firms are reluctant to adjust short-term accruals and depreciation expenses. For *RQ3*, board size shows a stronger relationship in curtailing manipulation through discretionary accruals in different governance mechanisms. In addition, gender-diverse and active boards are significant in emerging and Anglo-American systems, respectively. For *RQ4*, the variation in the heterogeneity levels and average correlation compared with overall findings indicates that IFRS adoption moderates the association between EM and board characteristics.

Over the years, there has been a burgeoning and ever-evolving literature on board characteristics. The present study offers the following research gaps identified from the meta-analytic review:

- Researchers adopted different theories to assess the impact of board characteristics on EM, such as agency theory (Hooghiemstra et al., 2019; Saona et al., 2020); resource dependency theory (Ud Din et al., 2021); stewardship theory (Davis et al., 1997); critical mass theory (Harakeh et al., 2019); information asymmetry (Sakawa & Watanabel, 2021). However, the findings remain fragmented due to the peculiarities in the intent of senior executives and the nature of CG. Therefore, future studies should employ a multi-theoretical framework to effectively explain the managerial intent behind EM.
- It is evident from the current study that the focal point of past researchers is on conventional governance mechanisms investigating the paradigm of board structure. Interdependencies between firms and varied environments cause governance practices and accounting policy variations. Thus, future studies should examine the supplementary role played by alternative governance. For instance, foreign and relational governance has become an essential supplement to conventional CG and is highly regarded in countries with well-developed legal frameworks (Yiu et al., 2019).
- Another potential area for future studies is to advance an appropriate construct to measure board independence that exemplifies its substance and effectiveness. Most studies measure board independence as the percentage of independent directors on a board. Furthermore, even though CEOs were involved in the collapse of corporate giants such as WorldCom, Enron, and Satyam. Most studies primarily concentrate on CEO duality, measured using a dummy variable taking "1" if the CEO and board chairperson are the same person and zero otherwise, which appears inadequate. Therefore, future studies should investigate how CEO attributes (expertise, tenure, external connections, ownership) influence EM practices.
- It is observed that the CG system of an economy significantly influences earnings quality. For instance, directors' political connections can override and upturn the managers to manipulate earnings (Wang et al., 2017). Further, the external ties of directors can prove to be a great source for providing resources to the firm. Thus, future studies should explore the external ties of firms listed under different legal and regulatory settings because these connections directly influence the vigilance of a corporate board.

Additionally, there is scant literature on the EM practices of financial firms. Most studies exploring the influence of board composition on EM eliminate financial firms from their sample. Hence, it will be worthwhile to analyze exclusively financial firms.

The study has several implications for regulators and investors concerning the board's role in controlling EM. First, the findings highlight that post-IFRS adoption is correlated with increased earnings quality, emphasizing the importance of fairness and the potential benefits of implementing IFRS in enhancing financial reporting quality. Hence, this emphasis can guide regulators in jurisdictions that are considering the adoption of IFRS. Second, emerging economies must promote a gender-diverse board to enhance institutional transparency, as female directors are more risk cautious and devoted to ethics. Third, the findings demonstrate that the impact of a corporate board on EM is influenced

by the CG mechanism. Nonetheless, regulators in emerging countries need to enhance the transparency of their CG systems to ensure the effective vigilance of financial reporting processes. Fourth, fund managers and investors should prioritize choosing companies in their portfolios whose boards are larger, meet more often, and are gender-diverse. These attributes contribute to reducing the occurrence of misrepresentation in financial statements and promote greater transparency and fairness in reporting practices.

The current study has certain limitations. First, although the systematic review of the literature included most articles examining the impact of board characteristics in the management of earnings, the meta-analytical methodology did not allow authors to control for reverse causality and endogeneity if the published studies did not account for this. Second, the lack of studies in specific sub-groups poses a limitation of computing effect size and a direction for future research to assess the effectiveness across various jurisdictions using case studies and empirical analysis. Third, selective reporting of outcomes or incomplete reporting of data within the included studies can introduce reporting bias and affect the overall findings. Fourth, meta-analysis is based on published studies, positive and significant results have greater chances of getting published than the studies with null or negative results. Such publication bias can skew the findings.

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APPENDIX

Table A.1. Selected studies (Part 1)

No.	*Author(s)*	*Sample*	*Timeframe*	*Country*	*Dependent variable*	*Independent variable*	*Findings*
1	Saleh et al. (2022)	3,840	2012–2019	MENA region	TA	b_indp	Pos. and sign.
						b_size	Neg. and sign.
2	Alkebsee et al. (2021)	12,176	2007–2017	China	TA	b_indp	Neg. and sign.
						b_size	Neg. and sign.
						b_meet	Pos. and sign.
						CEO_D	Pos. and sign.
3	Yousuf and Aldamen (2021)	3,092	2017	Multiple	TA	b_indp	Neg. and sign.
						b_size	Pos. and sign.
						b_meet	Neg. and insign.
						CEO_D	Pos. and insign.
4	Overland and Samani (2021)	1,507	2006–2014	Sweden	WCA	b_size	Neg. and insign.
5	Hickman et al. (2021)	15,626	2012–2017	India	TA	b_indp	Neg. and sign.
						b_size	Neg. and sign.
6	Gerged et al. (2021)	500	2010–2014	Jordan	TA	b_indp	Pos. and sign.
						b_size	Neg. and insign.
						CEO_D	Neg. and insign.
7	Ud Din et al. (2021)	2114	2010–2016	Pakistan	TA	CEO_D	Pos. and sign.
8	Doo and Yoon (2020)	18,346	2000–2017	Korea	TA	b_size	Pos. and insign.
9	Le et al. (2020)	1,032	2007–2016	Vietnam	TA	CEO_D	Pos. and insign.
10	Feng and Huang (2021)	8,646	2007–2015	USA	TA	b_size	Neg. and insign.
						CEO_D	Pos. and insign.
11	Arioglu (2020)	2,279	2009–2017	Turkey	CA	b_indp	Neg. and sign.
						b_size	Pos. and insign.
						b_gender-diversity	Pos. and insign.
12	Grimaldi et al. (2020)	60	2018	Italy	WCA	b_size	Pos. and insign.
13	Saona et al. (2020)	877	2006–2014	Spain	WCA	b_indp	Neg. and sign.
						b_size	Neg. and sign.
						b_gender-diversity	Neg. and sign.
					CA	b_indp	Neg. and sign.
						b_size	Neg. and sign.
						b_gender-diversity	Neg. and sign.
14	Borralho et al. (2020)	3,887	2011–2016	Spain	TA	b_gender-diversity	Neg. and sign.
15	Sakawa and Watanabel (2021)	11,689	2006–2014	Japan	TA	b_size	Neg. and sign.

Table A.1. Selected studies (Part 2)

No.	Author(s)	Sample	Timeframe	Country	Dependent variable	Independent variable	Findings
16	Orazalin (2020)	332	2010–2016	Kazakhstan	TA	b_gender-diversity	Neg. and insign.
						b_size	Neg. and sign.
						b_indp	Pos. and sign.
17	Harakeh et al. (2019)	1,986	2007–2015	UK	TA	b_gender-diversity	Neg. and insign.
18	Zalata et al. (2019)	7,450	2007–2014	USA	TA	b_size	Neg. and insign.
						b_indp	Neg. and insign.
19	Buertey et al. (2020)	354	2012–2015	Africa	TA	b_size	Neg. and insign.
						b_indp	Pos. and insign.
20	Hooghiemstra et al. (2019)	3,249	2001–2008	Multiple	WCA	b_size	Neg. and insign.
						CEO_D	Neg. and insign.
21	Martin et al. (2019)	12,284	1995–2014	USA	TA	CEO_D	Pos. and insign.
22	Saona et al. (2019)	1,269	2006–2016	Multiple	TA	b_indp	Neg. and insign.
						b_size	Neg. and insign.
23	Cassell et al. (2018)	9,450	2000–2011	USA	TA	CEO_D	Neg. and sign.
						b_indp	Neg. and sign.
						b_size	Neg. and sign.
24	Collins et al. (2018)	3,352	2006–2009	USA	TA	b_indp	Neg. and insign.
25	Gull et al. (2018)	3,160	2001–2010	France	CA	b_indp	Neg. and insign.
						b_size	Pos. and insign.
						CEO_D	Neg. and insign.
						b_gender-diversity	Pos. and insign.
						b_meet	Neg. and sign.
26	Bravo and Reguera-Alvarado (2018)	594	2008–2012	USA	TA	b_indp	Neg. and sign.
						b_size	Neg. and sign.
						CEO-D	Pos. and insign.
27	Zalata et al. (2018)	5,660	2007–2013	USA	WCA	b_indp	Neg. and insign.
						b_size	Neg. and sign.
28	Bao and Lewellyn (2017)	1,200	2012	Multiple	TA	CEO-D	Neg. and insign.
						b_size	Pos. and insign.
29	García Lara et al. (2017)	4,785	2003–2012	UK	TA	b_gender-diversity	Neg. and sign.
						b_size	Neg. and sign.
30	Strydom et al. (2017)	4,122	2005–2013	Australia	TA	b_size	Pos. and sign.
31	Katmon and Farooque (2017)	290	2005–2008	UK	TA	b_indp	Neg. and insign.
						b_meet	Pos. and insign.
						b_size	Neg. and insign.
32	Fernández Méndez et al. (2017)	798	2004–2011	Spain	TA	b_indp	Neg. and insign.
						b_size	Neg. and sign.
						CEO-D	Pos. and insign.
33	Carrera et al. (2017)	13,668	2001–2010	USA	TA	b_meet	Pos. and sign.
						CEO-D	Neg. and insign.
34	Muttakin et al. (2017)	917	2005–2013	Bangladesh	TA	b_indp	Neg. and sign.
						CEO-D	Pos. and sign.
35	Kusnadi et al. (2016)	423	2010	Singapore	WCA	b_indp	Pos. and insign.
						CEO-D	Pos. and insign.
36	Obigbemi et al. (2016)	45,690	2003–2010	Nigeria	TA	b_indp	Pos. and insign.
						b_size	Neg. and insign.
						b_meet	Neg. and insign.
						CEO-D	Neg. and insign.
						b_gender-diversity	Neg. and insign.
37	Petrou and Procopiou (2016)	16,873	1993–2010	USA	TA	CEO-D	Pos. and sign.
38	Vieira (2016)	629	1999–2011	Portugal	TA	b_indp	Pos. and insign.
39	Habib and Bhuiyan (2016)	7,915	2001–2013	Australia	TA	b_indp	Pos. and insign.
						CEO-D	Neg. and insign.
						b_size	Neg. and insign.
40	Habib and Bhuiyan (2015)	7,040	2004–2010	USA	TA	b_indp	Pos. and sign.
						b_size	Pos. and sign.
						CEO-D	Neg. and sign.
41	Khan and Wald (2015)	11,706	1993–2008	USA	TA	CEO-D	Pos. and insign.
42	Du et al. (2014)	1,602	2001–2011	China	TA	b_indp	Pos. and sign.
						CEO-D	Pos. and sign.
						b_size	Neg. and sign.
43	Arun et al. (2015)	1,217	2005–2011	UK	CA	b_gender-diversity	Neg. and insign.
44	Chi et al. (2015)	2,492	2006–2012	Taiwan	TA	b_indp	Neg. and sign.
						CEO-D	Pos. and insign.
45	He and Yang (2014)	6,239	2003–2007	USA	CA	b_indp	Pos. and insign.
						CEO-D	Neg. and sign.
46	Ye (2014)	6,139	2002–2008	China	TA	b_indp	Pos. and insign.
						CEO-D	Pos. and insign.
						b_size	Neg. and insign.
47	Chen and Zhang (2014)	3,129	2000–2006	China	TA	b_indp	Neg. and sign.
48	Sáenz González and García-Meca (2014)	1,740	2006–2009	Latin America	TA	b_indp	Neg. and sign.
						b_meet	Neg. and sign.
						b_size	Pos. and sign.
						CEO-D	Pos. and insign.

Table A.1. Selected studies (Part 3)

No.	*Author(s)*	*Sample*	*Timeframe*	*Country*	*Dependent variable*	*Independent variable*	*Findings*
49	Anglin et al. (2013)	216	2004–2008	USA	TA	b_indp	Pos. and insign.
						b_size	Neg. and insign.
						b_meet	Neg. and insign.
50	Dimitropoulos (2011)	268	2006–2009	Multiple	TA	b_size	Neg. and sign.
						b_indp	Neg. and insign.
						CEO-D	Neg. and insign.
51	Chen et al. (2010)	3,622	2002–2005	Taiwan	TA	CEO-D	Pos. and sign.
52	Jaggi et al. (2009)	770	1998–2000	Hong Kong	CA	CEO-D	Neg. and insign.
						b_size	Neg. and insign.
53	Baxter and Cotter (2009)	309	2001	Australia	TA	b_indp	Neg. and insign.
						b_meet	Pos. and insign.
						b_size	Neg. and insign.
					WCA	b_indp	Pos. and insign.
						b_meet	Pos. and insign.
						b_size	Neg. and sign.
54	Liu and Lu (2007)	5977	1999–2005	China	TA	CEO-D	Pos. and insign.
55	Marra et al. (2011)	888	2003–2006	Italy	WCA	b_indp	Neg. and insign.
						b_size	Neg. and insign.
						CEO-D	Pos. and insign.
56	Stockmans et al. (2013)	79	2003	Belgium	CA	CEO-D	Neg. and insign.
57	Pavlopoulos et al. (2017)	382	2011–2015	Multiple	TA	CEO-D	Neg. and insign.
58	Alzoubi (2018)	504	2006–2012	Jordan	TA	b_indp	Neg. and sign.
59	Chen et al. (2007)	2,237	2000–2003	Taiwan	TA	b_indp	Pos. and sign.
60	Bukit and Nasution (2015)	243	2011–2013	Indonesia	TA	b_indp	Neg. and insign.
61	Cormier et al. (2013)	137	2005	Canada	TA	b_indp	Pos. and insign.
						CEO-D	Neg. and insign.
						b_size	Neg. and sign.
62	Kuo et al. (2014)	13,840	2002–2011	China	TA	b_indp	Pos. and insign.
						CEO-D	Pos. and insign.
63	Shu et al. (2015)	5,836	2007–2010	Taiwan	TA	b_indp	Pos. and insign.
						b_size	Neg. and insign.
64	Du et al. (2017)	11,529	2004–2012	China	TA	b_indp	Pos. and sign.
						CEO-D	Pos. and sign.
						b_size	Neg. and sign.
65	Setia-Atmaja et al. (2011)	510	2000–2004	Australia	CA	b_indp	Neg. and insign.
						b_size	Neg. and sign.
66	Jaggi and Leung (2007)	523	1999–2000	Hong Kong	CA	b_size	Neg. and insign.
					TA	b_size	Neg. and sign.
67	Cai et al. (2021)	15,361	2000–2013	USA	TA	CEO-D	Pos. and sign.
						b_size	Pos. and sign.
						b_indp	Pos. and sign.
						b_gender-diversity	Pos. and sign.
68	Chee and Tham (2020)	1,404	2015–2018	Singapore	TA Dechow et al. (1995)	b_gender-diversity	Pos. and insign.
						b_indp	Neg. and sign.
						b_size	Pos. and insign.
						CEO-D	Neg. and insign.
					TA Kothari et al. (2005)	b_gender-diversity	Neg. and insign.
						b_indp	Neg. and sign.
						b_size	Pos. and insign.
						CEO-D	Neg. and sign.
69	Abdul Rahman and Haneem Mohamed Ali (2006)	97	2002–2003	Malaysia	WCA	b_size	Pos. and insign.
						CEO-D	Neg. and insign.
70	Ianniello (2015)	588	2007–2010	Italy	WCA	b_indp	Neg. and insign.
						CEO-D	Pos. and insign.
						b_size	Neg. and insign.
71	Suyono and Farooque (2018)	145	2010–2014	Indonesia	TA	b_size	Pos. and sign.
72	Sun and Liu (2013)	18,513	1996–2010	USA	TA	b_indp	Neg. and sign.

Note: For independent variables, b_indp = board independence, b_size = board size, b_meet = board meeting, CEO_D = CEO duality, b_gender-diversity = gender diverse boards. For dependent variables, TA = total accruals, WCA = working capital accruals, CA = current accruals.
Source: Authors' compilation.