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The role of independent directors' tenure and network in controlling real-earnings management practices

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Abstract

Manipulating real activities is generally regarded as more damaging to a firm's long-term growth and value than accrual-based manipulations. We consider this point of view and build on the agency theory framework for investigating the role of independent directors' (INDs') tenure and connection to several boards in controlling real-earnings management (REM) practices. We analyze a sample of UK listed non-financial companies over the period between 2005 and 2018. The potential endogeneity issue was controlled by the application of the two-step system-GMM estimations. The research findings suggest that REM was lower in those firms whose INDs were connected to several boards at a time. The findings also show that the association between INDs' tenure and REM varied with the phases of their tenure. Directors in the early stage of their tenure are less effective at controlling REM, however, as their tenure grew, they generate better oversight over the management conduct, thereby reducing REM. Contrary to this, extended tenure is shown as positively associated with higher REM practices. The overall findings thus suggest that the board monitoring role protects the stakes of the shareholders by constraining REM when INDs have better expertise and rich information acquired through their presence on multiple boards—and when they have moderate board tenure, which is neither too short nor too long. We argue that due to the importance of the role of INDs in the current global scenario this study has policy implications.

Keywords Independent directors · Tenure · Multiple-board sittings · Phases in tenure · Real-earnings management

JEL Classification C55 · G30 · G38 · M41

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1 Introduction

In this study, we examine the relationship between independent directors' attributes and real earnings management. Management can manipulate accounting information to chase or meet a targeted level of earnings or another financial figure. Earnings management (EM) occurs when executives employ their discretion to interpret or structure a transaction so as to modify the financial statements, with the intention of either hiding the true performance from certain stakeholders or effecting contractual results dependent on such communicated accounting and financial information (Healy and Wahlen 1999). Intentionally manipulating accounting and financial information lowers its worth, preventing stakeholders from making wise and informed decisions (Velury and Jenkins 2006; Matis et al. 2010). EM brings the corporate entity's actual performance into doubt, reducing the shareowners' capacity to make prudent decisions and resulting in increased agency costs (Xie et al. 2003). As shareholders elect the board of directors to avoid agency costs and to protect their interests, the board has the responsibility to ensure the quality of accounting and financial information reported (Xie et al. 2003).

Our review of the corporate governance and EM literature has revealed that most of the empirical evidence concerns accruals earnings management (AEM; (see, e.g., Klein 2002; Xie et al. 2003; Peasnell et al. 2005; Dhaliwal et al. 2010; Krishnan et al. 2011; Srinidhi et al. 2011; Badolato et al. 2014; Gonzalez and Garcia-Meca 2014; Arun et al. 2015; Katmon and Al Farooque 2017). However, researchers have documented that, due to increased accounting regulations, managers have taken an alternative approach to distorting earnings figures – that is, employing “real-earnings management” (Cohen et al. 2008; Zang 2011). The existence of strict regulations makes it extremely difficult to involve in and hide accrual based earnings manipulation (Cohen et al. 2008; Enomoto et al. 2015). Therefore, management finds it more convenient to manipulate earnings figures through the structuring of real activities related to operations, investing, and financing activities. It is also argued that the introduction of SOX in the United States – and IFRS into the UK – led to the use of REM to attain targeted earnings numbers and other benchmarks (Bartov and Cohen 2009; Osma and Young 2009).

Furthermore, manipulation of real business activities has severe implications for firm growth and value in the long run, as this approach to EM involves divergence from the optimal course of business actions (Cohen and Zarowin 2010; Zang 2011). The manipulation of real activities through overproduction, price cuts and discount offers, reductions in research and development (R&D), and advertising expenditure can hamper long-term corporate growth capacity (Cohen and Zarowin 2010). Impairing the growth of firms has severe implications for corporate value (Roychowdhury 2006) and growth. Thus, REM can be disastrous in the long run, especially in a highly competitive corporate setting (Zang 2011). Since evidence suggest that REM is less likely to be detected/constrained by accounting regulations and external scrutiny (independent audit) (Ewert and Wagenhofer 2005; Cohen and Zarowin 2010) and such manipulations have severe implications for firm from long term perspective (Roychowdhury 2006; Cohen and Zarowin 2010). Therefore, it is imperative to restrain management from structuring real activities to manage earnings and in such a situation the role of corporate governance as a monitoring mechanism to curb these manipulations has increased.

For this reason, regulation on corporate governance has increased to constrain managerial opportunism such as REM practices, however, despite these efforts, there is little research on the relationship between corporate governance and REM. It is also evident that most of the published studies focusing on the role of board independence in constraining REM have documented conflicting results (e.g., Osma 2008; Ge and Kim 2014; Chen et al. 2015; El Diri et al. 2020). Existing literature also provides evidence suggesting that the monitoring strength of independent directors' (INDs') stems from their skills and experience instead of simply considering their presence on board in numbers (Nguyen and Nielsen 2010). In line with this, we argue that existing literature lacks evidence around INDs' specific attributes and existence of REM practices in their firms. Furthermore, in the existing literature most of the available empirical evidence comes primarily from the US context (see, e.g., Ge and Kim 2014; Cheng et al. 2016; Sakaki et al. 2017; Baker 2019). However, in the UK context, accounting regulation (IFRS, being principle-based) and corporate governance rules (the comply or explain context) are fundamentally different than those of the US accounting (GAAP) and corporate governance setting (rules-based system). Therefore, exploring the role of INDs' specific attributes in REM in the UK potentially provide further insights in a different setting. This study therefore aims to investigate the monitoring role of independent directors' specific attributes in constraining REM in UK organizations.

Given the importance of INDs, their monitoring effectiveness could be determined by other factors, such as their tenure on the board and commitments to their role (multiple-board sitting). The corporate-governance literature provides evidence that the monitoring role of INDs is influenced by the phases of their tenure (Vafeas 2003; Niu and Berberich 2015) and by their presence on several boards at once (Ferris et al. 2003; Perry and Peyer 2005; Fich and Shivdasani 2006; Falato et al. 2014). However, there is little evidence regarding boards and REM in terms of these attributes of INDs. In terms of independent directors' tenure, Mallette and Fowler (1992) argue that INDs are less effective in overseeing executives in the early phase of their board tenure due to a lack of understanding regarding the firms' unique procedures. However, it is also documented in literature that INDs' extended tenure may reduce the efficacy of their monitoring role (Musteen et al. 2010; Hillman et al. 2011).

Moreover, there are competing views regarding the relationship between INDs' multiple-board sitting and their monitoring function. One school of thought is that their presence on several boards signifies a reputation as a better monitor (Ferris et al. 2003; Perry and Peyer 2005). The opposing view however regards INDs' multiple-board appointments as over-commitment, resulting in a compromised monitoring role (Core et al. 1999; Fich and Shivdasani 2006). As these characteristics (tenure and multiple-board sitting) shape the IND's commitment (effort norms) and critical debate (cognitive conflict), this research aims to provide deeper insights into the IND's monitoring role in constraining REM, by analyzing their specific characteristics. Drawing on the above discussion and motivations, this study aims to document empirical evidence around two empirical questions. Firstly, how do the independent directors' differing levels of tenure affect the extent of real-earnings management? Secondly, what is the role of an independent director's multiple-board sitting in constraining real-earnings management?

Using Pooled OLS and the most robust econometric estimation (i.e. the two-step System-GMM) to control potential endogeneity issue, this study analyzes a sample of the UK's listed non-financial firms, from 2005 to 2018. The findings show that INDs' presence on multiple boards is negatively associated with REM. This is in line with the reputational

hypothesis that INDs with experience of multiple boards are more effective in monitoring management actions (Core et al. 1999; Fich and Shivdasani 2006). An IND's early (junior) tenure is insignificant and positively associated with REM. Extended (senior) tenure positively affects REM, which supports the management-friendliness hypothesis of IND tenure (Vafeas 2003). INDs with median tenure are significantly and negatively associated with REM. This finding is consistent with the competence hypothesis of directors' tenure (Vafeas 2003).

This study extends the existing body of literature on corporate governance and REM in three ways. First, this is among the first few studies in the UK context to analyze REM by gaining more in-depth insights into INDs' monitoring role by emphasizing their tenure and multiple-board sitting. In existing UK literature, Osma (2008) examines the role of board structure (board independence) in controlling opportunistic cuts in R&D expenses and provide evidence in this context, however, the overall contributions of that study are limited to one aspect of REM. Following existing REM literature, our study uses the comprehensive measure of REM computed from abnormal operating cash flows, abnormal productions costs, and abnormal discretionary expenditures (Roychowdhury 2006; Cohen et al. 2008; Cohen and Zarowin 2010; Zang 2011) and provide further empirical evidence around relationship between INDs' attributes and firms' REM practices.

Second, the current study contributes to the corporate governance and REM literature by analyzing the role of INDs' multiple-board sitting in reducing or controlling the occurrence of REM. While previous studies have focused on the role of board independence (percentage presence) in REM and document conflicting evidence (see e.g., Osma 2008; Jaggi et al. 2009; El Diri et al. 2020). The current study extends the literature in this area by focusing on INDs' attributes forming the basis for their monitoring efficacy instead of just considering the board independence as standalone aspect of the corporate board. We provide empirical evidence that IND's presence on several boards brings more expertise and information to a firm, which improves the monitoring of such directors in terms of constraining REM practices. Third, this study contributes to empirical literature on INDs and REM by showing that monitoring by INDs to control REM varies with different phases of their tenure. Previous literature provides conflicting evidence regarding directors average tenure and AEM (e.g., Xie et al. 2003; Zalata et al. 2018). Consistent with competence and management friendliness arguments, our study extends the existing literature on directors' tenure and EM by providing evidence around different phases (early, moderate and extended) INDs' tenure and REM. Decomposing tenure in phases help to identify when INDs are most productive (with moderate tenure) and when they become counter-productive (with extended tenure) for constraining the REM.

The rest of this paper is structured as follows. Chapter 2 presents the theoretical background, literature review, hypotheses, and conceptual framework. Chapter 3 lays out the research design, the research model, and measurement of variables. Chapter 4 presents and discusses the results of the empirical analysis. Finally, Chap. 5 concludes this study by highlighting the key findings, contributions and noting the study limitations and directions for future research.

2 Literature review and hypotheses development

Modern corporate structure is characterized by ownership and management separation, forming the basis for the application of agency theory. Shareholders of modern corporations are widely dispersed and are not normally directly involved in the management of their organizations. Thus, an agency problem arises when, due to the separation of ownership and management, managers strive for their own interests instead of those of the corporations and the owners who have entrusted the manager with their resources (Jensen and Meckling 1976). Given this theoretical stance, activities intended to distort accounting and financial information generate agency conflicts. Shareholders utilize earnings figures extensively for contracting with top-tier managers, both directly to form the basis of bonus awards and indirectly as benchmarks for the launch of stock options. As a result, manipulated earnings figures can produce unfavorable impact on the wealth of executives (Healy 1985).

Furthermore, turnover of top-tier management is related to reported poor corporate performance (Weisbach 1988). These aspects provide managerial incentives to opportunistically distort reported profit (Watts and Zimmerman 1986). When managers' incentives are linked to their firms' financial performance, managers may attempt to manipulate earnings to show excellent performance (Xie et al. 2003; Boachie and Mensah 2022; Anderson et al. 2024). Multiple studies have observed that REM has adverse outcomes – reducing future operating cash flows, reducing returns on assets, and increasing cost of equity capital (Cohen and Zarowin 2010; Kim and Sohn 2013). There are also evidence suggesting that REM diverges from best business operations, concealing real-earnings figures and endangering the long-term competitiveness of the firm (Cohen and Zarowin 2010; Zang 2011). Moreover, earnings manipulation reduces the quality of decisions made by owners and is thus considered an agency cost (Davidson et al. 2004).

Earnings manipulation through accruals is the result of choices made when applying the accounting standards in the recording of business transactions, however, REM occurs when the timing or structure of the actual business activity is altered (Ewert and Wagenhofer 2005). Therefore, REM involves managers diverging from the optimal course of action to modify earnings, which increases costs in the long run and damages the firm's future value. Accounting regulations can strengthen standards to prevent or reduce accrual manipulation, but such provisions cannot control real-activities manipulation (Ewert and Wagenhofer 2005). Roychowdhury (2006: 337) describes real-earnings manipulation as “departures from normal operational practices, motivated by managers' desire to mislead at least some stakeholders into believing certain financial reporting goals have (been) met in the normal course of operations.”

Evidence in existing literature also suggest that managers mask accounting information and manipulate their firm's real operations to safeguard their short-term interests at the cost of the shareholders' long-term interests (e.g., Bartov 1993; Graham et al. 2005; Roychowdhury 2006). For instance, using lenient credit terms to boost sales in the current period increases the firm's credit default risk in the future. Overproduction designed to lower marginal costs and the cost of sales in the short term leads to inventory piling up due to the gap between market demand and quantity produced. Dynamic market conditions may cause excess stock to become obsolete, thereby increasing the firm's futures losses. Discretionary expenditure (e.g., on R&D and advertising) incurred in the current period has payoffs over the long run (David et al. 2001) and an abnormal reduction in these expenses instantly

increases earnings figures in the current period, at the cost of the firm's greater long-term good. For instance, reducing advertising expenditure lowers the growth of sales revenue in the future, and cuts to R&D investment can impair the firm's long-term competitiveness. The above explanation illustrates that manipulating real business activities can boost earnings figures for the current period while having adverse effects on future outcomes. The REM approach to manipulating earnings is more disastrous in the long run (Veganzones et al. 2023), especially in highly competitive corporate settings (Zang 2011), which result in agency conflict between the management and shareholders.

Corporate-governance mechanisms reduce agency conflicts through intensified monitoring of management actions and by reducing opportunistic behavior. The board is regarded as a key element of corporate governance, minimizing agency conflicts (Gonzalez and Garcia-Meca 2014) and monitoring the behavior of top management (Jensen and Meckling 1976; Fama and Jensen 1983). The characteristics of the board determine its potential strength and the quality of its monitoring ability. In this regard, Bange and Mazzeo (2004) argue that effective board monitoring is the function of its independence from executives. The evidence in corporate-governance literature also holds that INDs' overseeing role is influenced by the stage of their board tenure (Vafeas 2003; Niu and Berberich 2015) and their commitment as directors to several boards at a time (Ferris et al. 2003; Perry and Peyer 2005; Fich and Shivdasani 2006; Falato et al. 2014). However, corporate governance and REM literature lacks empirical evidence around these aspects of the corporate board.

Theoretically, the monitoring competence of INDs improve as their tenure grows in a firm however presence of INDs on board for an extended time period may develop professional intimacy with the management over time which potentially impair their objective monitoring role (Vafeas 2003). Furthermore, the presence of INDs on multiple-board might signal their effective monitoring expertise (Shivdasani 1993; Bedard et al. 2004). Contrary to this it is argued that INDs presence on too many boards can result in overcommitment which potentially affect their monitoring role in a negative way (Core et al. 1999; Fich and Shivdasani 2006). Therefore, this research applies an agency theory lens to examine the board monitoring role and test the relationship of IND tenure and multiple directorships with the prevalence of real-earnings manipulation.

There is evidence in some recent studies that cover the outcomes and causes of REM. For example, Kim and Sohn (2013) report that manipulation of current-period actual operational activities improve reported earnings in the short-term but destroys long-term firm value. The same is true about opportunistic cuts in R&D spending to improve earnings levels in the current period and offering price discounts and more flexible credit terms to produce additional but unsustainable revenue. Similarly, Cohen and Zarowin (2010) document that when a firm engages in REM practices before a seasoned equity offering, face a decline in performance in the subsequent period. Moreover, Bhojraj et al. (2009) show that firms using real-activities manipulation and accrual management to beat analyst forecasts will experience significantly poorer operating and stock-market performance in the succeeding period. The reverse is true for those firms which miss out on analyst forecasts by not manipulating their earnings.

There is also evidence in existing literature suggesting that firms substitute the AEM with REM when litigation risk is lower because REM are quite hard to be detected (Cai et al. 2020). These findings imply that executives use REM instead of AEM mainly due to their risk aversion behavior. Since REM is hard to detect and often difficult to convert the

resultant misleading financial disclosure into successful legal litigations. In another recent study in the US context, Huang et al. (2020) finds that management get involved in more aggressive REM, after a case to penalizing the REM practices was dismissed by court of law. The outcome of all these findings implies that legal protection may deter the REM, however, such manipulations are difficult to detect and prove in court of law.

Moreover, other studies investigate the implications of corporate and accounting regulations on the choice of approach to manipulate earnings. After the implementation of the US Sarbanes-Oxley Act in 2002, earnings management through the manipulation of actual business operations has increased significantly, and accrual based earnings manipulation has ultimately decreased (Cohen et al. 2008; Habib et al. 2022). The substitution effect is more pronounced in firms connected through interlock (Dharwadkar et al. 2024). However, vice versa was the case during the time before the enforcement of the Sarbanes-Oxley Act (Cohen et al. 2008). Since the enactment of the Sarbanes-Oxley Act, there have been stricter requirements for meeting the requirements of public disclosure and corporate governance regulations. Hence, scrutiny of accrual manipulation has increased, motivating firms to switch to other approaches to manage earnings (Cohen et al. 2008). Similarly, Bartov and Cohen (2009) and Osma and Young (2009) argue that the introduction of Sarbanes-Oxley Act (SOX) in the United States and IFRS in the UK led to the use of REM for meeting specific earnings targets and benchmarks.

Existing literature also provides evidence that a stringent regulatory framework, such as existence of accounting regulations in the developed world, make the manipulation of earnings with accrual based adjustments through accounting policies and methods significantly less likely (Cohen et al. 2008; Enomoto et al. 2015). Stricter regulations make it difficult to evade accrual manipulation, and management therefore finds it more convenient to manipulate earnings figures through the structuring of real activities related to operations, investing, and financing activities. In this situation, the role of corporate governance in constraining earnings manipulation increases, as neither audit scrutiny nor accounting regulations can control the maneuvering of real business operations. Despite this, only a few studies (summarized below) have explored the role of corporate governance in curbing REM.

There is evidence in existing literature that suggest institutional ownership produces a significantly negative influence on real-earnings management practices (Sakaki et al. 2017; Gerged et al. 2023; Gu 2023). However, this relationship does not exist in case of accrual based earnings manipulations (Gu 2023). As institutional investors are observed as long term oriented (see e.g., Bena et al. 2017; Luong et al. 2017), therefore, they operate as a force for monitoring management and discouraging short-termism at the cost of damaging the long-term value of the firm. In this regard, Wongsunwai (2013) documents that shareholding by high-quality venture capitalists led to less aggressive accounting reporting. In such a scenario, institutional ownership by high quality venture capitalists results in lower accrual and less real-activities manipulation, however, shareholding by lower-quality venture capitalists does not affect earnings manipulation in the investees' companies.

Another study by Baker (2019) documents that, in the pre-SOX period, accrual earnings manipulation was higher in the presence of a powerful CEO, however, the presence of powerful CEOs did not influence REM in either pre- or post-SOX times. The same study also reports a positive association between REM and a strong CFO in both pre- and post-SOX times, although the CFO power did not influence accrual-based manipulations. It is therefore argued that presence of a powerful CEO constrain a CFO's attempts to manipulate real

business activities during the pre-SOX times but not influence REM in the post-SOX period (Baker 2019). It seems that, since the enactment of SOX, the CEO validates the actions of the CFO in managing earnings.

While emphasizing on the long term implications of REM, Cheng et al. (2016) report that real-earnings manipulation is less common when there is a higher horizon (time to retirement) and greater relative remuneration of subordinate executives. They further argue that REM accrues short-term benefits to the organization at the cost of long-term firm value. Thus, subordinate executives operate as a force to constrain this manipulation and safeguard their long-term incentives, emphasizing their strong interest in firm value over the long-term. Moreover, Fan et al. (2021) find that subsequent period earning management is significantly low in those firms where shareholders resolution is passed by a narrow margin than those firms where resolution is declined by narrow margin. This finding supports the assertion that shareholders activism enhances the corporate board monitoring (corporate governance) which translates into lower EM in subsequent period.

There is also evidence that suggests that presence of co-opted independent directors are inversely related to earning management practices (Harris and Erkan 2023). This relationship supports the argument that co-opted directors do not pose serious threats to executive job security, due to which the myopic approach of management is minimized to meet earning targets in response to market pressure. However, the co-option in corporate board is more reactive to accruals earnings manipulation due to ease of detectability. In this regard, Osma (2008) examines a sample of UK firms, and reports that where management attempt to distort spending on R&D activities to fulfill short-term earnings objectives, INDs act as a constraint, however, opportunistic cuts in spending on R&D are less likely to get controlled when insiders dominate corporate boards (Osma 2008). Similarly, Chen et al. (2015) show that majority board independence after SOX reduces REM, and argue that the same relationship exists for non-compliant firms (minority independent board) provided the cost of acquiring information is low. Contrary to this, Ge and Kim (2014) document that REM is more common in the presence of strong corporate governance and lower in those firms with strong anti-takeover protection. There is also evidence suggesting that the greater tendency to manipulate real activities when there is strong governance, may be due to the substitution effect between accrual and REM. Moreover, board independence is positively associated with manipulation of research and development expenditure to manage earnings (Ge and Kim 2014). El Diri et al. (2020) document that corporate governance (measured through tenure, qualification, and independence) contributes to minimize the AEM, however, CG is positively associated with REM.

The review of the literature shows that there are few studies covering the relationship between corporate boards and REM, and most of those studies mainly consider a particular aspect which is board independence. However, the empirical evidence around board independence and REM are not conclusive, as some studies document positive and others observe negative relationship between the two variables (see e.g., Osma 2008; Ge and Kim 2014; Chen et al. 2015; El Diri et al. 2020). There is therefore scope for further research, particularly from the perspective of the role of independent directors' characteristics in shaping their monitoring strength. This study thus examines the association between INDs' multiple-board sitting and tenure in controlling real earnings management practices.

2.1 Hypotheses development

It is evident from the above discussions that existing literature provides conflicting evidence on the connectedness (networks) of a board's members through membership of multiple boards. On the one hand, it has been documented that such connections are a source of social capital that helps in improving the directors' performance (Reeb and Zhao 2013). Social connections provide opportunities to face and learn about different scenarios in different organizational settings, which can be a source of learning, and which also help in tackling various challenges. In this regard, the findings of Hoitash and Mkrtychan (2022) document that internal ties of board members (with firm ex-executives) reduce the level of REM, because such ties serve the source of easy access to unique information about the firm. There is also evidence that suggests the political connection of board members is inversely related with the level of both accrual and real earnings management and that board members with political connections employ more robust monitoring in care of their own reputation to improve the quality of accounting information. (Khalil et al. 2022).

Contrary to the above, Reeb and Zhao (2013) find that directors' networks had only a very marginal (positive) influence on disclosure quality. There is also evidence that suggests that firm level social network of top executives and directors is positively associated with both AEM and REM, however, this relationship is stronger in the case of professional connection than the network emerging from education or social activities (Fang et al. 2022). Moreover, it is also documented that directors sitting on fewer boards are positively associated with firms' R&D spending decisions, however, their presence on too many boards has been identified as negatively associated with R&D spending decisions (Bravo and Reguera-Alvarado 2017). In another paper, Kapoor and Goel (2017) report that presence of the same INDs on multiple boards negatively influence their monitoring effectiveness.

We therefore argue that multiple directorships either develop professional intimacy or leave less time for individual directors to perform their roles as monitors. It is thus expected that independent directors' network might compromise their impartiality, which in turn reduces the effectiveness of the oversight that they are required to provide. On a similar note, Sarkar et al. (2008) report that the busier the IND (due to multiple directorships), the higher the level of AEM, and argue that sitting on the boards of several companies at once left directors with less time to think about management activities and to enforce stringent monitoring of the board decisions.

Theoretically, there are two competing arguments regarding directors' multiple-board sitting and its impact on board monitoring. On the one hand, the busyness hypothesis suggests that directors serving on multiple boards have less time to fulfill their monitoring responsibilities (Core et al. 1999; Fich and Shivdasani 2006). Therefore, INDs sitting on multiple boards are likely to increase REM. On the other hand, the reputational hypothesis suggest that a director's presence on multiple boards is an indicator of their reputation or expertise as monitors (Shivdasani 1993; Bedard et al. 2004). Taking this view one can say that the greater an IND's board presence, the less will be the chances of the firm engaging in REM. In light of the above discussions, we form the following hypotheses:

Hypothesis a: Independent directors' multiple-board sitting is negatively associated with real-earnings management.

Hypothesis b: Consistent with busyness perspective, INDs' multiple-board sitting is positively related with real earnings manipulation.

Moreover, the tenure of INDs is relevant to their monitoring role, and ultimately, to the board effectiveness, however, there are differing views with respect to the significance of IND tenure. On the one hand, there is evidence in existing literature suggesting that extended tenure is detrimental to shareholder interests (Vafeas 2003). Similarly, Park and Shin (2004) report that the average tenure of independent board members does not contribute to their monitoring effectiveness in terms of reducing earnings manipulations. On the other hand, there is also evidence that show that short-tenured and newly elected directors might struggle to exercise effective oversight due to hesitancy to "rock-the-boat" or lack of acquaintance with corporate procedures and obligations (Mallette and Fowler 1992), and that their strength, as impartial actors, is expected to grow with time (Park and Shin 2004). In this regard, Xie et al. (2003) document that the tenure of INDs is positively associated with discretionary accruals and argue that extended tenure compromises the efficacy of the monitoring process, with INDs of long tenure ultimately supporting management interests. Moreover, Vafeas (2005) show board members' service length as inversely related to earnings quality. However, in a recent study, Zalata et al. (2018) conclude that the average tenure of INDs has a constraining effect on accrual earnings manipulation.

While explaining the importance of INDs for an active board, Vafeas (2003) proposes two competing arguments on the relevance of tenure to quality of monitoring. The first argument is based on the expertise hypothesis, which states that with extended tenure directors gain more experience and become more competent in organizational settings which improves their monitoring role. The second argument is linked to the management-friendliness hypothesis, that suggests that long tenured INDs develop professional intimacy with management that is causing them to lose their impartiality and become management advocates, rather than protectors of shareholder interests. In conclusion, to achieve the required quality of monitoring, it may be necessary to strike a balance in the INDs' length of tenure. Thus, length of tenure is a very relevant factor to the efficacy of the monitoring process which is intended to minimize agency conflicts by reducing the risk of earnings-manipulation. In light of the above discussions, we propose the following hypothesis:

Hypothesis 2 The association between INDs tenure and real-earnings management varies across the phases of the tenure.

2.2 Conceptual framework

The conceptual framework presented in Fig. 1 summarizes the arguments in support of hypotheses 1 and 2.2.

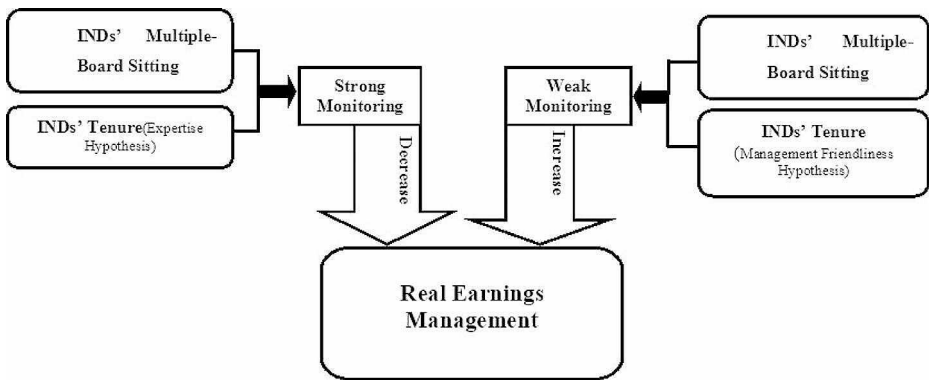


Fig. 1 Conceptual framework

Table 1 Sample distribution across industries

Industry Name	No. of Firms	Firm-Year Obs.	Percentage
Basic Materials	47	507	12.54
Consumer Discretionary	84	867	21.44
Consumer Staples	35	397	9.82
Energy	21	210	5.19
Healthcare	26	302	7.47
Industrials	101	1185	29.30
Technology	44	421	10.41
Telecommunications	14	155	3.83
Total	372	4044	100

3 Data and methodology

3.1 The research model

Due to the nature of the data (i.e., multiple cross-sections and years), this study applies panel data modeling to test the stated hypotheses. The baseline equation was estimated using the Pooled OLS approach. In this regard, existing studies in relevant areas, have highlighted about the presence of endogeneity and related issues and argue that not controlling endogeneity can have significant impact in making inferences about the research findings (see, e.g. Wintoki et al. 2012; Akbar et al. 2017; Asad et al. 2023). This study controls the potential endogeneity aspects in the empirical analysis by using the Generalized Methods of Movements (GMM) estimations approach. In a dynamic panel model, OLS estimators become biased when the lagged term of the dependent variable is correlated with the firm fixed effect. It is possible to eliminate the firm-level fixed effect with the use of fixed-effects modeling, but the transformation to control the unique effect of the firm still exhibits the association between the modified lag term of the dependent variable and the error term.

Additionally, when the explanatory variables are endogenous, it will give rise to the possibility of a correlation between the explanatory variables and the error term. Hence, the estimators obtained through the fixed or random effect model will be inconsistent and

biased. A solution to these issues is thus presented by the use of a dynamic model (i.e., GMM estimators). This approach can control the firm fixed effects through first-difference modification by adjusting for the bias described above (Arellano and Bond 1991). Implementing the two-step system-GMM thus overcame the endogeneity issues and produced consistent estimations. These estimations construct a system of two equations, one in the level and the other in the differences. It then combine the conditions of the moment for each, with instruments of endogenous variables lagging in the level and in the differences (Roodman 2009).

The given approach relies on the lag terms of the dependent variable and predictor, which are utilized as instruments. This study examines the lags in real-earnings management (dependent variables) to document the dynamic impact of past occurrence of REM on current level of earnings manipulation, with governance and financial variables as instruments. In order to ensure the validity of the instruments employed, the Hansen (1982) test for over-identifying restrictions was employed. The Hansen test was used instead of the Sargan statistic for instrument validity because the former provides a more consistent diagnostic in the presence of heteroscedasticity and autocorrelation (Roodman 2007). Moreover, the Arellano and Bond (1991) AR (1) and AR (2) statistics were used to decide on first- and second-order serial autocorrelation. The absence of second-order serial autocorrelation is the condition for the goodness of the system-GMM estimates.

In the baseline equation, the following econometric model was estimated using Pooled OLS (Eq. 1) to test the research hypotheses:

$$REM_{it} = \alpha + \beta_1 Bstg_{avg_{it}} + \beta_2 tnr_{mdn_{it}} + \beta_3 tnr_{snr_{it}} + \beta_4 tnr_{junr_{it}} + \sum_{j=1}^9 \lambda CONT_{it} + \varepsilon_{it} \quad (1)$$

The following dynamic econometric model was used to control the endogeneity issue through two-step system-GMM and to test the robustness of the results:

$$REM_{it} = \alpha + \beta_1 REM_{it-1} + \beta_2 REM_{it-2} + \beta_3 REM_{it-3} + \beta_4 Bstg_{avg_{it}} + \beta_5 tnr_{mdn_{it}} + \beta_6 tnr_{snr_{it}} + \beta_7 tnr_{junr_{it}} + \sum_{j=1}^9 \lambda CONT_{it} + \Theta X_{it} + \mu_i + \varepsilon_{it} \quad (2)$$

In the above equation, “**REM**” is real earnings management, as measured by a composite variable (see Appendix-2 for all variables’ measurements), computed from abnormal operating cash flows, abnormal productions costs, and abnormal discretionary expenditures (Roychowdhury 2006; Cohen et al. 2008; Cohen and Zarowin 2010; Zang 2011). As shown in Eq. (2) above, this study uses the first three lags of the dependent variable to capture the dynamic effect. “**Bstg_avg**” is the average number of board sittings by INDs. “**tnr_mdn**” is median tenure value of INDs, “**tnr_snr**” is the highest value, and “**tnr_junr**” is the minimum.

Similarly, “**CONT**” stands for the control variables (board size, board meeting, CEO duality, female directors on board, board independence, firm size, leverage, firm growth, and performance). Subscript “*i*” is the cross-section and “*t*” is the time observed in the model. Moreover, “ **β** ” is the loading factor (coefficient) of independent variables (variables of interest), “ **λ** ” represents the coefficient of control variables, “ **X_{it}** ” represents the exogenous variables (governance and financial variables), “ **μ_i** ” captures the unobserved firm

effect, and “ ϵ ” stands for the error term (unobserved phenomena). In order to deal with the extreme-values (outlier) and related issues, the continuous variables were winsorized at the first and 99th percentiles.

3.2 Modeling real-earnings management

In this study, the construction of REM measure is based on methods adopted by previous research studies in this area (e.g., Roychowdhury 2006; Cohen et al. 2008; Cohen and Zarowin 2010; Zang 2011; Cheng et al. 2016; Hsu and Liao 2023) because most of these studies document about the validity and reliability of the measures they adopted in their research. For example, the REM variable was operationalized by the Roychowdhury (2006) approach, and used by Cheng et al. (2016) for measuring the abnormal level of (1) operating cash flow [Ab_OCF]; (2) production costs [Ab_PROD]; and (3) discretionary expenses [Ab_DISX] (R&D, advertising and selling, general and administrative expenses).

In addition, Roychowdhury (2006) explains that a manager may manipulate sales in order to manage earnings figures in the intended direction by exercising excessive price cuts or softer terms of credit. Hence, EM by manipulating sales is anticipated to lower operating cash flows of the current period. However, these approaches to boost the sales volume will be short-term, and any gain is expected to disappear when the firm comes back to its original prices and credit policy (Roychowdhury 2006).

In the first phase, we produce the normal cash flow as a linear function of the current- and previous-period sales volumes. To estimate the model, we applied the cross-sectional regression equation given below for each industry's firm-year observation. All variables used in the equation are deflated by lagged total assets which is line with previous studies on earnings manipulation (Roychowdhury 2006; Cohen et al. 2008; Cheng et al. 2016).

$$\frac{OCF_{i,t}}{Assets_{i,t-1}} = \beta_1 \left[\frac{1}{Assets_{i,t-1}} \right] + \beta_2 \left[\frac{Sales_{i,t}}{Assets_{i,t-1}} \right] + \beta_3 \left[\frac{\Delta Sales_{i,t}}{Assets_{i,t-1}} \right] + \epsilon_{i,t} \quad (3)$$

In the second phase, the computed coefficients of Eq. (3) are used to calculate normal cash flow from operations. Computed normal cash flow is then deducted from actual cash flow from operations to derive the abnormal cash flow from operations (Ab_OCF), using Eq. (4).

$$Ab_OCF = \frac{OCF_{i,t}}{Assets_{i,t-1}} - \left(\hat{\beta}_1 \left[\frac{1}{Assets_{i,t-1}} \right] + \hat{\beta}_2 \left[\frac{Sales_{i,t}}{Assets_{i,t-1}} \right] + \hat{\beta}_3 \left[\frac{\Delta Sales_{i,t}}{Assets_{i,t-1}} \right] \right) \quad (4)$$

Another REM approach employed by managers is to raise production to excessive levels to build inventory, such that the fixed production overheads attributed to each unit are minimized (Cohen et al. 2008). In this regard existing studies, such as; Roychowdhury (2006), Cheng et al. (2016), Zang (2011), and Cohen and Zarowin (2010) all utilized production cost measures to predict real-earnings management. They describe production cost as the sum of the cost of goods sold and the change in inventory for a given year. The normal cost of production can be demonstrated as a linear function of sales, as expressed in the econometric equation below:

$$\frac{\text{PROD}_{i,t}}{\text{Assets}_{i,t-1}} = \beta_1 \left[\frac{1}{\text{Assets}_{i,t-1}} \right] + \beta_2 \left[\frac{\text{Sales}_{i,t}}{\text{Assets}_{i,t-1}} \right] + \beta_3 \left[\frac{\Delta \text{Sales}_{i,t}}{\text{Assets}_{i,t-1}} \right] + \beta_4 \left[\frac{\Delta \text{Sales}_{i,t-1}}{\text{Assets}_{i,t-1}} \right] + \epsilon_{i,t} \quad (5)$$

In the third phase, the computed coefficients of Eq. (5) are used to calculate normal production cost. The computed normal production cost is then deducted from the actual component to derive the abnormal production cost (Ab_DISX), using Eq. (6).

$$\text{Ab_PROD} = \frac{\text{PROD}_{i,t}}{\text{Assets}_{i,t-1}} - \left(\hat{\beta}_1 \left[\frac{1}{\text{Assets}_{i,t-1}} \right] + \hat{\beta}_2 \left[\frac{\text{Sales}_{i,t}}{\text{Assets}_{i,t-1}} \right] + \hat{\beta}_3 \left[\frac{\Delta \text{Sales}_{i,t}}{\text{Assets}_{i,t-1}} \right] + \hat{\beta}_4 \left[\frac{\Delta \text{Sales}_{i,t-1}}{\text{Assets}_{i,t-1}} \right] \right) \quad (6)$$

In the above equations, “PROD” is defined as the sum of the cost of goods sold (COGS) and the change in inventory (ΔINVT).

In our analyses, abnormal discretionary expenses are the third component of the REM measure. In this regard, existing research has shown that management may reduce discretionary expenditure to swing earnings figures in the desired direction. Companies can choose to reduce their discretionary expenses (such as R&D, advertising and selling, and general and administrative expenses) to increase earnings in the current period. However, reducing discretionary expenditures to manipulate earnings is a risky practice as it will negatively affect firm growth and future cash flows (Roychowdhury 2006). In order to measure manipulation of discretionary expenses this study employs the Roychowdhury (2006) and Cheng et al. (2016) approach in the analyses. The econometric equation used to estimate the normal level of discretionary expenses is as follows:

$$\frac{\text{DISX}_{i,t}}{\text{Assets}_{i,t-1}} = \beta_1 \left[\frac{1}{\text{Assets}_{i,t-1}} \right] + \beta_2 \left[\frac{\text{Sales}_{i,t-1}}{\text{Assets}_{i,t-1}} \right] + \epsilon_{i,t} \quad (7)$$

To calculate normal discretionary expenses, we use the computed coefficients of Eq. (7). The computed normal discretionary expenses are then deducted from the actual expenses to derive the abnormal discretionary expenses (Ab_DISX), using Eq. (8).

$$\text{Ab_DISX} = \frac{\text{DISX}_{i,t}}{\text{Assets}_{i,t-1}} - \left(\hat{\beta}_1 \left[\frac{1}{\text{Assets}_{i,t-1}} \right] + \hat{\beta}_2 \left[\frac{\text{Sales}_{i,t-1}}{\text{Assets}_{i,t-1}} \right] \right) \quad (8)$$

In the above equation, DISX is measured by adding the expenses incurred for R&D, advertising and selling, and general and administrative matters.

After estimating the abnormal OCF, production cost, and discretionary expenditures, we computed the aggregate measure (see Table A2) to capture the REM. Lower (abnormal) OCF indicates manipulation in sales, and lower (abnormal) discretionary expenditure indicates manipulation in such discretionary items to boost earnings. Moreover, higher (abnormal) production cost indicates manipulation of production levels to report higher earnings. Therefore, to compute aggregate REM, we multiplied by -1, the residual of operating cash flows (Ab_OCF) from Eq. (4) and the residual of discretionary expenditure (Ab_DISX) from Eq. (8).

3.3 Variables measurement

There are two key variables of interest in the study. The first is the INDs' multiple-board sitting, where we follow Ferris et al. (2003), and Bravo and Reguera-Alvarado (2017) and construct this variable as the average number of directorships held by INDs in other companies. The second test variable is the INDs' tenure for which we follow Vafeas (2003), and propose three categories of tenure: tenure of the most senior director, median tenure of directors, and tenure of the most junior director for each firm during each year under observation.

Consistent with existing literature, this study employs firm-specific (financial and corporate-governance) factors as controls to improve the consistency and accuracy of the econometric model. Following Cohen and Zarowin (2010), Francis et al. (2016), and Sakaki et al. (2017), this study controls for firm **SIZE** (measured as a natural log of total assets), **LEVERAGE** (long-term debt to total assets), **MTB** (market-to-book ratio), and **ROA** (proportion of current-year profit to total assets). With respect to firm size, there are two different views regarding EM. One school of thought is that a larger firm is subject to more asymmetric information, which increases the risk of earnings manipulation (Chung et al. 2005; Othman and Zeghal 2006). However, Wiedman (1996) argue that a larger firm has a better information environment and the attention of analysts and regulators and hence fewer opportunities to distort accounting and financial facts. It is also argued that highly geared firms are subject to debt covenants that induce them to engage in EM to avoid violation of the given restrictions conditions (Cohen and Zarowin 2010). Similarly, market-to-book ratio represents a firm's growth opportunities therefore a firm with greater growth opportunities might manipulate earnings upwards to maintain a good profit impression on the market (Zalata et al. 2018). Another perspective is that firms with better growth are more cautious about their competitiveness in long run hence less likely to manipulate the earnings (McNichols 2000). This study also includes firm performance as a control variable in the model because a firm with lower financial performance (profitability) is more likely to manipulate its earnings (Fang et al. 2022).

The corporate-governance controls include CEO duality, board size, board meetings, and the number of female directors on the board. From the perspective of agency theory, the board's role in governing corporate affairs can be at stake in a situation where the CEO of the corporation is also heading the board (Jensen 1993). In this regard, Davidson et al. (2004) document that CEOs with dual roles are more likely to manage earnings as they had greater control over the accounting information produced and sought to maintain positive trends. Regarding board size, evidence in existing research report that smaller board size is associated with better performance and lower AEM (Epps and Ismail 2009). This is consistent with the argument that larger boards are associated with more political and bureaucratic problems. The competing argument however suggest that existence of a large board brings more expertise and is better able to review the tasks under consideration, thereby reducing the chances of error and improving the efficacy of the decisions reached (Klein 2002).

With respect to board meetings, Gonzalez and Garcia-Meca (2014) document that board meetings are negatively associated with the occurrence of earnings manipulation, and suggest that a board that meet more frequently is in a better position in performing its monitoring function. Similarly, Xie et al. (2003) provide evidence that the frequency of board meetings negatively related with EM practices in their sample companies. There is also evidence that suggests that the presence of female directors is related to greater efficacy

and functioning of the board (Adams and Ferreira 2009). Moreover, other researchers argue that female directors tend to involve themselves in voluntarily positions for obtaining information which reduces information asymmetry and puts them in a better position to make effective decisions (Gul et al. 2009). In the same vein, Lara et al. (2017) report that a larger proportion of female INDs on a board, results in lower rates of earnings manipulation.

3.4 Sample description

This study analyzes a sample of UK-listed (FTSE-All Share Index based) non-financial firms. After excluding firms from the financial, utilities, and real-estate industries – and merging financial data with governance data obtained from BoardEx – the final sample consists of 372 firms and 4,044 firm-year observations. In the final sample, 95 firms and 786 firm-year observations belong to dead firms. All of the data from financial variables, and some of the corporate-governance data, was collected from Refinitiv Workspace. The data on IND tenure and board-sitting was collected from BoardEx. The sample period ranges from 2005 to 2018¹. In addition, the sample years, data was extracted for 2003 and 2004 which enabled us to fulfill the lag-period requirements for estimating REM variables. Table 1 presents the sample distribution across the given industries. The study sample comprises eight industries and includes both dead and active firms. There is a large representation of the industrial category in the sample, comprising around 29% of the sample companies, while the telecommunications industry has the lowest representation, at just 3.83%.

4 Results and discussions

4.1 Descriptive statistics

Descriptive statistics of the variables in the study sample are presented in Table 2. The average values of the REM variables are above -1 and below $+1$, which is consistent with the published literature in this area (Cohen and Zarowin 2010; Ge and Kim 2014; Cheng et al. 2016; Baker 2019). On average, INDs sit on four boards at a time. The mean value of longest tenure (*tnr_snr*) in the sample firms is 12.09 years suggesting that in sampled firms there are incidences where INDs are serving on board of firm beyond three service terms which is not recommended by UK's governance codes. Although firms listed in UK have prerogative to explain and justify the retention of INDs for extended period however, INDs serving beyond recommended tenure may be detrimental for board's fiduciary role. The average of INDs' median tenure for sampled firms (*tnr_mdn*) is 4.92, where the median tenure represents two service terms, each comprising three years. The average junior tenure (*tnr_junr*) is 1.35 years. The average value of board independence is 0.61 implying that the majority of the board members are independent which is consistent with the UK corporate

¹ The sample period of this study is restricted up to 2018 because there were unnatural shocks in operating performance of firms due to the COVID 19 pandemic and firms' ability to long term investment was substantially constrained over this period. Therefore, we end the study period in 2018 (i.e., to exclude COV-19 period from the study), which makes it more reasonable to investigating the empirical exercise over the sample period of a normal course of business operations in ensuring that the estimation of REM variable is not affected by the unnatural variation in operations, performance, and investments.

Table 2 Descriptive analysis

Variable	Mean	Std. Dev.	Minimum	Maximum
Ab_OCF	-0.0221	0.0788	-0.2196	0.1871
Ab_PROD	-0.0358	0.2035	-0.6691	0.5043
Ab_DISX	-0.0161	0.1559	-0.5225	0.3875
REM	-0.0052	2.3660	-6.3528	6.9724
Bstg_avg	4.0186	1.4430	1.5	8.8
tnr_mdn	4.9209	2.6828	0.5	9.9
tnr_snr	12.0979	8.2463	0.9	21
tnr_junr	1.3534	1.4047	0	7.3
ROA	0.0655	0.0757	-0.2032	0.3026
SIZE	14.6569	1.8418	10.8720	18.7996
LEV	0.1703	0.1378	0	0.5590
PB_ratio	3.4355	3.3776	0.19	21.71
brd_meet	8.6316	2.7813	4	18
brd_sz	9.5326	2.7187	5	18
brd_ind	0.6150	0.1627	0.2222	0.9286
f_brd	0.1462	0.1105	0	0.4286

Note: This table provides the descriptive statistics for the variables used in the study, where “Ab_OCF” is abnormal cash flow from operating activities, “Ab_PROD” is the abnormal production cost, “Ab_DISX” is an abnormal discretionary expenditure, “REM” is the sum of REM_PROD, REM_DISXPT and REM_OCFT, “Bstg_avg” is the average number of boards on which INDs sit, “tnr_mdn” is the median tenure of INDs, “tnr_snr” is the maximum tenure of an IND, “tnr_junr” is the minimum tenure of an IND, “SIZE” is the size of the firm, “LEV” is leverage, “ROA” is firm performance, “PB_ratio” is the price-to-book ratio, “brd_ind” is the proportion of independent directors on the board, “brd_sz” is board size, “brd_meet” is board meetings, and “f_brd” is the proportion of female directors

governance codes. The average board size is nine, and the average number of board meetings is eight. In addition, the average number of female directors on a board is 14.62%.

4.2 Correlation analyses and multicollinearity diagnostics

Table 3 provides the correlation matrix for the study variables. The correlation between REM and average board-sitting is negative. This is consistent with view that INDs present on several boards at a time bring with them more expertise and richer information (Shivdasani 1993; Bedard et al. 2004), thus employing better monitoring and more effectively constraining management efforts to manipulate earnings. The median tenure of an IND is negatively correlated with REM. However, extended (tnr_snr) and early tenure (tnr_junr) are positively correlated. This correlation is consistent with assertion that INDs' monitoring capacity improves as they spend more time on the board, as their firm-specific knowledge improves (Vafeas 2003; Park and Shin 2004). However, an extended tenure is detrimental to the monitoring role, which is probably an outcome of “management friendliness” hypothesis (Vafeas 2003).

The correlation matrix for the explanatory variables is crucial for analyzing and detecting multicollinearity issues among the predicting variables. In the econometric literature, it is argued that a correlation of 0.80 or higher between explanatory variables is a serious problem for model specification (Gujarati 2009). Highly collinear variables will capture the same effect, so the inclusion of both such variables can produce biased results. The highest correlation documented in the correlation matrix table is 0.590 (between board size and firm

size), which is below 0.8 and is therefore acceptable. We therefore argue that the correlation matrix indicates that there is no multicollinearity issue between the explanatory variables in the econometric model used to test the hypotheses of this study. As a further check for multicollinearity, we conducted the Variance Inflation Factor (VIF) analysis which produced a VIF value of 2.03 for “Size”. The VIF value of 2.203 is significantly lower than the threshold value of 5 (Greene 2003), which confirmed no multicollinearity among the variables. Results of the VIF analysis are reported in Table 3 below.

4.3 Multivariate results and discussions

The association between INDs’ attributes and real earning management is analyzed by using the pooled regression and the two-step System-GMM estimations. Table 4 presents the estimated results for the sample using the baseline equation (Pooled OLS). We estimated four models – each of the first three having a different tenure variable capturing unique phase of INDs’ tenure in addition to multiple-board sitting (*Bstg_avg*), and a set of control variables. **Model 4** included all tenure variables, capturing different phases. In the first three models, each tenure variable captured a unique phase (moderate, senior, and early [junior] tenure) to ensure that the relationships between the given variables and REM were not driven by probable multicollinearity. **Model 4** was estimated by including all tenure related variables to show that the results remain consistent and were not biased by multicollinearity.

The results in Table 4 show that average board-sitting (*Bstg_avg*) is significant and has negative coefficient in all the four models. This finding supports the first hypothesis (1a) that multiple-board sitting is significant and negatively associated with real-earnings manipulation which implies that REM is lower in firms whose INDs sit on several boards. This empirical evidence provides support for the reputational/expertise argument regarding directors multi-board sitting, which suggest that presence of INDs on several boards indicate a reputation as strong monitors due to greater expertise and the richer information that they bring to the board (Vafeas 2003; Park and Shin 2004). This finding implies that INDs having presence on several boards at a time bring more expertise, competence, and information to a firm board which helps them to employ robust monitoring that result in constraining real earnings manipulations. Based on the empirical evidence of the study, we argue that having INDs on firm board who have presence on several boards are beneficial for corporation and shareholders because they bring quality information, competence and expertise in their deliberations and role performance. Therefore, such directors are more critical to executives’ proposals and reports which help to constrain management opportunism which ultimately improve the quality of accounting information.

We analyze the presence of INDs on boards in three phases covering early, median (moderate) and senior (extended) phase. Median tenure has a negative coefficient and is significant in **Model 1** and **Model 4** which implies that INDs with moderate tenure are better monitors hence reduce the incidences of REM. The variable of extended (*trn_snr*) tenure has a significant and positive coefficient in **Model 2** and **Model 4** suggesting that REM is higher when INDs are serving on firm’s board for extended period. The early (*trn_junr*) tenure is insignificant and has a positive coefficient in **Model 3** and **Model 4**. These results provide support for the second hypothesis – which indicate that the association between INDs’ tenure and REM varies across the phases of the tenure. On the one hand. The results show moderate tenure (median tenure) as negatively associated with REM. On the other hand,

Table 3 Correlation analysis

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	VIF
1 REM	1														
2 Bstg_avg	-0.017	1													1.06
3 tnr_mdn	-0.023	-0.030	1												1.84
4 tnr_snr	0.003	-0.065	0.543	1											1.54
5 tnr_junr	0.026	-0.039	0.428	0.123	1										1.42
6 ROA	-0.211	0.028	0.122	0.084	0.080	1									1.30
7 SIZE	-0.040	0.148	0.062	0.150	-0.257	-0.054	1								2.03
8 LEV	-0.041	0.023	-0.009	0.093	-0.119	-0.207	0.314	1							1.24
9 PB_ratio	-0.195	0.006	0.046	0.044	-0.040	0.373	-0.014	0.117	1						1.26
10 brd_meet	0.058	-0.063	-0.158	-0.118	-0.066	-0.139	-0.009	-0.014	-0.068	1					1.06
11 brd_sz	-0.056	0.115	0.115	0.232	-0.215	0.012	0.590	0.183	0.039	-0.047	1				1.65
12 brd_ind	-0.102	-0.043	0.106	0.109	-0.116	0.027	0.361	0.050	0.056	-0.048	0.174	1			1.23
13 f_brd	-0.039	-0.022	-0.071	-0.051	-0.177	0.006	0.318	0.077	0.111	0.031	0.202	0.250	1		1.19
14 ceo_dual	0.028	-0.005	0.192	0.195	0.037	0.023	0.063	0.061	0.089	0.011	0.131	0.111	0.027	1	1.08

Note: This table presents correlation between dependent and explanatory variables and between explanatory variables. The variance inflation factor (VIF) values are included in the right-hand column of the table

the early (insignificant and positive coefficients) and maximum (*tnr_snr*) tenure variables are associated with higher REM. These findings provide support for both the competence and management-friendliness hypotheses (Vafeas 2003). The positive impact of early tenure points to the relevance of the competence hypothesis, suggesting that if a director's tenure is very short – or they are newly elected – they might be unable to exercise effective oversight due to a hesitancy to “rock-the-boat” or a lack of acquaintance with the unique corporate setting (Mallette and Fowler 1992). Similarly, if INDs are serving on a firm board for several years, then they become friends with the management which negatively influences their monitoring role.

Moreover, these findings imply that the median (moderate tenure) is beneficial from shareholders and/or from the companies' perspective because we find that these directors are better able to employ robust monitoring and controlling the REM when they are in the moderate phase of their tenure. However, “senior (extended) tenure” is observed to impair the INDs impartiality as monitoring force hence they are positively related with REM. Since the average values of median and senior tenure are 4.92 and 12.04, respectively. This suggests that INDs with median tenure, involving two service terms (each of three years), are able to constrain REM due to their competence and understanding – reflected by their board tenure – without compromising their impartial approach. The results also show that senior tenure (*tnr_snr*) is associated with higher REM, providing support for the management-friendliness hypothesis. This finding is in line with the recommendations in the UK codes of corporate governance (2018), which state that an IND's presence on a board for more than nine years may impair their independence.

Firm size has a significant and negative effect on REM in **Models 1** and **3**. This result is consistent with the findings of published literature on earnings management, which states that larger firms are less likely to engage in REM (Kim and Sohn 2013; Ge and Kim 2014) because such firms are consistently followed and scrutinized by analysts and regulators. Leverage is negatively associated with REM, suggesting that the executives of highly leverage firms have lower opportunity to involve in REM e.g., non-optimal spending or overproduction because such firms are subject to strict scrutiny by debt providers (Jensen 1986). Our empirical evidence around leverage is consistent with the findings of existing EM literature (see, e.g., McNichols 2000; Dechow et al. 2011; Francis et al. 2016).

Firm performance (ROA) is statistically significant and negatively associated with REM, suggesting that better performing (with higher firm-performance) firms are less likely to manipulate their earnings (Fang et al. 2022) because such firms are not under pressure of meeting/beating any earnings targets. Market to book ratio (*PB_ratio*) is negatively related with REM, implying that growth firms do not get involved in REM to avoid adverse implications for their competitive edge in the long run (McNichols 2000; Dechow et al. 2011). Moreover, board independence has negative association with REM suggesting that majority board independence strengthen the board monitoring capabilities which results in lower REM (Lara et al. 2017). The board meeting is observed as negatively related with REM which support the argument that more frequently meeting corporate boards are better able to employ robust monitoring (Xie et al. 2003; Gonzalez and Garcia-Meca 2014).

To check the consistency of the results estimated for the full sample in Table 4, we re-estimated the baseline models using sub-samples of active and dead firms.² The results of

² The firm remained part of the sample until the date it was declared as dead. If a firm died during the period of the sample, it would automatically disappear from the sample due to the non-availability of data. Active

the sub-samples (see Table A1) are largely the same as for the full sample. This confirms that the results in Table 4 do not suffer from sample selection bias. In addition, the estimates obtained for full sample hold in the sub-sample analysis of both active and dead firms.

4.4 Robustness checks

The endogeneity issue in the empirical model estimated for corporate-governance studies has been highlighted and documented by several studies (e.g., Wintoki et al. 2012; Akbar et al. 2017). To overcome this issue and test the robustness of the results, we estimated the two-step system-GMM for the sampled firms the results of which are reported in Table 5. The results obtained from the two-step system-GMM estimations are consistent with those obtained for the baseline equation in Table 4. The results estimated by GMM confirm that variable for INDs sitting on multiple boards is significant and negatively associated with REM in all the models estimated. The impact of median tenure (*tnr_mdn*) is negative and significant which is again consistent with the empirical evidence documented in baseline model. In addition, the results show that senior tenure is significant and positively associ-

Table 4 Pooled regression results – baseline model using REM dependent variable

Variables	Model 1	Model 2	Model 3	Model 4
Constant	1.8390 (0.000)	2.8802 (0.000)	2.8613 (0.000)	2.8520 (0.000)
Bstg_avg	-0.1178*** (0.000)	-0.0710*** (0.003)	-0.0761*** (0.001)	-0.0711*** (0.003)
tnr_mdn	-0.0378*** (0.003)			-0.0280* (0.081)
tnr_snr		0.0090** (0.039)		0.0128** (0.011)
tnr_junr			0.0175 (0.491)	0.0300 (0.284)
brd_ind	-1.9263*** (0.000)	-1.5711*** (0.000)	-1.5388*** (0.000)	-1.5369*** (0.000)
brd_meet		0.0355*** (0.005)	0.0335*** (0.008)	0.0339*** (0.009)
f_brd		0.4946 (0.151)	0.4297 (0.213)	0.4866 (0.157)
ceo_dual		0.1985*** (0.007)	0.2192*** (0.003)	0.2089*** (0.005)
brd_sz		-0.0255* (0.095)	-0.0190 (0.213)	-0.0235 (0.126)
ROA		-9.1246*** (0.000)	-9.0675*** (0.000)	-9.1089*** (0.000)
SIZE		-0.0530** (0.030)	-0.0494** (0.042)	-0.0495** (0.042)
LEV		-1.7931*** (0.000)	-1.7556*** (0.000)	-1.8090*** (0.000)
PB_ratio		-0.0804*** (0.000)	-0.0802*** (0.000)	-0.0796*** (0.000)
F-Stat	39.78	58.01	58.1	49.48
Prob (F)	0.000	0.000	0.000	0.000
R-Square	0.0248	0.1545	0.1537	0.1551
Industry and Year FE	Yes	Yes	Yes	Yes
N. Obs	4044	4044	4044	4044

Note: This table provides the Pooled-OLS results for non-financial firms listed on the London Stock Exchange. All reported results are based on robust (heteroscedasticity- and autocorrelation-consistent) standard errors. *, **, *** indicate the significance of the variables at 10%, 5% and 1% degrees of freedom, respectively. “**Bstg_avg**” is the average number of boards on which INDs sit, “**tnr_mdn**” is the median tenure of the INDs, “**tnr_snr**” is the maximum tenure of an IND, “**tnr_junr**” is the minimum tenure of an IND, “**SIZE**” is the size of the firm, “**LEV**” is leverage, “**ROA**” is firm performance, “**PB_ratio**” is the price-to-book ratio, “**brd_ind**” is the board independence measure, “**brd_sz**” is board size, “**brd_meet**” is board meetings, “**ceo_dual**” is CEO/chairman duality, and “**f_brd**” is proportion of female directors

firms are those that continued as entities throughout the period of the sample.

ated with REM in **Models 2** and **3**. The results for the control variables are also consistent with the findings reported for the baseline equation (Table 4).

These findings again affirm that an IND presence in several boards at a time is equipped with higher quality information and expertise and thus able to employ more robust monitoring of the management's actions to protect the interests of the shareholders (Vafeas 2003; Park and Shin 2004). The GMM estimations confirm that the median IND tenure acts as a constraint, being significant and negatively associated with REM. The relationship between extended tenure (*tnr_snr*) and REM is significant and positive. This provides support for the assertion that, following a longer tenure on a board, an IND is likely to develop a friendlier attitude toward management, thus compromising their impartiality and making them less critical of the views and decisions of executives. Further, this consistency in the results from the most robust estimation technique (two-step system-GMM) confirms that the results are not driven by the estimation technique and are robust.

Additionally, the specification tests for the models confirm the appropriateness of the system-GMM approach. The F-Statistic is significant across all the models for the REM measures, which indicates a good fit. Following Wintoki et al. (2012), we tabulated the AR (1) and AR (2) statistical probability. The probability of AR (1) is significant for all models, which confirms the presence of first-order serial autocorrelation and warrants the application of system GMM approach to estimate the study econometric models. On the other hand, AR (2) is insignificant, which demonstrates that the models are valid. The probability of the Hansen's test is insignificant, which confirms that the instruments are valid. On this basis, the hypotheses of this study can be accepted. First, as detailed in the reputational hypothesis, the presence of INDs on multiple boards constrains real-earnings manipulation. Second, the association between INDs' tenure and REM varies with the phases of their tenure.

To further confirm the robustness of the results, we re-estimated all three models using AEM as an alternative measure of earnings management. We used the modified Jones (1991) model, as implemented by Dechow et al. (1995), to estimate AEM. Absolute values of discretionary accruals were used as the dependent variable. The results in Table 6 for multiple-board sitting, median tenure (*tnr_mdn*), and extended tenure remained the same as those obtained with REM as the dependent variable. These results confirm that the presence of the INDs on multiple boards constrains earning-management practices. The monitoring role of the INDs reduces earning-management practices when the directors' tenure is moderate, but an extended tenure aggravates earning-management practices. The latter provides support for the view that longer tenures (potentially beyond two terms) lead to the development of professional intimacy and friendly connections with top executives, which impair the directors' independence and ultimately their efficacy in their monitoring roles.

Based on the empirical results of the study, we argue that INDs safeguard the interest of the corporation and its shareholders by employing robust monitoring to reduce earnings manipulation so that agency conflict can be minimized. Independent directors are theoretically expected to constrain earnings manipulation of all types, however, it is less likely to scrutinize/detect REM through accounting regulations or by an external auditor (Ewert and Wagenhofer 2005; Cohen and Zarowin 2010). As a result, the role of corporate board to constrain REM has increased. Our empirical evidence in Tables 5 and Table 6 around REM and AEM supports this argument because the magnitude of the impact of "Bstg_avg" and *tnr_mdn* is larger in the case of REM than AEM. These findings imply that INDs multiple board sitting, and moderate (median) tenure contribute to reduce earnings manipulation

however this impact is comparatively larger in REM because real earning manipulations have severe implications for a firm in long run.

Taken together, the study's results (presented in Tables 4, 5 and 6) suggest that INDs with multiple-board sitting strengthen the board monitoring because of their expertise and breadth of information/knowledge which reduces the managerial opportunism to manipulate the earnings. Although INDs are not effective in the early phase of their tenure due to lack of acquaintance to firm environment/system, they discharge their fiduciary role effectively to protect the shareholders' interest by constraining EM as their tenure grows in the firm. However, the presence of such directors on the firm's board for an extended period (possibly beyond three service terms) is counterproductive to their board monitoring role and protection of shareholders' interests.

5 Conclusion

The quality of accounting and financial information is extremely important for stakeholders in general, and shareholders in particular, as it helps in shaping their strategic decisions. The corporate board holds the key monitoring role, tasked with ensuring the quality of accounting and financial information by controlling management attempts to opportunistically manipulate such information. Therefore, this study probed the role of board monitoring in controlling REM by emphasizing the effects of the length of the INDs' tenure and the

Table 5 Results estimated through generalized methods of movements (GMM)

Variables	Model 1	Model 2	Model 3
Bstg_avg	-0.0357** (0.035)	-0.0421** (0.033)	-0.1120*** (0.000)
tnr_mdn	-0.0173** (0.019)		-0.0119** (0.049)
tnr_snr		0.0071** (0.031)	0.0070*** (0.004)
brd_ind	-0.2912 (0.383)	-0.8195*** (0.000)	-0.3708** (0.012)
brd_meet	0.0186 (0.354)	0.0212 (0.331)	0.0251* (0.090)
f_brd	0.9289** (0.011)	0.3505 (0.302)	0.9978 (0.690)
ceo_dual	0.0414 (0.369)	0.0565 (0.300)	0.0074 (0.845)
brd_sz	-0.0440* (0.066)	-0.0769*** (0.002)	-0.0255 (0.168)
ROA	-3.5275*** (0.000)	-4.0068*** (0.000)	-2.5088*** (0.001)
SIZE	-0.1509*** (0.009)	-0.2399*** (0.003)	-0.1792* (0.082)
LEV	-1.3029*** (0.003)	-1.3619*** (0.000)	-1.2431*** (0.000)
PB_ratio	-0.0132 (0.353)	0.0270 (0.114)	0.0176 (0.169)
REM _(t-1)	0.6292*** (0.000)	0.5593*** (0.000)	0.6035*** (0.000)
REM _(t-2)	0.1793*** (0.000)	0.1681*** (0.000)	0.1554*** (0.000)
REM _(t-3)	0.0968*** (0.000)	0.0865*** (0.000)	0.0823*** (0.000)
F-Stat (Prob)	72.80 (0.000)	50.28 (0.000)	123.36 (0.000)
Groups/Instruments	360/106	360/90	360/140
AR (1) (Prob-Value)	0.000	0.000	0.000
AR (2) (Prob-Value)	0.649	0.523	0.460
Hansen test (Prob)	0.278	0.135	0.305
Industry and Year FE	Yes	Yes	Yes

Note: This table provides the results for non-financial firms listed on the London Stock Exchange, using two-step system-GMM. All the reported results are based on robust (heteroscedasticity- and autocorrelation-consistent) standard errors. *, **, *** indicate the significance of the variables at 10%, 5%, and 1% degrees of freedom, respectively. "REM" (dependent variable) is real-earnings management

Table 6 Results estimated using GMM as an alternative measure of earnings management

Variables	Model 1	Model 2	Model 3
Bstg_avg	-0.0107*** (0.004)	-0.0099** (0.028)	-0.0103** (0.019)
tnr_mdn	-0.0099*** (0.002)		-0.0105** (0.016)
tnr_snr		0.0092** (0.024)	0.0089** (0.012)
brd_ind	-0.0641** (0.027)	-0.0697** (0.021)	-0.0672** (0.025)
brd_meet	0.0064* (0.083)	0.0072* (0.051)	0.0062* (0.089)
f_brd	0.0388 (0.192)	0.0400 (0.211)	0.0401 (0.204)
ceo_dual	0.0059 (0.820)	0.0051 (0.669)	0.0049 (0.849)
brd_sz	-0.0018 (0.975)	-0.0022 (0.930)	-0.0020 (0.919)
ROA	-0.1593*** (0.000)	-0.1597*** (0.000)	-0.1591*** (0.000)
SIZE	-0.0414*** (0.004)	-0.0420*** (0.004)	-0.0042*** (0.004)
LEV	-0.0616 (0.797)	-0.0621 (0.799)	-0.0425 (0.860)
PB_ratio	-0.0093** (0.028)	-0.0094** (0.029)	-0.0093** (0.029)
AEM _(t-1)	0.0807*** (0.000)	0.0818*** (0.000)	0.0806*** (0.000)
F-Stat (Prob)	63.64 (0.000)	62.05 (0.000)	61.79 (0.000)
Groups/Instruments	372/70	372/69	372/70
AR (1) (Prob-Value)	0.000	0.000	0.000
AR (2) (Prob-Value)	0.213	0.220	0.217
Hansen test (Prob)	0.446	0.401	0.412
Industry and Year FE	YES	Yes	Yes

Note: This table provides the results for non-financial firms listed on the London Stock Exchange, using two-step system-GMM. All the reported results are based on robust (heteroscedasticity- and autocorrelation-consistent) standard errors. *, **, *** indicate the significance of the variables at 10%, 5% and 1% degrees of freedom, respectively. "AEM" (dependent variable) is accrual earnings management

directors' presence on multiple boards. By analyzing the sample of UK listed non-financial firm we document that INDs' presence on multiple boards is inversely related to the level of REM which is consistent with expertise/reputational argument about directors' multiple directorships. Since INDs serving on several boards benefit from richer information and more expertise therefore, they draw on better capabilities to employ more robust monitoring which results in lower REM. Moreover, the results show that early and extended tenure are positively associated with REM and that median tenure has a negative relationship with REM. These findings imply that INDs monitoring strength to constrain REM improve as they spend time on firm's board however, presence of such directors on board for longer period impair their impartiality which ultimately deteriorate the objective monitoring.

Our research findings extend the existing literature on corporate governance and REM in three different ways. First, this is among the first few studies in the UK setting which analyze the role of corporate board in controlling REM practices. Previously the empirical evidence in this context was covering one aspect of REM. Our study extends this stream of literature by using a comprehensive REM measure to provide further evidence around INDs specific attributes and real earnings manipulation. Second, previous studies on the role of board independence in real earnings management have documented conflicting results. Therefore, this study contributes to this strand of corporate governance and REM literature by empirically documenting that INDs' attributes are more relevant to control earnings manipulation. We provide evidence that INDs connections to several boards serve as source of rich information, competence, and expertise, benefiting their firms by improving the quality of the boards' monitoring and controlling of REM. Third, this study provides

empirical evidence suggesting that INDs' monitoring quality varies with the phases of their tenure. Independent directors contribute to improving the board monitoring function which reduces REM during their median (moderate) tenure. However, extended tenure of INDs is counterproductive for robust board monitoring and minimizing REM practices.

These findings have policy implications for firms (shareholders) seeking to improve the structure of their boards for robust monitoring purposes, which is the primary function of any corporate board. While electing INDs for the board, firms must consider the improvements in expertise and information that accrue from those directors who sit on multiple boards. They should also carefully analyze the costs and benefits of having the same INDs on their boards for extended time periods. These results also have implications for the official bodies responsible for the UK's corporate governance regulations, and other jurisdictions, contributing to the development of effective guidelines for improving board monitoring. Policy guidelines should seek to minimize the professional intimacy between INDs and management by strictly restricting their maximum service terms, thereby discouraging sympathetic approaches to top executives.

Like any other study, this research has limitations that could serve as avenues for future inquiries. This investigation considered specific aspects of INDs (multiple-board sitting and tenure) and a set of control variables (firms' financial characteristics and corporate governance features – such as board size, frequency of meetings, CEO duality, and proportion of female directors). However, it did not cover the directors' education, expertise, ownership stakes or the ownership structures of the firms. Future studies could take these aspects into account to extend the findings of the current study. Moreover, this study was conducted in the UK, where corporate governance codes are based on the principle of “comply and explain.” As such, its findings may not be applicable to settings in which corporate governance codes are rule-based. Therefore, investigations in settings with different corporate-governance regulations – or indeed a multi-country analysis – could be a valuable avenue for future researchers.

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Declarations

Conflict of interest We declare that we have no conflicts of interest in any form with any international or national institution or agency.

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