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CEO POWER, CORPORATE GOVERNANCE MECHANISMS AND EARNINGS QUALITY

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ABSTRACT

This paper investigated the determinants of the firm's earnings quality (FREQ) using panel data of Egyptian listed firms to address the concerns of endogeneity and heterogeneity. We found that CEO power dynamics negatively impact FREQ. Furthermore, corporate governance's weakening or substitution role is investigated for the negative association between CEO power dynamics and FREQ. Our findings showed that board-independence significantly weakens the impacts of CEO- ownership and CEO-tenure on FREQ. In contrast, the results fail to support the weakening or substitution role of board-independence for the negative effects of CEO-duality and CEO-political connection on FREQ. Board gender diversity is not significantly associated with FREQ. However, we found that the presence of gender critical mass serves as a substitution mechanism for the negative association between CEO power dynamics and FREQ. Lastly, we observed strong robustness for our primary analysis through propensity matching scores and difference-in-different (DID) techniques. This study brings a novelty to existing research by exploring the negative consequences of CEO power dynamics. Furthermore, it provides an insight into the constraining or weakening of the role of corporate governance. The main findings of the current study are also robust to Modified Jones model (1995) reverse-causality, DID and propensity-matching techniques.

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Keywords: CEO-duality, CEO-ownership, CEO-tenure, CEO-political connection, Gender diversity, Board-independence, Gender critical mass

INTRODUCTION

The complexity of the corporate world has led to growing demands on firms concerning the disclosure of higher-quality financial reports. According to the upper echelons theory, the top executives are solely responsible for determining the firm's strategy (Hiebl, 2014; Nielsen, 2010). However, firms differ regarding the balance of power (Abatecola & Cristofaro, 2020). Furthermore, empirics suggested a trade-off between the costs and benefits of conversing additional decision-making powers with CEOs (Chatterjee & Hambrick, 2010; Hong et al., 2016). One school of thought associates CEO powers with a firm's efficiency as the power allows him to accelerate the firm's decision processes, and this may produce timely and efficient responses to the awaited contests in the market (Ozbek & Boyd, 2020; Wang et al., 2019). In contrast, the second school of thought suggests that a CEO with concentrated decision-making power may act individually with less input from the board (Gupta et al., 2018).

Theory suggests that a more centralised decision-making process may not be able to produce better results when information asymmetry is more pronounced (Crossland & Chen, 2013). At the same time, the market structure dictates a powerful CEO's role, and the outcomes are highly correlated with the CEO's entrenched behaviour. Therefore, the part of CEO power dynamics is influenced by the market structure in which a firm operates, and the outcomes of power dynamics are greatly associated with the CEO's entrenched behaviour.

To address the concerns, we investigated the impacts of CEO power dynamics on firm's earnings quality (FREQ). There are several motivations for the current study. First, we find no empirical evidence explaining the consequences of CEO power dynamics in the Gulf region, where the probability of adverse outcomes seems to be more pronounced. Specifically, in Egypt, the market presents a scenario where their entrenched behaviour is not under accountability. Second, since the new political regime, it has become essential to explore diverse financial aspects. It is imperative to assess the role of CEO power dynamics in the context of FREQ as information asymmetry, and misappropriation of power are more likely in the Egyptian market.

The current study adds to the existing literature in two ways. First, it provides evidence showing the misuse of CEO power in the context of FREQ in Egypt. For analysis purposes, we used four attributes of CEO power dynamics

(duality, tenure, ownership and political connection) to highlight their impacts on FREQ. Second, we explored the moderating role of corporate governance as a weakening or substitution mechanism for a negative association between CEO power dynamics and FREQ. We used two governance mechanisms for the analytical purpose (board independence and gender critical mass). The findings showed that the presence of gender crucial mass on the corporate board substitutes for the negative relation between CEO power dynamics and FREQ.

RESEARCH BACKGROUND

The literature recommends that the cost and benefits associated with an entrenched CEO depend upon the market setting in which the firm is operating (Amin et al., 2019; Jo & Harjoto, 2011). Different views prevail in the capital market. One argument states that an entrenched CEO could increase firm values since a CEO generally faces more performance pressures in developed market economies (Li et al., 2018). Resultantly, more robust negative performance and CEO turnover persist in these markets because poor-performing firms are continuously exposed to takeover threats by stronger competitors (Aguilera et al., 2008; Park, 2014).

Furthermore, entrenched CEOs are more likely to shield their position in their firms; therefore, they are expected to focus their courtesy on amplifying firm values (Dechow et al., 2010; Harjoto & Jo, 2011). The other view states that entrenched CEOs may destroy firms' values in the setting where the shareholders' protection laws are comparatively weaker, and the capital market cannot exert the required pressure to constrain CEOs from misuse of powers for their private gain. The weak external force allows entrenched CEOs to preserve their standing; they are more likely to decide their interests (Bear et al., 2010; El-Bannany, 2018; Hass et al., 2016; Jo & Harjoto, 2011). Powerful CEOs make "CEO-centralised" choices. Somehow, these centralised decisions are mainly associated with misappropriating a firm's resources for personal gains, which reduces market value (Crossland & Chen, 2013; Gao et al., 2017; Gupta et al., 2018). In line with this view, (Haynes & Hillman, 2010) stated that powerful CEOs often invest in "pet projects" that improve firms' values. In addition, powerful CEOs are more entrenched as they can counteract the corporate governance mechanisms endorsed by stockholders.

CEO POWER DYNAMICS AND FREQ

In an organisational setting, powers denote the capability of an individual to employ their determination to achieve their desired goals (Park, 2014; Chatterjee & Pollock, 2017; Singh et al., 2018). CEO's power implies how much a CEO can influence managerial decisions. So far, literature has highlighted both aspects of CEO power (negative and positive) (Sariol & Abebe, 2017). However, the outcomes are associated with the market structure in which the firms are operating. In modern organisational settings, there is a need to focus on the bases from which these CEOs acquire powers to control (Duong et al., 2020). The grounds comprise internal sources, including ownership and management expertise, and external sources, including personal status and societal esteem. Any escalation in the CEO's powers strengthen their influence over the corporate board (Baek & Kim, 2015). Typically, empirics show that CEO powers rise with the increase of their position for a longer time as longer tenure dilutes monitoring powers of external or internal mechanisms (Godfrey et al., 2003; Wells, 2002).

Once a CEO-tenure increases, they can obtain organisational capabilities and advancement in relations with corporate board members, thus, gaining considerable influence over the board (Shen & Lin, 2016; Shen & Cannella, 2003; Wu et al., 2012). Likewise, a significant portion of firm ownership is also an imperative source of acquiring board power, and it helps him influence the board in certain strategic and financial decisions (Ding et al., 2018; Srinidhi et al., 2011). In addition, the CEO's political connections also serve as a source of power because political backing empowers them to make decisions of personal liking (Li et al., 2016). Political connections also help firms acquire better access to financing, exceptional allocation in the grant of state agreements, and a superior likelihood of state bailout during predicaments (Makhaiel & Sherer, 2018). Based on this viewpoint, we studied CEO duality, ownership, political connections, and tenure as the bases through which they can gain influence over the corporate board. The hypotheses for the association between CEO power and FREQ are developed in the next section.

CEO Duality and FREQ

The empirics strongly support the view that CEOs gain more powers once they also chair the corporate board. The role enables him to promote entrenched behaviour (Davidson et al., 2004; Yasser & Mamun, 2015). A CEO can have several discretions once they also chair the board. Firstly, they can direct the meeting's plans and subjects. Secondly, there is the likelihood that they can have significant control over the essential information evolving from various meetings

(Asogwa et al., 2019; Che-Ahmad et al., 2020; Cudia et al., 2021). Thirdly, comparatively more substantial power enables him to hire a compliance director on the corporate board (Krause et al., 2014; Li & Yang, 2019; Wang et al., 2019). Briefly, the CEO's dual role strengthens the CEO to pursue his private gains in a reasonably available mode (Latif, 2018; Alves, 2023). Overall, the CEO often acts as their boss (Nuanpradit, 2019).

On the other hand, a CEO with a non-dual role has constrained power to support their entrenched behaviour (Surroca et al., 2020). Empirical evidence supports the view that CEO-duality is positively associated with their entrenched behaviour, specifically in economies where weak governance mechanism prevails (Chee & Tham, 2021). Consequently, CEO duality is expected to affect FREQ as a CEO's dual role negatively empowers him to protect their self-interest even at the cost of the main stakeholder (shareholders) (Che-Ahmad et al., 2020; Tran, 2022). FREQ offers a phenomenon where one can easily explore the negative consequences of CEO power dynamics as higher earnings quality ensures less involvement in earnings management (Ben Mohamed et al., 2012; Jo & Harjoto, 2011; Maaloul et al., 2018; Nasr & Ntim, 2018). Based on these viewpoints, we proposed that CEO-duality reduces the quality of earnings.

H1a: There is a negative relation between CEO duality and FREQ.

CEO Tenure and FREQ

Empirics have shown that CEOs acquire powers mainly through their longer tenure in focal firms. Many encounters often confront a recently selected CEO they might have never experienced (DeBoskey et al., 2019). First, they must acquire recognition from the board to secure their job and insert authority on the board (Francis et al., 2008; Mitra et al., 2020; Wells, 2002). Thus, till they can satisfy the expectancies, their position lingers far weaker than those of established CEOs (Baker et al., 2019; Mitra et al., 2020). Upon acceptance, the board recognises its managerial capabilities (Stock et al., 2019). Henceforth, the position may empower him to have definite adoptions like the selection of "compliant directors". This way, they can reinforce their authority over the board (Francis et al., 2008; Wells, 2002). Therefore, the presence of "compliant directors" confirms their jurisdiction over the board in strategic choices.

As a result, the monitoring function of the corporate board reduces, thereby allowing him to make entrenched decisions. In such a situation, the tendency to make self-cantered decisions is relatively higher. Thus, information asymmetry would prevail more seriously (Latif, 2018). A powerful CEO can influence the board's decision-making process and seek members backing even in unethical

practices like earnings manipulation, which results in poor FREQ (Che-Ahmad et al., 2020; Zalata et al., 2019). In economies with poor investor protection laws, the problem of misuse of powers is more severe and pronounced. In Egypt, a CEO with longer tenure is likely to gain more control and may be involved in poor FREQ to follow personal interests at the cost of less secure shareholders. Hence, we hypothesised that CEO tenure is one of the essential features through which they acquire more powers that may result in poor FREQ.

> H1b: There is a negative relation between CEO tenure and a firm's earnings quality.

CEO Ownership and FREQ

As a CEO acts as an agent on behalf of stockholders, executive authority accrues to them in their ability as an agent of the focal firm (Ding et al., 2007; Hashmi et al., 2018; Jiang & Anandarajan, 2009). In the context of CEO ownership, we mainly focused on the misuse of executive power once they acquire a significant portion of the stock. Recently, corporate governance rules mandated CEOs to purchase a part of equity (Javeed & Lefen, 2019). The modern concept of executive ownership is viewed as a maxim of "skin in the game", which implies that executive and shareholders' interests should be aligned. This idea is more prevalent in the Western context, where CEO performance monitoring mechanisms are comparatively more robust, and the issue of information asymmetry is uncommon. However, empirics have highlighted higher levels of disruptive governance observance among firms where CEOs preserve substantial voting power. Furthermore, the higher portion of ownership allows them to appoint directors of their liking. Thus, the probability of having a compliance board is higher in these firms.

Therefore, a CEO with substantial stock ownership in the focal firm is more likely to influence corporate board decisions making through their influential role power (El-Bannany, 2018; García-Meca & Sánchez-Ballesta, 2009; Hoang et al., 2017). Consequently, minority shareholders are less protected (Baker et al., 2019). The issue of misuse of CEO powers is more pronounced in emerging economies (Latif, 2018). Sometimes, CEOs use their powers to defend their current position (Ding et al., 2007; Yassin et al., 2010). Sometimes, they are also involved in earnings manipulation to smooth their earnings so that they can send positive signals to the market regarding firm performance, thus, meeting financial expectations and keeping the company's stock prices intact. So far, empirics have highlighted the negative consequences of substantial CEO ownership by showing

a positive correlation between CEO ownership and the probability of making self-centred choices (Chatterjee & Hambrick, 2010). Based on these viewpoints, we proposed that CEO's higher stock ownership is negatively associated with FREQ.

> H1c: There is a negative relation between the higher level of CEO-stock ownership and a firm's earnings quality.

CEO Political Connection and FREQ

Empirical evidence highlights that executive political connections have resulted in severe agency encounters (Cao et al., 2019; Hashmi et al., 2018; Makhaiel & Sherer 2018; Maaloul et al., 2018; Shen & Lin, 2016). The connection can help a CEO acquire substantial power to influence the monitoring role of the corporate board (Makhaiel & Sherer, 2018). So far, the literature highlights the adverse effects of political connections on the accounting and internal control systems (Hashmi et al., 2018; Hastori et al., 2015; Elzahaby, 2021). Once a CEO is politically connected, they can persuade the corporate board to reveal discriminatory info and window dress overall financial reports (Hashmi et al., 2018; Ozili, 2017; Yassin et al., 2010; Bhandari et al., 2020).

Moreover, the positive correlation between agency conflicts and CEO-political connection is observed more in economies where heavy political weights significantly influence firm policies (Hashmi et al., 2018; Yassin et al., 2010). Therefore, the current study expected a significant drop in the disclosure of critical financial information in published financial reports (Hashmi et al., 2018; Md Salleh, 2009; Tee & Rassiah, 2020). Likewise, political connections empower the CEO to be involved in earnings manipulation that ultimately results in poor FREQ (Harymawan et al., 2019). Our argument is based on the viewpoint that having a political connection is one of the critical attributes of power for CEO in economies with the sluggish political system. Therefore, CEOs' involvement in earnings manipulation is relatively higher because connected CEOs often feel secure against legal actions (Abdul Wahab et al., 2020). This ultimately reduces the credibility of a firm's FREQ (Cao et al., 2019; Hashmi et al., 2018; Makhaiel & Sherer, 2018; Maaloul et al., 2018; Md Salleh, 2009; Shen & Lin, 2016). Therefore, we postulated:

> H1d: A CEO's political connections have negative and significant impacts on a firm's earnings quality.

CORPORATE GOVERNANCE

Corporate governance comprises a system of directions, practices, and procedures that directs and controls a firm's operations (Bhagat & Bolton, 2019). It principally balances the interest of different stakeholders (Abdou et al., 2021; Ezat, 2019). If a CEO behaves in an entrenched manner (Chi et al., 2020; El Diri et al., 2020), we can use corporate governance to curtail his power (Kovermann & Velte, 2019; Hashim et al., 2019). The situation requires researchers to highlight the specific factors that may have weakening or substitution impacts on negative concerns of CEO power dynamics instead of generalising the issue (Al-Okaily et al., 2020). We have postulated the negative outcome of CEO power dynamics in the Egyptian context regarding FREQ; here, we are mainly concerned with governance-specific factors that can curtail CEO entrenched behaviour. The entrenchment theory explains that powerful managers often maneuverer a firm's resources for their self-interest. Corporate decisions are the probable results of collaboration between the board and the firm CEO (Burkhard et al., 2018). In adverse powers, corporate governance structure can curtail CEO decisions (Kjærland et al., 2020). The construct of corporate governance contingencies sets trade-offs between the CEO and the corporate board (Bear et al., 2010; Oh et al., 2018). Furthermore, it provides a system of control that explains how a corporate board oversees and manages a firm and stresses the efficacy of its concentration, including CEO behaviour (Canella et al., 2009; Nasr & Ntim, 2018; Stock et al., 2019). In cases where CEO is entrenched, they are more likely to track the firm's resources for personal gains. Circumstances may arise where the board can vigilantly observe his entrenched behaviour (Singh et al., 2018).

FREQ and Board Vigilance

As a fundamental concept of governance, corporate board vigilance is a construct that refers to board effectiveness in monitoring and disciplining executives and is appropriately involved in a firm's strategic and financial decisions. Its fundamental importance can be highlighted by vigilance in constraining a CEO's discretion and aligning those decisions in the best interest of stakeholders (Canella et al., 2009). It is not a matter of exploring a single construct; we must consider several governance constructs that curtail CEO discretionary powers. These governance constructs may vary across organisations and economies; thereby, we highlighted the role of the board mechanism in limiting CEO power in Egypt. As per the innate principal-agent theory, top executives like CEOs may often involve in self-serving choices if the constraining power of the board is relatively weaker (Li & Yang, 2019). The settings that validate board oversight can be factual, yet their practical applications are a cause of concern. Therefore, we convened

two constructs of board resilience: board independence measured by the ratio of independent directors and gender diversity. For this purpose, we constructed the following hypotheses.

Board-independence and FREQ

The logic behind board independence lies predominantly in the agency theory. The idea is framed on the separation of ownership and control, in which shareholders act as principals by delegating administrative tasks to an agent (Alves, 2023; Duong et al., 2020). Both these parties (principals and agents) are rational human beings and often pursue utility maximisation and private gain, forming a deviation of interests that ultimately results in agency conflicts (Istianingsih, 2021; Abdul Wahab et al., 2020). To secure their interests, the principals can inaugurate, among other constraints, monitoring by appointing independent directors. Agency theorists commend that higher board-independence levels in developing economies are linked with high board monitoring. In contrast, a high level of company experts observed that poor monitoring by independent directors is a significant cause of corporate scandals (Zollo & Winter, 2002).

Further, governance theorists have emphasised board independence as one of the key constructs determining board efficacy (Canella et al., 2009; Nasr & Ntim, 2018; Stock et al., 2019). A higher percentage of independent directors curtails a CEO's power and directs their discretion for stakeholders' benefits. Additionally, empirics have shown that independent directors are more observant, comparatively more knowledgeable, and guided by the rule of ethics (García-Meca & Sánchez-Ballesta, 2009; Khalil & Ozkan, 2016; Lin & Hwang, 2010). Subsequently, independent directors determine CEO-performance sensitivity relation and oversee any earnings manipulation. Furthermore, they often constrain CEO self-centred decisions (Canella et al., 2009). Likewise, they have greater motivation to observe CEO entrenchment behaviour. Indeed, in the current study, we are mainly focusing on the constraining or substitution role of the CEO in earnings manipulation, which results in poor FREQ. We assumed that the board-independence could theoretically limit the misuse of CEO power dynamics (Baker et al., 2019; Mitra et al., 2020; Wells, 2002). Therefore, we proposed:

> H2a: The higher board independence substitute or constrain the negative association between CEO power dynamics (duality/ownership/political connection) and the firm's earnings quality.

Gender Diversity and FREQ

Though female representation on corporate boards is increasing gradually, it remains expressively understated. There are specific measures (like quotas and public disclosure) taken throughout the globe to increase their representation significantly (Ye et al., 2019). Conversely, the empirics showed mixed linkages for their association with the different financial outcomes. Empirics back the view that a gender-diverse board reliably improves a firm's efficiency in the context of performance and ethics (Baker et al., 2019; Mitra et al., 2020; Wells, 2002). In addition, they play a relatively more active and independent motoring role as they cannot be a subset of "old boys' networks" (Bear et al., 2010; Gul et al., 2013; Perafán Peña, 2018). Similarly, female directors oppose management's opportunistic conduct (Orazalin, 2020).

As per resource dependency theory, they bring new expertise and skills that influence board decision-making processes. So, their existence ensures higher observing concentration and superiority, decreasing CEO entrenchment behaviour in financial choices (Ben-Amar et al., 2017; Reddy & Jadhav, 2019). Accordingly, earnings manipulation involves misrepresenting financial statements and seems to be the critical primary feature of CEO entrenchment conduct (Thiruvadi & Huang, 2011; Sadaa et al., 2023; Ghaleb et al., 2021). CEOs often manipulate earnings upward in general as it helps them seek to evade their removal from office due to performance sensitivity issues (Ud Din et al., 2021; Dobija et al., 2022). In contrast, downward earnings management is often used when they have already exploited short-term benefits like bonuses (An, 2017; Qayyum et al., 2021). As a result, these behaviours might mislead stockholders and other potential investors about their firm's primary financial performances or impact assured outcomes (Gul et al., 2013; Perafán Peña, 2018). The corporate board is primarily responsible for constraining opportunistic managerial choices by active monitoring (Carter et al., 2010; Francoeur et al., 2008; Hoang et al., 2017; Lanis et al., 2017; Nekhili et al., 2018). Recently, empirics have shown evidence in line with the view that female presence is more likely to improve board vigilance as they are expected to be more involved in the financial decision. Further, they are also driven by the rule of law and ethics. So far, their involvement is related to better FREQ and less probability of a firm's level of financial fraud (Dah & Jizi, 2016; El-Bannany, 2018). Based on these viewpoints, it can be argued that their presence can limit the CEO's power and curtail or substitute the negative effects of CEO power dynamics on FREQ. Hence, we constructed the following hypothesis:

> H2b: The presence of female directors on corporate board gender diversity curtails the negative association between CEO power dynamics (duality/ ownership/ political connection) and a firm's earnings quality.

Control Variables

There are quite a few other variables that may have an impact on FREQ. These factors are included in our model to control for the probably unexplained effects of firm-level variables. These include firm-level financial and governance variables. Several board meetings, the board size, CEO education, CEO age, CEO social capital, and firm's audit quality are used to capture governance effects on our primary model following prior researchers (Ding et al., 2007; Jiang & Anandarajan, 2009; Latif, 2018). Likewise, we included market-to-book value, return on assets (ROA), financial leverage, firm growth, dividend pay-out ratio, asset tangibility, and firm size to control for firm-level financial variables (Khalil & Ozkan, 2016; Sarun, 2016). We also include year and industry effects to account for any variation in observation caused by year and industry. These variables are defined in Appendix A.

Measurement of Earnings Quality

In modern research, earnings quality is used as the proxy for determining the overall credibility of financial reports. Therefore, our dependent variable is FREQ. Earnings management can be measured through different methods, including accrual, real earnings management, earnings smoothing, income shifting, and other advanced techniques. It is pretty difficult to justify any single measure as the trade-off between these methods is based on their costs and benefits to their firms and own welfare. We used discretionary and non-discretionary accruals to measure earnings quality to avoid such incidences. Discretionary accruals are accrual by management choices and typically represent management involvement in earnings manipulation. On the other hand, non-discretionary accruals are often the outcome of business activities. The use of accrual for measuring earnings quality is logical in the context of the current study.

To measure FREQ, we used the adaptive cross-sectional Jones (1991) model to estimate the absolute values of discretionary accruals to specify FREQ (Dechow et al., 2010). In the case of higher values of discretionary accruals, the FREQ is treated as lower and vice versa, in line with an earlier study by Dechow et al. (2010). Our measure of the firm's reported earnings quality is in line with earlier studies (Abdul Rahman & Mansor, 2018; Ozili, 2016; Rezaee & Tuo, 2019; Yasser, & Soliman, 2018). Discretionary accruals, as represented by DACC, are measured in two steps. First, we used Model 1 to calculate non-discretionary accruals. Second, our model's estimate of the error term is used to measure the discretionary accruals component. In brief, the difference between total accrual and non-discretionary accrual is represented by the model's estimated error term,

which denotes the model's discretionary accrual. In addition, we calculated total accrual as the firm's earnings before extraordinary items, discontinued firm operations, and net cash flows from operations.

$$TACC_{I,t} = \alpha_0 + \alpha_1\left(1 \Big/ assets_{I,t-1}\right) + \alpha_2\left(\Delta PrPIEq_{i,t} \Big/ assets_{I,t-1}\right) + \varepsilon_{I,t} - 1 \qquad (1)$$

where:

$TACC_{I,t}$ = firm total accrual divided by last year's total assets;

$T - assets_{I,t-1}$ = the lagged of the firm's total assets in year t;

$\Delta Revenue_{I,t}$ = change in firm's annual revenue scaled by the lag of total assets;

$\Delta PrPIEq_{i,t}$ = represents firm property, plant, and equipment scaled by the lag of total assets

$\varepsilon_{I,t}$ = the error term.

These estimates yield firm- and year-specific residuals, which form the basis for the earnings quality metric, $Earning\ quality_{j,t+4}$ equal to the rolling five-year standard deviation of firm j's estimated residuals over years t to $t + 4$. Importantly, lagers value of $\sigma(v_{j.t+4})$ characterises poorer earnings quality.

METHODOLOGY

Models Specification

Our study mainly focuses on twofold objectives. We established the association between CEO power dynamics and FREQ in the first stage. To test hypotheses H1a, H1b and H1c, we used the following regression model.

$$FREQ_{it} = \alpha_0 + \beta_1 CEO\ power\ dynamics + \beta_2 corporate\ governance\ control + \beta_3 financial\ control + \beta_4 year\ FE + + \beta_5 industry\ FE + \varepsilon_1 \qquad (2)$$

In Equation 2, the FREQ of firm I in year t is represented by FREQ. There are four CEO power dynamics measures used in the equation. These include CEO-duality, CEO-ownership, CEO-tenure and CEO-political connections. Each measure is hypothesised separately in the hypothesis development section. Corporate governance and financial controls are included in our primary model to

capture control impacts of variables other than variables of concern. Governance controls are comprised of CEO education, audit quality, CEO age, CEO social capital, board size and board independence.

In contrast, financial controls are firm profitability measured by ROA, firm size (log of total assets), leverage (debt to equity ratio), asset growth, market to book value, asset tangibility, and divided measure by dividend pay-out ratio. We also include year and industry-fixed effects for in-depth analysis to capture unobserved heterogeneity. We also used the Hausman specification test for the validity of the fixed effect model. The results show a statistically significant difference between the fixed effect model and the random effect model, implying that fixed effect estimation is appropriate for our panel regression.

Secondly, we explored the constraining role of corporate governance measures for the negative association between CEO power dynamics and FREQ. The inclusion of gender diversity as a variable in our model may cause a classical endogeneity effect, as the appointment of female directors may be affected by other firm-specific factors. These unobserved factors may have impacts on FREQ concurrently. Therefore, we used the two-step Generalised method of moments (GMM) estimation technique to address the endogeneity concern in our model following prior research (Rehman et al., 2020). The literature has highlighted that the estimate of FREQ is heterogeneous to various extents, while it is difficult to observe most variables (Chenhall & Moers, 2007). So far, empirics have tested other factors in diverse contexts and concepts, causing the likelihood of unobserved factors concerns. Though these unobserved factors are not in the scope of research, their absence may create conjectural endogeneity. In the current study, the issue of non-observability and simultaneity might cause severe endogeneity problems (Roberts & Whited, 2013). Following the reference of Petersen (2009), we addressed the matter of endogeneity by applying the GMM method. Petersen (2009) recommended three approaches to address the issue of endogeneity, namely:

1. One-year lag value of main variables (independent variables) of concerns variables (Bellemare et al., 2017);
2. To change the variable approach depending on the research model (Chung, 2010); and
3. The generalised method of moments (Wintoki et al., 2012).

Among the three approaches mentioned above, the GMM method is more relevant since it is robust in confronting the subject of reverse-causality in the main model and hypothetical appropriate to hypothesis analysis in our study. The GMM approach has numerous benefits: in the meantime, it addresses the likely concerns of endogeneity of variables of concerns in the main model. Likewise, it does tackle the unobserved constant heterogeneity developing out of the specific cause of firms that stay over time. Further, two-step GMM techniques also allow the researcher to introduce numbers to the instrument to improve the effectiveness of the model. Therefore, we used the two-step GMM panel as the estimating technique. The following model is used for analysis purposes.

$$\begin{aligned} FREQ_{it} = {} & \alpha_0 + \beta_1 CEO\ power\ dynamics + \beta_2 board\ independence + \\ & \beta_3 gender\ critical\ mass + \beta_4 CEO\ power\ dynamics \times \\ & board\ independence + \beta_5 CEO\ power\ dynamics \times \\ & gender\ critical\ mass + \beta_6 governance\ control + \\ & \beta_7 financial\ control + \beta_8 year\ Fixed\ Effect + \beta_9 industry \\ & Fixed\ Effect + \varepsilon_1 \end{aligned} \tag{3}$$

In Equation 3, CEO power dynamics are measured by their duality role, percentage of shares in the focal firm, tenure, and political connection. The measures are the same as used in Equation 2. Our variables of concern are the interaction terms between CEO power dynamics and corporate governance measures (gender diversity and boar-independence) for their association with FREQ. The interaction terms are used for each measure of CEO power and governance, resulting overall eight interaction terms (four measures of CEO power multiplied by two measures of corporate governance). A year and industry effects are also included in our regression analysis.

Data Selection and Description

For the current study, we faced challenges while finalising data for final analysis. First, there was a significant variation in the number of listed firms on the Egyptian stock market known as "The Egyptian Exchange" from 2000 to 2021. We found consistency in several firms after 2008. After 2011 more disclosure were found in the financial statements of listed firms. Therefore, we started our sample period from 2012 to 2021 to report the latest findings. Second, we included only those firms that remained listed once they were included in our main sample. This resulted in an increasing trend in our sample. Third, only firms that have provided their data on DataStream Thomson Reuters for financial and corporate governance

variables are included. These constraints of sample selection limited the total number of firms included in our main sample.

The overall description of our sample size is provided in Table 1 below. As the number of firms in our sample remained increasing; therefore, our sample was unbalanced panel data. We used firms from the manufacturing sector. The data is extracted from DataStream Thomson Reuters for our variables. To collect CEO-political connection and gender diversity information, we extracted information provided in the published financial report. Notably, the numbers of total observations are also provided in Table 1.

Table 1
Sample description

Year	Overall firms	Financial-firms	Manufacturing-firms
2012	171	17	154
2013	170	18	152
2014	172	18	154
2015	172	17	155
2016	172	17	155
2017	245	18	227
2018	245	20	225
2019	246	20	226
2020	215	20	195
2021	230	20	210
Total firms' year observations			2,038
Less (financial firms' year observation)			(185)
Net observations			**1,853**
Firms' year observations with the non-dual CEO role			1,550
Firms' year observations of the dual CEO role	**(1,853–1,550)**		**303**
Firms' year observations with a non-gender diverse board			**325**
Firms' year observations with gender-diverse board	**(1,853–325)**		**1,528**
Firms' year observations with gender critical mass board (three or above female directors)			**311**

(*Continued on next page*)

Table 1 (*Continued*)

Year	Overall firms	Financial-firms	Manufacturing-firms
Firms' year observations with the non- gender critical mass board (less than three female directors) observations	(1,853–311)		1,542
Firms' year observations with politically connected CEO			**684**
Firms' year observations with non-politically connected CEO	(1,853–684)		**1,169**

In Table 1, first, we presented the firms included in our sample on yearly basis. Then, we describe the firm's year observations. Importantly, only those firms included in our sample size remained listed during the entire period once they are selected in the main sample.

Descriptive Statistics

Sample descriptive statistics are presented in Table 2. We also provided values of the variance inflation factor (VIF) of variables. The mean value of CEO-duality is 0.1531, which indicates that 15.31% of firms have a CEO-duality role. Our sample's overall age of CEOs is 48.976, with a maximum value of 58 and a minimum of 30. Further, CEO ownership has a mean value of 0.2543, indicating ownership held by firm CEOs in sample firms. CEO social capital has a mean value of 0.5431. On average, a CEO has tenure of 4.9801 years in a firm, whereas 16.52% (mean value 0.1652) of CEOs are politically connected. CEO education, board independence, and gender diversity have mean values of 4.7354, 0.1699, and 0.5712, respectively. Among the gender-diverse firms, the mean value of firms with gender critical mass is 0.1201. On average, the number of board members is 13.1540, and sample firms have a 7.6591 frequency of board meetings annually. Among the sample firms, 38.21% (mean value 0.3821) are audited by the top five ranked audited firms in Egypt. Firm size, ROA, and asset growth have mean values of 7.1939, 0.0915 and 0.0721, respectively.

Furthermore, the dividend pay-out ratio of sample firms is 5.35%, and the mean value of the market- to-book value is 2.7651. The mean market-to-book value indicates that a stock is being traded above its par value on the stock market. To test the existence of multicollinearity in our main regression model, we used VIF in line with earlier research (Rezaee & Tuo, 2019). The value of VIF helps us in detecting multicollinearity in the model. It is better to see multicollinearity. It provides collinearity among group variables; a correlation matrix only describes

the correlation between two variables (Rehman et al., 2020). Table 2 also reports the value of VIF for each variable and the presented values to indicate that there is no issue of multicollinearity among variables as the value is below the described maximum range of 9.

Table 2
Sample descriptive statistics and VIF

Variable	Mean	Maximum	Minimum	S. D.	VIF
CEO-duality	0.1531	1.0000	0.0000	0.3182	2.1851
CEO-ownership	0.2543	0.9905	0.0414	0.2704	2.1111
CEO age	48.976	58.000	30.000	0.6422	2.3570
CEO social capital	0.5431	1.0000	0.0000	0.1099	1.6771
CEO-tenure	4.9801	20.5961	2.1313	0.2114	1.8989
CEO-political connection	0.1652	1.0000	0.0000	0.2467	1.8910
CEO-education	4.7354	5.3377	3.1202	0.2859	2.1541
Board-independence	0.1699	0.6747	0.1047	0.3509	2.7885
Gender-diversity	0.5712	1.0000	0.0000	0.7854	1.9901
Gender critical mass	0.1201	1.0000	0.0000	0.2768	2.0321
Board-size	13.1540	27.7033	8.1807	0.1833	2.5943
Board-meeting	7.6591	15.1334	5.3333	0.2215	1.9788
Audit quality	0.3821	1.0000	0.0000	0.3221	1.7456
ROA (%)	0.0915	0.7445	–0.0851	0.2001	1.7095
Firm size	7.1939	14.5001	5.8563	0.2365	2.9571
Assets growth (%)	0.0721	0.2451	–0.0154	0.0921	2.2971
Market-to-book ratio (%)	2.7651	6.1537	0.3152	0.2172	1.0991
Dividend payout ratio (%)	0.0535	0.1975	0.0000	0.0946	0.8001

Notes: % represents the variable included in the percentage. VIF are presented and the values indicate that there is no issue of collinearity. Therefore, we did not present a correlation matrix value.

EMPIRICAL FINDINGS

CEO's Power Dynamics and FREQ (Hypotheses 1a to 1d)

We presented the main regression result of model two concerning the association between CEO power dynamics and firms' performance in Table 3. Our findings show that CEO-duality has a negative and statistically coefficient value indicating that firms with CEO duality role report poor FREQ in Egypt (β = –0.0811 and $p < 0.10$). The negative association between CEO-duality and FREQ is in line with our supposition that CEO with a dual role enjoys more influential power over the

corporate board and controls the decision-making process (Dechow et al., 2010; Nasr & Ntim, 2018). At the same time, their duality role also empowers them to exercise their discretion, thus, allowing them to involve in activities that reduce the ultimate quality of earnings (Nasr & Ntim, 2018; Ozili, 2016). The negative role of CEO-duality decreased over the years (Hemdan et al., 2021) may be corporate solid governance code implications in Egypt. In this way, they can guard the decision-making process either to shade their poor performance or to signal to the market their ability through unethical practices (earnings manipulation). Therefore, the view is strongly supported as we stated that the CEO-duality role leads to poor monitoring and weakens the effect of board independence (Nasr & Ntim, 2018). Our H1a is strongly supported, which signifies that CEO-duality is negatively associated with FREQ in Egypt.

Second, we tested the role of CEO ownership in measuring FREQ in Egypt. We found that CEO ownership is a negative but low level of significant determinants of FREQ in Egypt (β = –0.0402 and $p < 0.10$). Stock ownership allows him to appoint directors of their liking; therefore, the power to appoint new directors enables them to construct a compliance board that often does not oppose their decisions (Paiva et al., 2016). Ownership also allows him to fire directors who frequently monitor and criticise their abuse of power (Dechow et al., 2010). In this way, he exercises dominance over the corporate board by diluting the effect of the board-independence (Sarun, 2016). Therefore, our maxim is strongly supported, which states that the CEO acquires influence over the corporate board through their stock ownership. The result allows him to seek support even in unethical practices that reduce the quality of FREQ. Hence, our H2b is supported by postulating the negative relationship between CEO ownership and FREQ in Egypt.

Third, we examined the role of CEO tenure in determining FREQ in Egypt. CEO tenure is used to capture the CEO power dynamic. We found that CEO tenure negatively and statistically significantly impacted FREQ (β = –0.1568 and $p < 0.01$). In line with our view that the CEO gains powers through longer tenure, and the power enables him to influence the board's decision-making process and seek support for his entrenched behaviour (Lin & Hwang, 2010; Zhang, 2009: Hemdan et al., 2021). The negative role of CEO tenure has gotten stronger over the last five years compared to the findings of Hemdan et al. (2021). Likewise, their longer tenure also helps them to develop relationships with outside directors through their hiring and firing processes (Aishah Hashim & Devi, 2008; Mitra et al., 2020).

Sometimes, a CEO with longer tenure enables him to get himself attached to a specific group of stakeholders to shield his position in his focal firm (Lin & Hwang, 2010; Zhang, 2009). As a result, the oversight role of board independence diminishes, and the CEO gets approval for their desired decisions. Their likelihood of being involved in earning manipulation is augmented, reducing the quality of earnings significantly (Mitra et al., 2020). Our findings also align with the view that a CEO's longer tenure negatively impacts FREQ, thus, supporting our H1c in the Egyptian context.

Fourth, we also explored the impact of CEO political connections on FREQ in Egypt. Our findings depicted that a politically connected CEO is negatively associated with FREQ in the Egyptian context (β = –0.1687 and $p < 0.01$). In emerging economies, a CEO gains vital power through their political connections as these economies lack a sound legal system for shareholders' protection rights (Aishah Hashim & Devi, 2008). At the same time, poor management and involvement in mega corruption scandals disrupt the justice system, and the likelihood of involvement in unethical practices is more pronounced in firms with political roots (Aishah Hashim & Devi, 2008; Md Salleh, 2009). Similarly, these political connections protect firms' CEOs from accountability; thereby increasing the probability of their involvement in poor earnings quality (Aishah Hashim & Devi, 2008; Ding et al., 2018; Gaio & Pinto, 2018; Hashmi et al., 2018; Md Salleh, 2009). In conclusion, our findings support H1d, which states that a politically connected CEO is more likely to involve in earnings manipulation, thus, reducing the quality of FREQ in Egypt.

We also include two different sets of firms' specific control factors in our regression model. These include governance and financial controls. Governance control factors comprise of CEO-education, CEO age, CEO education, the firm board size, frequency of board meetings, and firm audit quality. Higher CEO education leads to better FREQ in Egypt (β = 0.0814 and $p < 0.10$). This relation is in line with earlier studies (Chen et al., 2016; Ham et al., 2018; Hoang et al., 2017). We also found a positive and significant impact of social capital on FREQ. Further, our findings also show positive and significant effects of frequency of board size and firm's audit quality on FREQ in Egypt (board-meeting coefficient estimates (β) = 0.1390 and $p < 0.05$; audit quality coefficient estimates (β) = 0.2885, $p < 0.05$: refer to Table 3). The association of these variables is in line with earlier empirical findings of (Khalil & Ozkan, 2016). In contrast, we found no support for a significant association between CEO age, the board size, and FREQ in the Egyptian context. Among the firm's specific financial factors, we found positive impacts of ROA and market-to-book value on FREQ in Egypt (ROA β = 0.1380

and $p < 0.05$; market-to-book value $\beta = 0.0657$ and $p < 0.10$). Asset tangibility also has a positive and statistically significant coefficient estimate. This support the view that better-performing firms (financial and market performances) are more likely to be ethical (Rezaee & Tuo, 2019). This shows that firms with positive ROA and higher market-to-book value are more likely to have higher FREQ in Egypt (Rezaee & Tuo, 2019; Yeh et al., 2014). In contrast, we find negative impacts of firm assets growth ($\beta = -0.0875$ and $p < 0.05$) and financial leverage ($\beta = -0.0919$ and $p < 0.05$) on FREQ ($\beta = -0.078$ and $p < 0.05$). Therefore, firms in the growth stage and with higher financial leverage often report poor earnings quality. Lastly, year and industry controls are also included and are reported in Table 3.

Table 3
Relation between CEO-power and FREQ

Dependent variable = FREQ			
Variable	β-value	Std. error	t-statistics
The variable that measures the CEO's power dynamics			
CEO-duality	–0.0811*	0.0487	–1.6653
CEO-ownership	–0.0402*	0.0223	–1.8027
CEO-tenure	–0.1568***	0.0316	–4.9620
CEO-political connection	–0.1687***	0.0481	–3.5073
Governance control factor			
CEO-education	0.0814*	0.0471	1.7282
CEO age	0.0041	0.0028	1.4643
CEO social capital	0.0415*	0.0222	1.8694
Board-size	0.1390**	0.0599	2.3205
Board-meeting	0.1562	0.1183	1.3204
Audit quality	0.2885**	0.1158	2.4914
Control factors			
ROA	0.1380**	0.0590	2.3390
Firm size (log)	0.0097**	0.0048	2.0208
Assets growth	–0.0875**	0.0431	–2.0302
Financial leverage	–0.0919**	0.0325	–2.8277
Market-to-book ratio	0.0657*	0.0402	1.6339
Dividend payout ratio	0.0723	0.0645	1.1209
Asset tangibility	0.1012**	0.0504	2.0063
Constant	–0.1124**		
Year effect	Included		

(*Continued on next page*)

Table 3 (*Continued*)

Dependent variable = FREQ			
Variable	*β*-value	Std. error	*t*-statistics
The variable that measures the CEO's power dynamics			
Industry effect	Included		
F-test	5.427***		
R^2	0.5210		
Hausman test	0.008***		

Notes: In this table, we are mainly concerned with the association between CEO power dynamics and FREQ. In our regression analysis we included firm year and industry effects. ***, ** and * are significant 1%, 5% and 10%, respectively.

Board Vigilance and Earnings Quality

In Model 3, we explored corporate governance measures' role in constraining CEO power dynamics' negative impacts on FREQ in the Egyptian context. The results are reported in Table 4. Importantly, we regressed separate regression for each interaction term to avoid complexity in our primary model. We run four different regressions, and the findings of each regression are reported in the separate column below.

Before applying the GMM estimator, we tested the validity of our econometric model. First, we performed Arellano-Bond tests (AR 1) and Arellano-Bond tests (AR 2). The null hypothesis states that there is no second-order serial correlation in disturbances, and in case of its rejection, our econometric model is valid. However, the first-order serial correlation is expected due to the inclusion of lagged dependent term (FREQ (*t*–1)). As per the results reported in Table 4, the *p*-value of AR 2 is far above the 10% significance level ($p = 0.455$, refer to column 1 in Table 4), suggesting a solid rejection of second-order correlation in our main model. However, the value of AR 1 is significant, thus, rejecting our null hypothesis. Secondly, we used the Hansen test to validate the lagged variables used as instruments in our primary model. Hansen's test nullifies that our instrumental variables are "exogenous". As per the results reported in Table 4, we found a *p*-value of Hansen above the 10% significance level. The insignificance of Hansen shows that selection of our instrumental variables is valid. These tests confirm that the GMM estimator is most appropriate for our analyses. Thirdly, we found that the numbers of instruments are less than the number of groups. In the current study, we have "16" instrument groups, and it can be concluded that the study also encounters the state of instruments that must be less than groups (Roodman, 2009). Fourthly, we estimated the Hansen J-test statistics to test the

validity of the instruments. The value of the Hansen test is "0.415", and it is within the range of the tell-tale sign "0.25" to "1" (Roodman, 2009). Finally, we applied the "Wald test" of the joint significance of estimates, and its *z*-statistics "241.08" displays that the estimations are significantly different from zero.

Before explaining the interaction terms, the results of other main variables (other than control) are explained. As far as the association between CEO power dynamics and FREQ is concerned, we find identical coefficients and levels of significance results, as reported in Table 3 (Model 2). To avoid repetition, we only explained the impacts of governance variables (board independence and gender diversity) on FREQ. The findings show that board independence is positive and statistically significant ($\beta = 0.04182$ and $p < 0.10$: refer to column 1 in Table 4). The coefficient estimates remained identical throughout our four regressions. This implies that firms with higher board independence are more likely to report higher earnings quality. However, we fail to find any significant association between gender dummy and FREQ. For further clarity, we also included two other measures of gender diversity (gender_2 and gender critical mass). Again, we did not find any support for the significant role of board gender diversity in determining FREQ (for gender_2). Notably, gender critical mass ensures better FREQ in Egypt ($p < 0.01$: refer to Columns 1–4). This implies that females do have a significant impact on FREQ only once their presence reaches the critical mass (three or more females on the corporate board), in line with earlier empirical findings (Dah & Jizi, 2016; Elkalla, 2017; Hoang et al., 2017; Lanis et al., 2017; Latif, 2018; Dobija et al., 2022). These findings also support the maxim of tokenism in the Egyptian context in line with empirical findings (Hoang et al., 2017; Latif, 2018).

In Table 4, the interaction terms are the variables of concern for our study. We regressed two interaction terms in each model, and the results are presented in columns 1 to 4. In column 1, we introduced the findings of interaction terms between CEO-duality and board vigilance measures (board-independence and gender critical mass). The coefficient estimate of the interaction term between CEO-duality and board independence is negative and statistically significant ($\beta = -0.12055$ and $p < 0.05$). This shows that board independence neither substitutes nor constrains the negative impact of CEO duality on FREQ, in line with earlier empirical findings (Abad et al., 2018; Amin et al., 2019; Perafán Peña, 2018). Likewise, the coefficient estimate of the interaction term between CEO-duality and gender critical mass is also positive and statistically significant ($\beta = 0.23681$ and $p < 0.01$: refer to column 1 in Table 4). The positive and effective coefficient estimate of the interaction term indicates that the presence of gender critical mass significantly substitutes the negative impact of CEO-duality on FREQ in Egypt.

In column 2, we replaced CEO-duality with CEO-tenure in the interaction terms for board vigilance measures. The results show that the interaction term between CEO tenure and board-independence is negative and highly significant (β = –0.437 and $p < 0.05$; refer to column 2 in Table 4). The finding supports the view that board independence substitutes the negative relation between CEO tenure and FREQ. However, board independence weakens the negative association between CEO tenure and FREQ both in terms of magnitude and level of significance. It dilutes the significant impact of CEO tenure as the interaction term has an insignificant association with FREQ (Zhang, 2009). Therefore, we can use board independence as a constraining tool for the negative impact of CEO tenure on FREQ but also as a substitution mechanism (Aishah Hashim & Devi, 2008). Furthermore, the coefficient estimate of the interaction term between CEO-tenure and gender critical mass is positive and statistically significant (β = 0.231 and $p < 0.01$; refer to column 2 in Table 4). The results show that gender critical mass substitutes for the negative and statistically significant impact of CEO tenure on FREQ, supporting earlier empirical findings (Misangyi & Acharya, 2014; Oh et al., 2018; Hemdan et al., 2021).

In column 3, CEO ownership is used to test its interaction role with both measures of board vigilance for their negative impacts on FREQ. The findings depict that the coefficient estimate of the interaction term between CEO-ownership and board independence is statistically insignificant and negative (refer to column 3 in Table 4). Like the interaction effect of CEO tenure and board independence, board independence also dilutes the negative impact of CEO ownership on FREQ (Abad et al., 2018; An, 2017; Ozili, 2016). In contrast, the coefficient estimate of the interaction term between CEO-ownership and gender critical mass is positive and statistically signifying. These findings imply that the presence of gender critical mass ensures a substitution role for the negative impact of CEO-ownership on FREQ (β = 0.0977 and $p < 0.01$; refer to column 3 in Table 4).

Table 4
Association between board vigilance, CEO's power dynamics and FREQ

	Column 1		Column 2		Column 3		Column 4	
Variable	*β*-value	Std. error	*β*-value	Std. error	*β*-value	Std. error	*β*-value	Std. error
Variables that measure board-vigilance								
Board-independence	0.04182*	0.0198	0.04581*	0.0101	0.04266*	0.0201	0.04202*	0.1901
Gender-dummy (*t*–1)	–0.00995	0.0093	–0.00995	0.0093	–0.0094	0.0086	–0.0091	0.0949
Gender_2 (*t*–1)	0.01222	0.0096	0.01222	0.0096	0.01222	0.0096	0.01222	0.0949
Gender critical mass (*t*–1)	0.25188***	0.0871	0.2630***	0.0911	0.2784***	0.0922	0.25115***	0.7991
Variables that measure CEO's power dynamics								
CEO-duality	–0.10988*	0.0510	–0.1210*	0.0512	–0.10911*	0.0592	–0.1094**	0.4901
CEO-tenure	–0.09987***	0.0481	–0.09989***	0.0521	–0.0997***	0.0480	–0.0998***	0.4690
CEO-ownership	–0.06921*	0.0399	–0.06921*	0.0421	–0.06885*	0.0389	–0.06866*	0.3701
CEO-political connections	–0.16664***	0.0459	–0.16654***	0.0651	–0.1558***	0.0471	–0.1668***	0.4678
Interaction terms								
CEO-duality * Board-independence	–0.12055**	0.0661						
CEO-duality * Gender critical mass	0.23681***	0.0394						
CEO-tenure * Board-independence			–0.437**	0.0062				

(*Continued on next page*)

Table 4 (*Continued*)

	Column 1		Column 2		Column 3		Column 4	
Variable	*β*-value	Std. error	*β*-value	Std. error	*β*-value	Std. error	*β*-value	Std. error
Interaction terms								
CEO-tenure * Gender critical mass			0.231***	0.0689				
CEO-ownership * Gender critical mass					0.0977	0.0433		
CEO-political connections * Board-independence							–0.168***	0.0396
Control factors	Included		Included		Included		Included	
Year plus industry dummies	Yes		Yes		Yes		Yes	
F-statistics (Probability > *F*)	632.21*** ($p < 0.01$)		766.48***($p < 0.01$)		698.11*** ($p < 0.01$)		726.27*** ($p < 0.01$)	
AR 1 (z, *p*-value)	–2.02*** ($p < 0.01$)		–2.07*** ($p < 0.01$)		–1.83*** ($p < 0.01$)		–2.37*** ($p < 0.01$)	
AR 2 (z, *p*-value)	–1.395 ($p = 0.455$)		–0.971 ($p = 0.771$)		–1.164 ($p = 0.428$)		–1.134 ($p = 0.293$)	
Sargan test (Chi^2, *p*-value)	774.24***($p < 0.01$)		882.46***($p < 0.01$)		791.64*** ($p < 0.01$)		768.25***($p < 0.01$)	
Wu-Hausman test *p*-value	241.08*** ($p < 0.01$)		573.16*** ($p < 0.01$)		423.19*** ($p < 0.01$)		299.72*** ($p < 0.01$)	
Hansen test (Chi^2, *p*-value)	124.17 ($p = 0.209$)		159.11 ($p = 0.291$)		144.59 ($p = 0.199$)		153.44 ($p = 0.229$)	

Note: Different models are used for each interaction term. Year, industry dummies, and control factors included. ***, ** and * are 1%, 5% and 10%, respectively.

Lastly, in column 4, we introduced interaction terms between CEO-political connections and measures of board vigilance to test the constraining or substitution role of governance measures. The coefficient estimate of the interaction term between CEO-political connections and board independence is negative and significant (β = –0.168 and $p < 0.01$; refer to column 4 in Table 4). It suggests that board independence neither substitutes nor constrains the negative impact of CEO- political connection on FREQ. In contrast, the coefficient estimate of the interaction term between CEO-political connections and gender critical mass is positive and statistically significant ($\beta = 0.198$ and $p < 0.01$; refer to column 4 in Table 4). This is in line with earlier empirical findings (Misangyi & Acharya, 2014; Oh et al., 2018). The results support the substitution role of gender critical mass in the Egyptian context. In our models, we include governance and financial control; however, we did not present their findings for brevity purposes as we mainly focus on interaction terms between CEO power dynamics and board vigilance.

DISCUSSION OF MAIN FINDINGS

This study is performed in two stages. We established the association between CEO power dynamics and FREQ in the first stage. We used four different CEO power dynamics constructs: duality role, tenure in focal firms as CEO, stock ownership, and CEO-political connections. Our findings show that CEO power dynamics are negatively associated with FREQ in the Egyptian context. The negative impacts of CEO power dynamics show that a powerful CEO is involved in entrenched behaviour and manipulates the firm's earnings, eventually negatively impacting FREQ, particularly in the last five years. CEO involvement in financial statements manipulation is a type of accounting deception that remains one of Egypt's most critical on-going problems. Once a CEO obtains power through these power hubs (duality, ownership, tenure, and political connections), they exercise discretion over the board in terms of influence on policies and decisions, thus, using their power to safeguard their position by manipulating firms' earnings. Once they exercise discretionary control over the corporate board, they behave more in an entrenched manner that affects FREQ negatively.

Furthermore, in economies like Egypt, the shareholders' protection rights are also on the weaker side, and higher information asymmetry exists simultaneously. The poor market structure also allows them to behave in an entrenched manner that diminishes FREQ quality. If we compare these attributes, a politically connected CEO has more pronounced negative impacts on FREQ both in terms of coefficient estimates and level of significance, particularly in the last five years. Higher political involvement in Egypt may be one of the causes that

empower CEO to manage firms' earnings either to guard their position in focal firms or to deliver benefits to a specific shareholder of any class of stakeholders. This is in line with the view that weaker legal structures and shareholders' protection empowers CEOs to behave in entrenched manners. However, compared to other power dynamics, we found a weak association between CEO ownership and FREQ in terms of coefficient and level of significance ($p < 0.10$) as compared to CEO tenure and CEO-political connections. In general, we found that CEO power with tenure and political connections negatively impacts FREQ in the Egyptian context.

In the second stage, we explored governance mechanisms' constraining or substitution role (board independence and gender critical mass) for the negative association between CEO power dynamics and FREQ. We found that board independence weakens the negative impacts of CEO tenure and CEO ownership on FREQ, as the coefficient estimates of both interactions are negative and statistically significant. Therefore, increased board independence ensures that CEO is not involved in managing earnings even if he has a longer tenure in the firm at their current position or they have substantial stock ownership. At the same time, we find the ineffectiveness of board independence in cases where a CEO exercises duality or is politically connected. In this context, board independence ultimately losses its monitoring role and becomes ineffective in firms where CEO-duality of political connection is pronounced.

On the other hand, the gender critical mass remains effective in all four interactions and performs a substitution role despite changes in power sources. These findings strongly support the view that the presence of gender critical mass improves board efficiency due to the effectiveness of their position and solid participation in constraining misuse of power behaviour. Evidence shows that gender diversity improves the board's monitoring role and benefits a firm's stakeholders, specifically in terms of FREQ, which is strongly supported in the Egyptian context.

ROBUSTNESS OF MAIN FINDINGS

Modified Jones Model (1995)

In literature, the Jones (1991) model has received much criticism, regarding its explanatory power (Dechow et al., 2005). Xie (2001) stated that the residuals from the Jones model often show lower predictive ability for further earnings than the non-discretionary accrual. Similarly, the residuals may positively correlate with total accruals (Dechow et al., 2005). The correlations can be a crucial concern

while using residuals to test the determinants of earnings quality, in which performance is a critical potential omitted correlated variable. Furthermore, Dechow et al. (2009) show that discretionary accruals are less potent than total accruals at detecting earnings management (Dechow et al., 2010). Dechow et al. (1995) modify the Jones model to adjust for growth in credit sales.

For robustness purpose, we used following modified Jones Model as introduced by Dechow et al. (1995).

$$TACC_{I,t} = \alpha_0 + \beta_1(\Delta Revenue - \Delta Receivable_{i,t}) + \beta_2 \Delta PrPlEq_{I,t} + \varepsilon_{I,t}$$

After determining FREQ from modified Jones model (1995), we have re-run the primary regression to estimate our findings of concern variables. In re-estimation, we found a minor variation in coefficient estimates only. However, the direction of the relationship between variables of concern and dependent variable remained unchanged. Furthermore, the significance level of the main variables of the problem also remained unchanged. The results are reported in Table 5. The findings of the Jones model are robust through the modified Jones model (refer to Table 5). Importantly, we also re-run the regression for moderation effect. The results of main variables are similar to findings reported in Model 4. For brevity purpose, we did not report the findings.

Table 5
Relation between CEO-power and FREQ

Dependent variable = FREQ	β-value	Std. error	t-statistics	β-value
The variable that measures the CEO's power dynamics				
CEO-duality	–0.0811*	–0.08301	0.047902	–1.73288
CEO-ownership	–0.0402*	–0.04115	0.021935	–1.87585
CEO-tenure	–0.1568***	–0.16049	0.074185	–2.1634
CEO-political connection	–0.1687***	–0.17267	0.08362	–2.06496
Governance control factor				
CEO-education	0.0814*	0.083316	0.046329	1.798374
CEO age	0.0041	0.004197	0.002948	1.42371
CEO social capital	0.0415*	0.042477	0.021836	1.945233
Board-size	0.1390**	0.142272	0.058919	2.414708
Board-meeting	0.1562	0.159877	0.116363	1.373956
Audit quality	0.2885**	0.295292	0.113904	2.592471
Control factors				

(*Continued on next page*)

Table 5 (*Continued*)

Dependent variable = FREQ	β-value	Std. error	*t*-statistics	β-value
ROA	0.1380**	0.141249	0.058034	2.433905
Firm size (log)	0.0097**	0.009928	0.004721	2.102844
Assets growth	–0.0875**	–0.08956	0.042394	–2.11255
Financial leverage	–0.0919**	–0.09406	0.031968	–2.94245
Market-to-book ratio	0.0657*	0.067247	0.039551	1.700231
Dividend payout ratio	0.0723	0.074002	0.063444	1.166421
Asset tangibility	0.1012**	0.103582	0.049614	2.087767
Constant	–0.0424			
Year effect	Included			
Industry effect	Included			
F-test	2.028***			
R^2	0.496			
Hausman test	0.013***			

Note: The results are reported based on the modified Jones Model (1995). ***, ** and * are 1%, 5% and 10%, respectively

Difference-in-different (DID) approach

The difference-in-different (DID) approach is used in econometrics to support and justify the study's main findings. It is a quasi-experimental strategy used to use longitudinal data from treatment and control groups to achieve a suitable counterfactual to evaluate a causal effect (Rezaee & Tuo, 2019). In our construction of CEO power dynamics, we used four different measures that determine the CEO's power over the corporate board; thus, our main analysis' probability of shielding is likely. There is a likelihood that firms having a CEO with a duality role may be politically connected, have longer tenure, or have substantial stock ownership. This mixture exposes our unit of analysis to severe shielding effects. We used four models to address the concern (see Table 6). The *t*-test is used to find any significant difference in the main variable, and the results are reported in Table 6.

As per findings reported in Panel A (refer to Table 6), we find significantly lower FREQ, frequency of board meetings, and audit quality. This implies that firms with a CEO-duality role are more likely to report poor FREQ, the frequency of board meetings is also significantly lower, and these firms are less likely to be audited by a top-ranked audit firm in Egypt. This lower FREQ supports our

main finding, concluding the negative association between CEO-duality and FREQ. We used median split criteria for higher and lower CEO ownership in panel B. The firms where CEO's stock ownership is above the median value are categorised as higher CEO-ownership firms and vice versa. Then we applied a t-test of difference to explore any significant difference in FREQ of both group firms. The findings depicted that firms with higher CEO ownership have lower FREQ and vice versa. At the same time, we found poor audit quality in firms where CEO-stock ownership is significantly higher. The same criterion of the median split is used to construct Panel C. Our findings showed that firms with higher CEO tenure are more likely to have poor earnings quality; these firms are not audited by top audited firms in Egypt and have a lower market-to-book value. Lastly, Panel D is constructed based on a dummy variable equal to 1 if a CEO is politically connected; otherwise, 0. Findings show that firms with politically connected CEOs report poor FREQ, are not audited by top audited firms, and their market-to-book value is comparatively lower in Egypt.

Overall, we found comparatively poor FREQ in firms where CEOs have influential powers, and these firms are also not audited by the top 5. Poor auditor quality also contributes to FREQ in Egypt because we found significantly lower audit quality in our four panels. Based on these findings, we recommend that audits from top firms may restrict CEO negative involvement in earnings quality. These findings support our main results that show the negative impacts of CEO power dynamics on FREQ.

Propensity Score Matching (PSM) Approach

The study also used propensity score matching (PSM) to support the main findings based on the role of gender critical mass as a constraining or substitution role. PSM is a quasi-experimental method that allows us to use statistical techniques through which we constructed an artificial control group by having a match between a treated and non-treated unit of the same group with related features. As we explored the impact of gender diversity on FREQ, there is a likelihood that female directors may join firms that have higher growth, profitable operation, and are more prominent (Zalata et al., 2019). The nearest neighbourhood approach was used to support our main findings. We matched the two clusters of firms; gender critical mass and non-gender critical mass on the board. (Nekhili et al., 2018; Zalata et al., 2019).

Table 6
Differences in CEO power dynamics (mean difference t-test)

		Panel A			Panel B	
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Variable	Firms with CEO-duality	Firms with CEO non-duality	Difference (column 1–2)	CEO-ownership> mean value	CEO-ownership < mean value	Difference (column 4–5)
FREQ	0.0699	0.1701	–0.1002**	0.0799	0.1863	–0.1064***
Board meeting	0.0429	0.0644	–0.0215**	0.0449	0.0689	–0.0240
Audit quality	0.0968	0.2933	–0.1965**	0.0999	0.3188	–0.2189**
ROA	0.1087	0.1174	–0.0087	0.1098	0.1227	–0.0129
Market-to-book ratio	1.2293	1.2875	–0.0582	1.2819	1.3749	–0.0930
		Panel C			Panel D	
Variable	Column 7	Column 8	Column 9	Column 10	Column 11	Column 12
	CEO-tenure> mean value	CEO-tenure < mean value	Difference (column 7–8)	CEO-political connection	CEO-political connection	Difference (column 11–12)
FREQ	0.0785	0.1953	–0.1168**	0.0787	0.2096	–0.1309***
Board meeting frequency	0.0467	0.0729	–0.0262	0.0489	0.0781	–0.0292
Audit quality	0.1042	0.3312	–0.2270***	0.1094	0.3511	–0.2417***
ROA	0.1241	0.1295	–0.0054	0.1193	0.1385	–0.0192
Market-to-book ratio	1.3252	1.4598	–0.1346***	1.3801	1.5534	–0.1733***

Notes: Four different panels are constructed to avoid any mixing in CEO dynamics measures. We constructed panels A and panel D based on dummy variables criteria. To construct panels B and C, we used mean split criteria. Mean values and t-tests of differences in mean values are presented. For clarity purposes, we only include the main variable of interest. ** and *** are significant at 5% and 1%, respectively.

For matching purposes, we used ROA, the firm board size, and market-to-book value. In our overall sample, we have 1,683 firms' year's observations, and they are matched with firms having identical ROA, firm size, and market-to-book value. Furthermore, only those firms compared that have at least three gender critical mass on their board, and the technique allowed us to analyse our main findings typically. This technique also reduces our sample significantly. The findings are reported in Table 7. Generally, our results from the propensity-matched selection are similar to the main conclusions reported in Tables 3 and 4 (Model 2 and Model 3). CEO power dynamics negatively impact FREQ in the propensity-matched sample in line with our earlier findings reported in Table 3. Likewise, board independence and gender diversity variables also have similar impacts, as reported in Table 4.

Furthermore, we found that interaction terms between CEO power dynamics and gender critical mass have positive and significant coefficient estimates. However, we did find minor variations in coefficient estimates of the independent variable reported in Table 7. Still, these variations are negligible because the significance level remained the same, as noted earlier in the main findings. In conclusion, our results are robust to the main findings that depicted that gender critical mass substitutes for the negative impacts of CEO power dynamics on FREQ in Egypt, and selection biases of the sample do not run these findings.

Table 7
Results of propensity matching score based on gender critical mass firms

	Column 1	Column 2	Column 3	Column 4
Variables that measure board-vigilance	*β*-value	*β*-value	*β*-value	*β*-value
Board-independence	0.05101*	0.03899*	0.03112*	0.03182*
Gender-dummy (*t*–1)	–0.00509	–0.00478	–0.01096	–0.00891
Gender-2 (*t*–1)	0.01574	0.01601	0.01732	0.01975
Gender critical mass (*t*–1)	0.25788***	0.21304***	0.23794***	0.21222
Variables that measure CEO power dynamics				
CEO-duality	–0.16867**	–0.16201**	–0.12104**	–0.18926**
CEO-tenure	–0.12455**	–0.10723**	–0.09821**	–0.10625**
CEO-ownership	–0.09487*	–0.07329*	–0.06925*	–0.09001*
CEO-political connections	–0.17105***	–0.16020***	–0.17847***	–0.16877***

(*Continued on next page*)

Table 7 (*Continued*)

	Column 1	Column 2	Column 3	Column 4
Interaction terms				
CEO-duality × Gender critical mass	0.26577***			
CEO-tenure × Gender critical mass		0.26999***		
CEO-ownership × Gender critical mass			0.31901***	
CEO-political connections × Gender critical mass				0.19001**
Control factors	Included	Included	Included	Included
Year dummy	Included	Included	Included	Included
Industry dummy	Included	Included	Included	Included

Notes: We included control factors in the models; *, ** and *** are significant at 10%, 5%, and 1%, respectively.

CONCLUSION AND RECOMMENDATIONS

The current study is conducted in two stages. In the first stage, we explored the influence of CEO power dynamics (CEO-duality, stock-ownership, tenure, and political connection) on FREQ. Earning quality is the most evident and suitable channel through which a CEO can convey timely information to the market, thus, safeguarding their position or protecting their self-interest. Based on prior empirical evidence, we postulated that a powerful CEO is negatively associated with earnings quality, specifically in an economy where shareholder protection is weaker, and information asymmetry prevails (emerging economy of Egypt). We found strong empirical support for the negative association between CEO power dynamics and FREQ in Egypt. Therefore, our hypotheses are strongly accepted (H1a – H1d). While comparing these power dynamics, we found a more substantial negative influence of CEO-political connection on FREQ (higher coefficient estimates and significance level). This nuanced impact of political relationships may be attributed to the government's increased involvement in the firm's operation, reducing earnings quality significantly.

In the second stage, we examined the constraining or substitution role of two main governance mechanisms (board independence and gender diversity). We proposed that active board monitoring effectively substitutes or constraints the CEO's use of power to manage earnings and reduce FREQ. Among these mechanisms, board independence constrains the negative impact of CEO power

on a firm's earning quality through effective monitoring when a CEO has longer tenure or substantial stock ownership; but fails to constrain or substitute the negative impact in case of CEO-duality or political connections. Therefore, our findings predict that board monitoring is ineffective when a CEO exercises duality or has political connections. Regarding the constraining or substitution role of gender critical mass, we found that the presence of gender critical mass effectively substitutes the negative use of CEO power in managing earnings, thereby improving the FREQ in Egypt. The presence of gender critical mass ensures higher earnings quality in Egypt. However, the insignificant impact of gender dummy and gender_2 on FREQ backs the notion of female tokenism in Egypt.

Overall, our findings suggest that CEO power is negatively associated with FREQ. Furthermore, board independence can be constrained only when the CEO gains powers through longer tenure or higher stock ownership. In addition, board gender critical mass substitutes the negative impacts of CEO power dynamics and augments the credibility and reliability of earnings. Therefore, our study adds to the understanding of the negative consequences of CEO power dynamics on FREQ. Further, it provides timely empirical evidence concerning the constraining or substitution role of two governance mechanisms.

Our research offers recommendations for future research. First, the sample we used in the study is from Egypt (an emerging economy). The relation between CEO power dynamics and FREQ and the impacts could be diverse in other economies. Second, we believe that role of the governance variable may vary across economies. It will be interesting to explore the constraining role of governance mechanisms in economies where shareholders protection is comparatively more robust or governance mechanism is more effective. Third, it would be interesting to explore our models in the context of financial firms, as they have better regulation and are monitored by a regulatory authority.

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APPENDIX

Appendix A

Variables and their definitions

Variables used	Measurement of variables
CEO-duality	Measured as a dummy variable equal to 1 if the CEO chairs the board, otherwise 0
CEO-ownership	Percentage of shares held by the CEO
CEO-tenure	Focal firm serving years
CEO-age	Log of the age of CEO
CEO social capital	Dummy variable equal to 1 if a CEO is a member of any social welfare organisation, society, trust, etc., otherwise 0.
Political connections	Dummy variable equal to 1 if CEO is politically connected, otherwise 0
CEO-education	CEO education in four categories (bachelor, Master, postdoc, and professional)
Board independence	The ratio of independent directors to total directors
Gender critical mass	Dummy variable equal to 1 if firms have gender critical mass, otherwise 0
Board size	Total directors on corporate board
Board meeting	Total board meeting in a year
Audit quality	Dummy variable that equals to 1 if a firm is audited by top 5, otherwise 0
ROA	Return of assets mentioned in financial statement
Firm size	Log of total assets
Assets growth	Current assets minus last year assets scaled by last year assets
Market-to-book ratio	Market to book value mentioned in financial report
Dividend payout ratio	Dividend payout ratio mentioned in financial report
Asset tangibility	Tangible assets scaled by total assets