Board gender diversity, CEO power and LGBTQ-supportive corporate policies

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ABSTRACT

This study investigates the effect of two key corporate governance mechanisms, board gender diversity, chief executive officer (CEO) power, and their interactions on firms' implementation of lesbian, gay, bisexual, transgender, and queer (LGBTQ)-supportive policies. Using 348 Fortune 500 firms from 2003–2023, our study reveals that the presence of three or more female directors on the board is positively associated with LGBTQ-supportive policies. We also find that CEO formal (informal) power has a positive (negative) impact on LGBTQ-supportive policies. Lastly, we document that whereas the effects of the interactions of CEO formal power with both the gender diversity measures are positive, the interactions between CEO informal power and gender diversity measures: critical mass and token are positive and negative respectively. Overall, the results suggest that CEO power could act as a double-edged sword, and a high female director representation reduces the negative effect of CEO informal power on LGBTQ-supportive policy implementations.

1. Introduction

Over the past few years there has been a shift in corporate strategies towards recognising and adopting Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ)-supportive policies in the workplace like same-sex domestic partner benefits and clear anti-discrimination policies in the workplace based on sexual orientation. For instance, in August 2021, the Securities and Exchange Commission (SEC) approved the proposal of NASDAQ to implement new listing rules where at least one board member identifies as LGBTQ. Another reason for the shift is the recent court verdicts on LGBTQ-supportive policies in workplace, which led to a rise in LGBTQ employees in firms. Thus, in June 2020, the US Supreme Court has pronounced the Civil Rights Act of 1964, that safeguards LGBTQ employees from workplace discrimination (Liptak, 2020). The above is against the backdrop that there has been reports of regular discrimination of LGBTQ employees at work. For instance, Center for American Progress in their report in 2014 illustrates that roughly 13 to 47 percent of LGBTQ workers have been discriminated at work.

In light of the above evidence, this study attempts to examine the role of corporate governance mechanisms like board gender diversity and CEO power to promote LGBTQ-supportive policies at work. To date, empirical support on the impact of CEO power over corporate LGBTQ-supportive policies has been limited. So far, we have identified one study by Brodmann et al. (2021), and they report that powerful CEOs have an adverse effect on firm LGBTQ policies. In relation to board gender diversity, studies find that board gender

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diversity increases firms' adoption of LGBTQ policies (Steiger and Henry, 2020 and Cook and Glass, 2016). These findings suggest that board gender diversity could improve firms' adoption of LGBTQ-supportive employee policies, while powerful CEOs might hinder the adoption of such strategies. However, whether the interactions between board gender diversity and CEO power affect LGBTQ-supportive employee policies remain unexplored and this study addresses this gap.

To the extent that board gender diversity can improve firms' adoption of LGBTQ-supportive policies, as evidenced by Steiger and Henry (2020) and Cook and Glass (2016), it could be argued that the mere presence of female directors in the boardroom is unlikely to generate substantial LGBTQ-supportive policies as desired by the proponents of stakeholder theory. Indeed, the critical mass theory coined by Kanter (1977a, b) suggests that the presence of only one female director on the board could be considered as a "token". Torchia et al. (2011) and Joecks et al. (2013) examined this critical mass theory and concluded that the presence of three female directors corresponds to the critical mass or "magic number" that could bring gender diversity in the boardroom. Several empirical studies found support for the critical mass theory and have shown that a critical mass of female directors improves firm performance (see Liu et al., 2014; Chijoke-Mgbame et al., 2020; Brahma et al., 2021). Building on these studies and following the evidence of Torchia et al. (2011) and Joecks et al. (2013), we examine whether a critical mass of three or more female directors on corporate boards could lead to firms' implementation of LGBTQ-friendly policies.

CEOs are considered to "set the tone for the entire corporation" (Wheelen and Hunger, 1990, p. 69), and hence, their position constitutes a source of power (Daily and Johnson, 1997). Finkelstein (1992), in his seminal paper has identified four dimensions of CEO power: structural, ownership, expert, and prestige. In recent years, several studies have divided these four dimensions of CEO power into two distinct power bases, which are CEO formal power (structural and ownership power) and CEO informal power (expert and prestige power) (Huang and Gao, 2022; Shui et al., 2022; Zou et al., 2021; Greve and Mitsuhashi, 2007). CEO formal power is bestowed through their position in the organisation, whereas CEO informal power stems from personal and social capital (Walls and Berrone, 2017; Finkelstein, 1992). Indeed, past studies regarding CEO formal and informal power report that CEO formal power positively impacts risk-taking (Zou et al., 2021), increases debt policy persistence (Huang and Gao, 2022), negatively affects corporate social responsibility (CSR) (Sheikh, 2019a) while they find opposite results for CEO informal power. Given this empirical evidence, we expect that different motivations drive CEOs' formal and informal power to devise corporate LGBTQ-supportive policies. Hence, in this study, by creating two indexes to measure CEO formal and informal power we examine the impact of two distinct dimensions of CEO power on firm LGBTQ-supportive policies.

The objectives of this study are as follows: (i) to examine whether the degree of board gender diversity in terms of critical mass (three or more female directors) or token (one or two female directors) would affect firms' implementation of LGBTQ-friendly policies (ii) to investigate whether CEO formal and informal power would alter firms' adoption of LGBTQ policies (iii) to determine the effect of the interaction of gender diversity measures (critical mass and token) and CEO power measures (CEO formal and informal power) on firm LGBTQ-supportive employee policies.

This study contributes to corporate governance literature in the following ways. First, based on a sample of 348 firms from Fortune 500 companies over the period 2003–2023, this study finds that a critical mass of three or more female directors has a positive impact on firm LGBTQ-supportive employee policies, while a token representation of one or two female directors has no significant impact on such policy implementation. Thus, this study builds on and complement the studies by Steiger and Henry (2020) and Cook and Glass (2016), suggesting that high proportion of female representation on corporate boards is vital for improving firms' adoption of LGBTQ-supportive employee policies.

Second, we show that different sources of CEO power have varying impacts on firms' adoption of LGBTQ-supportive employee policies. Specifically, we show that CEO formal power positively affects firms' adoption of LGBTQ-supportive employee policies, while CEO informal power has an adverse impact on such policies. These results lend support to stakeholder theory and suggest that CEOs with formal power initiate LGBTQ-supportive policies driven by stakeholder concerns. This could be attributed to CEOs' motives to build a competitive edge (Sheikh, 2019a) or increase firm value (Jiraporn and Chintrakarn, 2013). The negative impact of CEO informal power appears to suggest that agency theory is unsupported. Overall, the result shows that CEO formal and informal power have mixed effects on LGBTQ-supportive policies and hence has important policy implications when it comes to hiring of CEOs. This result is also an improvement from Brodmann et al. (2021) in that it suggests that CEO power needs to be looked at in a more granular manner to determine its effect on LGBTQ policy enactment.

Third we show that a critical mass of female directors is more effective in improving LGBTQ supportive policies in the presence of CEOs with formal power than informal power. The results further show that the interaction of the critical mass variable and CEO informal power is positive, implying that a critical mass of female directors could negate the negative effect of CEO informal power on firm LGBTQ-friendly employee policies. This lends support to the critical mass theory. We also find that a token presence of female directors could improve LGBTQ-supportive policies only in the presence of CEO formal power. Furthermore, we find that the token presence of female directors could adversely impact on the LGBTQ-supportive policy implementations in the presence of CEO informal power. To the best of our knowledge, this is the first study that examined the effect of interaction of board gender diversity and CEO power and we consider this as one of the novel contributions to literature.

The rest of the paper is structured as follows. In the next section, I show the literature and research hypotheses. The following section presents the data and methodology. This is followed by the main results and the results of the robustness tests, and the final section concludes.

2. Literature review and hypotheses development

Firms' commitment towards its LGBTQ employees could be perceived by the stakeholder theory advanced by Freeman (1984). This

theory suggests that firms have an ethical duty concerning their stakeholders, and adopting socially responsible policies is likely to improve firm value. Firms' commitment to diversity and inclusion is vital to CSR (Colgan, 2011; Chintrakarn et al., 2020). Studies on firm LGBTQ-supportive policies have found that there is a positive relationship between corporate equality index (CEI)[1] scores and stock price reaction (Johnston and Malina, 2008; Wang and Schwartz, 2010; Pichler et al., 2018), market valuations (Fatmy et al., 2022; Shan et al., 2017), firm innovation (Hossain et al., 2020), superior credit ratings (Chintrakarn et al., 2020), firm performance (Lourenco et al., 2021). In line with responsible investment, Do et al. (2022) and Roberson (2009) show that investors prefer to invest in firms that support LGBTQ-supportive policies. In a review of studies on LGBTQ-supportive employment policies, studies find that there is strong support that LGBTQ-supportive policies lead to less discrimination in the workplace, improved health results, and job satisfaction (Griffith and Hebl, 2002; Badgett et al., 2013). Friedman (1970) argues that firms' engagement in CSR could lead to a misallocation of resources and decrease firm value. This argument is supported by the findings of Nadarajah et al. (2021), who show that firms that are located in highly individualistic states are unlikely to implement workplace diversity policies, and such implementation could lead to a negative impact on firm performance. In a similar vein, Briscoe et al. (2014) report that firms with liberal CEOs have a positive impact on LGBTQ group formation, especially in firms with powerful CEOs with newly formed LGBTQ groups. Despite an increasing interest as documented above, a recent review by Brahma et al. (2023) reveals that research in this area is still nascent and requires further attention. Only a few studies have examined the relationship between firms' LGBTQ policies and corporate governance. These are reviewed in Sections 2.1 and 2.2 below.

2.1. Board gender diversity and firm LGBTQ-supportive policies

The relationship between board gender diversity and firm LGBTQ-supportive policies could be perceived from the lens of social role theory. This theory suggests that individuals' roles in organisations is dictated by their position as well as by their social roles and beliefs linked to their social group. Women and men have different dispositions based on existing social norms and expectations linked to their social group (Eagly et al., 2000). Few studies have advanced that gender-specific social roles are likely to instil cooperative and relationship-building behaviours in women and autonomous and competitive behaviours in men (Gilligan, 1982). This social role differentiation implies that women develop diverse paths to leadership and are likely to focus on diverse areas of the organisation than men (Konrad and Kramer, 2006). This theory further suggests that female leaders are more committed to equity, fairness, and inclusion and hence cater to the needs of diverse stakeholders, than their male counterparts (Adams and Funk, 2012).

Empirical evidences have lent support to this theory. For instance, study finds that female leaders may take more risky and non-traditional management strategies than their male counterparts (Adams and Funk, 2012). Others have reported that female leaders might give precedence to fairness and equity while considering alternative perspectives. Another study has advanced that leaders who themselves undergone discrimination are more sympathetic towards supporting inclusive policies.

From these theoretical and empirical evidences on the social role theory it is apparent that due to existing social norms and expectations, female directors are likely to support LGBTQ friendly policies in the boardroom. Empirical evidences by Cook and Glass (2016), Everly and Schwarz (2015), and Steiger and Henry (2020) also support this debate. Cook and Glass (2016) also examine the effect of female CEOs on LGBTQ-friendly policies and do not find any conclusive results. On the other hand, Yan (2018) find that female CEOs positively impact firm LGBTQ friendly HR practices. However, none of these studies examine whether certain thresholds of gender diversity in boardrooms like a critical mass of female directors are imperative to generate such policy implementations. Clearly, empirical evidences are scant and warrants further investigation. One of the objectives of this study is to address this gap.

In the context of board gender diversity, the token theory suggests that gender composition matters in organisations, and the token presence of female directors will fail to bring boardroom gender diversity and make any meaningful difference in firm policies and strategies (Kanter, 1977 a, b). The presence of only one female director gives them solo status, and such token or solo status subjects female directors to different hurdles, involving increased assessment and negative appraisal (Kanter, 1977a and Eagly and Karau, 2002). Such biases linked to token or solo status might lower female directors' motivation to initiate novel and possibly controversial policies like LGBTQ-supportive policies. Studies on board gender diversity by Torchia et al. (2011) and Joecks et al. (2013) conclude that the presence of at least three female directors would constitute critical mass and remove their token status in the boardroom. These studies report that a critical mass of three female directors is the "magic" number in terms of generating boardroom gender diversity. The empirical literature has lent support to the critical mass theory and its positive link to firm performance (Liu et al., 2014; Chijoke-Mgbame et al., 2020; Brahma et al., 2021). Brahma et al. (2021) find that the positive relation between board gender diversity and firm performance is more pronounced and unequivocal in the presence of three or more female directors.

From the above theoretical and empirical discourses, it could be argued that the presence of three or more female directors would constitute the critical mass that is likely to bring the gender specific social norms in the boardroom that would promote inclusion and equity. This could in turn generate innovative and inclusive programmes like LGBTQ-friendly policies. Hence, we propose the following hypotheses.

Hypothesis 1a. . A critical mass of three or more female directors is positively related to firm LGBTQ-supportive employee policies.

Hypothesis 1b. . Token presence of female directors is unrelated to firm LGBTQ-supportive employee policies.

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[1] CEI is a report that is published by Human Rights Campaign Foundation to rate businesses on their corporate policies, practices, and benefits related to its LGBTQ employees.

2.2. CEO formal and informal power and firm LGBTQ policies

Finkelstein (1992), in his seminal paper has identified four dimensions of CEO power: structural, ownership, expert, and prestige. Brodmann et al. (2021) report that powerful CEOs have an adverse effect on firm LGBTQ policies. This study has created an index of CEO power by taking five proxies of power. However, we argue that a broad index of CEO power may not be able to paint the full picture of the extent to which powerful CEOs can sway corporate LGBTQ policies. Other studies on CEO power and CSR in general have reported mixed evidences on the impact of CEO power on CSR. Stakeholder theory asserts that firms' managers should try to address the goals of the various stakeholders (Freeman and Evan, 1990). In support of this theory, past studies report that CEO power increases the positive impact of ESG disclosure on firm value (Li et al., 2018), and CEOs engage in CSR to consider the interests of all the stakeholders and establish a competitive edge rather than to improve their reputation (Sheikh, 2019a). Pucheta-Matínez and Gallego-Álvarez (2021) also find support of stakeholder theory and find that CEO power is positively linked to CSR disclosures and this is more pronounced when CEO compensation is linked to shareholder return. In similar vein, Maswadi and Amran (2023) report that board capital attributes and CSR disclosure quality is positively moderated by CEO power.

Other study report that CEO power imparts a crucial part in environmental performance and CEO expert power plays a role in environmental activism in the absence of shareholder activism (Walls and Berrone, 2017). In this context, Al-Shaer et al. (2023) show that CEO managerial power exerts a positive influence on environmental performance and this is larger in the presence of board independence and board diversity. This study further shows that CEO tenure which they define as CEO legitimate power has no effect on environmental performance. Zhang et al. (2022) report that CEO power has a favourable effect on environmental innovation and this is higher for independent boards and greater market competition. On the other hand, some studies show that CEO power has an adverse impact on firms' decisions regarding CSR (Harper and Sun, 2019; Li et al., 2016). Another study finds that CEO power has a negative effect on CSR disclosures (Muttakin et al., 2018). Clearly evidences regarding CEO power and CSR are mixed and warrants further investigation. In addition, these empirical evidences suggest that different sources of CEO power could have varied impact on CSR and thereby firm LGBTQ-supportive policies.

In recent years, several studies have divided the four dimensions of CEO power into two distinct power bases, which are CEO formal power and CEO informal power (Greve and Mitsuhashi, 2007; Zou et al., 2021; Huang and Gao, 2022; Shui et al., 2022). CEO formal power is bestowed through their position in the organisation as the employees accept the authority of the CEOs. This formal power stems from its structural and ownership power (Finkelstein, 1992; Walls and Berrone, 2017). Studies report that CEO formal power positively impacts risk-taking (Zou et al., 2021), increases debt policy persistence (Huang and Gao, 2022), and negatively affects CSR (Sheikh, 2019a). Hence, we advance that CEO formal power could be viewed from the lens of stakeholder theory. CEO informal power stems from personal and social capital (Walls and Berrone, 2017; Finkelstein, 1992). Past studies report that CEO informal power has adverse impact on risk-taking, debt policy persistence, and CSR (Sheikh, 2019a; Huang and Gao, 2022; Zou et al., 2021). From this evidence, it is apparent that CEO informal power, which is measured by expert and prestige power, could make them self-serving, and that could exacerbate agency problems.

Based on these arguments, we advance that CEO formal (informal) power is likely to exert a positive (negative) influence on LGBTQ-supportive policies.

Hypothesis 2a. . CEO formal power positively influences firms' adoption of LGBTQ-supportive employee policies

Hypothesis 2b. . CEO informal power negatively influences firms' adoption of LGBTQ-supportive employee policies

3. Research design

3.1. Sample and data

Data in this study comprises of 348 firms from the Fortune 500 companies over the period 2003-2023. Data for this study has been taken from three sources. Data on corporate LGBTQ policies have been taken from the Corporate Equality Index (CEI) published by the Human Rights Campaign Foundation following Brodmann et al. (2021). The rationale for selecting Fortune 500 firms is due to the importance of these firms in formulating policy and practice among the firms in the US. In addition, Fortune 500 firms are of similar size, and are subject to similar level of public scrutiny and hence confirms internal validity. Data on board gender diversity, and other corporate governance variables have been obtained from Refinitiv Eikon. Data on CEO power have been obtained from the Boardex database. After removing the missing variables, we obtained 4879 firm-year observations.

3.2. Regression model and measurement of variables

3.2.1. Board gender diversity

The first explanatory variable of interest in this study is board gender diversity. In line with the critical mass theory (Kanter, 1977 a, b), we examine whether the presence of three or more female directors in the boardroom would have a favourable impact on firms' adoption of LGBTQ policies compared to one or two female directors, which is perceived as tokenism. As discussed in the previous section, several studies found support of the critical mass theory and concluded that the presence of three or more female directors could lead to a significant influence on firm strategies and outcomes (Torchia et al., 2011; Joecks et al., 2013; Liu et al., 2014; Chijoke-Mgbame et al., 2020; Brahma et al., 2021; Yarram and Adapa, 2021). Following this argument, we use two measures of board gender diversity. The first measure is the critical mass dummy that takes the value of 1 if there are three or more female directors on the

board and 0 otherwise. The second measure of gender diversity measure is the token dummy variable that takes the value of 1 if there are one or two female directors on the board and 0 otherwise.

3.2.2. CEO power

The second explanatory variable of interest in this study is CEO power. To test Hypotheses 2a and 2b presented in Section 2, we have constructed two indexes of CEO power, i.e., CEO Formal Power and CEO Informal Power. CEO Formal Power is the sum of five categorical measures of power, which are CEO duality, CEO pay slice, CEO tenure, CEO founder, and CEO ownership following Huang and Gao (2022), Shui et al. (2022), Walls and Berrone (2017), and Bebchuk et al. (2011). The index considers (i) whether there is CEO-Chair duality, (ii) whether the CEO tenure is more than the median tenure in the sample, (iii) whether the CEO ownership measured by the equity-linked compensation as a proportion of total compensation of the CEO is more than the median value (iv) whether the CEO pay slice is more than the median value in the sample (v) whether the CEO is a founder. If each of these conditions is met then the dummy variable takes the value of 1 and zero otherwise. CEO Informal Power is measured as the sum of three categorical variables: CEO education, CEO age, and the number of outside directorships held by the CEO following Huang and Gao (2022). The index counts (i) whether the CEO age is more than the median CEO age in the sample, (ii) whether the CEO qualification is more than the median CEO qualification, (iii) whether the number of outside directorships held by the CEO is more than the median value in the sample. If each of these conditions is met, then the dummy variable takes the value of 1 and zero otherwise.

3.2.3. Research model

To examine the impact of gender diversity and CEO power on firms' adoption of LGBTQ policies, I construct the following ordinary least square (OLS) model. OLS is a common technique to estimate the relationship between one or more explanatory variables with a dependent variable. It aims to minimise the difference between the sum of square errors. It is one of the most popular and widely used regression techniques. However, one drawback of the OLS technique is that is does not address the potential endogeneity concerns. Hence, in order to address this, we have checked the robustness of our OLS results by taking alternative estimation models which are two-step instrumental variable regression and two-step system generalized method of moments (GMM) regression.

$$CEI_{i,t} = \beta_0 + \beta_1 Gender\ Diversity_{i,t} + \beta_2 CEO\ Power_{i,t} + \sum_n^N \beta_{3n} Controls_{i,t} + \beta_4 IndustryFE + \beta_5 YearFE + \varepsilon_{i,t} \tag{1}$$

The dependent variable in Eq. 1 is CEI which is the corporate equality index that we use in this study to measure firms' adoption of LGBTQ-supportive policies following Brodmann et al. (2021), Hossain et al. (2020), and Shan et al. (2017). The CEI score ranges between 0 and 100, and they incorporate several corporate schemes in support of their LGBTQ employees, like medical and other financial benefits for the employees and their domestic partner, education, workplace safety, training, maintenance of responsible citizenship, and formation of diversity council. The two main explanatory variables in Eq. 1 are Gender Diversity and CEO Power. Gender Diversity is measured by the two dummy variables, critical mass, and token. We have defined this in Section 3.2.1 above. CEO Power refers to the CEOs' Formal and Informal Power indexes as defined in Section 3.2.2.

Controls_{i,t} refers to the series of firm-level control variables that we have used in this study. These are board characteristics and a number of firm-level factors that could affect CEI score. These are board independence, board size, board meeting, leverage, firm size, ROA, and liquidity. Table 1 presents the definition of all the variables that are used in this study. The rationale for the use of the different control variables in this study are provided below.

Board independence is taken as a control because agency theory suggests that a greater proportion of independent directors could alleviate agency problem by improving board monitoring (Hillman and Dalziel, 2003; Byrd and Hickman, 1992). Studies find that board independence have a favourable impact on firms' CSR initiatives (Harjoto and Jo, 2011; Shaukat et al., 2016; Chang et al., 2017) and hence likely to positively impact on firm LGBTQ initiatives.

Table 1
Variable definition table.

Variable name	Definition
Dependent variables	
Corporate Equality Index (CEI)	The CEI score range between 0 and 100 and they incorporate several corporate schemes in support of their LGBTQ+ employees
Independent variables	
Critical Mass	This is a dummy variable that takes the value of 1 if there are three or more female directors in the boardroom and zero otherwise
Token	This is a dummy variable that takes the value of 1 if there are one or two female directors in the boardroom and zero otherwise
CEO Formal Power	Composite index of CEO power obtained from five variables, CEO duality, CEO tenure, CEO ownership, CEO pay slice, CEO founder
CEO Informal Power	Composite index of CEO power obtained from three variables, CEO age, CEO education, and CEO outside directorship
Board Independence	Percentage of independent directors in the board
Board Size	Measures the total number of members in the board
Board Meeting	The number of board meetings during the year
Firm Size	Natural log of total assets
Liquidity	Ratio of current assets to current liabilities of the sample firms
Leverage	Percentage of a firm's total debt to total assets
ROA	Return on assets measured as firm's earnings before interest and tax divided by the total assets

Board size is a crucial factor that could influence board supervision. Agency theory suggest that large boards may lead to weak coordination and communication (Yermack, 1996). From a resource dependence theory perspective large boards tend to exhibit greater knowledge and information (Carter et al., 2010). Stakeholder theory suggests that large boards tend to cater to diverse interest and are likely to improve CSR initiatives (Kock et al., 2012; Hillman and Keim, 2001). Hence from stakeholder theory perspective it can be theorized that large boards could improve firm LGBTQ initiatives.

Board meeting frequency is perceived as an indicator of board monitoring (Adams and Ferreira, 2009). Few studies have attempted to examine the impact of board meeting frequency on corporate social responsibility disclosure and so far, the evidences are mixed. Harymawan et al. (2020) report that board meeting frequency has an inverse relationship with corporate social responsibility disclosures (CSRD) while Fauzyyah and Rachmawati (2018) report a positive correlation between board meetings and CSR reporting. Ju Ahmad et al. (2017) did not find any significant association between board meeting frequencies and CSR reporting. However, this study emphasizes that board meeting frequency is key to protect different stakeholders' interests. Other studies in corporate governance literature have also used board meetings as a control variable (see, Ahmad et al., 2021; Ullah et al., 2019). Based on these discourses we have taken board meeting as one of our board specific control variables.

Our first firm specific control is leverage. Management literature envisages that CSR disclosures could reduce firms' cost of capital through various avenues (El Ghoul et al., 2011; Ng and Rezaee, 2015). High CSR firms are also considered to be less risky (Starks, 2009). CSR is also reported to have a negative impact on firm leverage in the presence of high product market competition (Sheikh, 2019b). In the light of these empirical evidences on firm's leverage and CSR it could be argued firms' leverage could impact on the LGBTQ supportive policies and hence we have taken leverage as one of our control variables.

Another control variable we have used in this study is firm size. Several studies have examined the impact of firm size on different corporate strategies. For instance, Ibhagui and Olokoya (2018) finds that firm size is an important determinant in explaining the impact of leverage on firm performance. In relation to firm CSR, Udayasankar (2008) finds a U-shaped relationship between firm size and CSR. Lepoutre and Heene (2006) find that small firms face constraints towards imposing CSR initiatives and this study suggests avenues to overcome such constraints. In contrast, Baumann-Pauly et al. (2013) find that both small and large firms have specific characteristics that could promote CSR initiatives. Based on these empirical evidences it could be argued that firm size could be an important determinant for firm LGBTQ initiatives. Hence, we have taken firm size as one of our controls.

We have also included ROA as one of our firm specific controls. Few studies have examined the effect of LGBTQ inclusive policies and firm performance and reported that higher CEI has a positive impact on firm performance measured by ROA (Foster et al., 2020; Lourenco et al., 2021). Other studies on CSR and firm value have also reported partial relationship between CSR performance and firm value measured by ROA (Cho et al., 2019). In similar vein, Okafor et al. (2021) also report a positive relationship between tech firms' CSR performance and ROA. Based on these empirical evidences we have added ROA as one of our control variables.

Few studies have examined the effect of firm liquidity on CSR initiatives. For instance, Uyar et al. (2023) find a bi-directional relationship between firm CSR and liquidity. Jihadi et al. (2021) report that among other firm level variables, liquidity has a positive effect on firm value and this is moderated by firms' CSR. Pham et al. (2018) report that firms' liquidity is an important determinant of firms' innovation as they find that firms with more liquid assets invest more in R&D. Some studies contend that when firms engage in projects that are unpredictable they usually resort to cash or external equity. However, external equity is sometimes difficult to obtain and hence availability of more liquid assets might help these firms to invest in these projects (Chan et al., 2001; Brown et al., 2009; Brown and Petersen, 2011). In the light of these arguments and also based on the evidences regarding CSR and firms' liquidity it could be argued that firms' adoption of LGBTQ friendly policies would be positively related to firms' liquidity. Hence, we have taken liquidity as one of our control variables.

The effect of interaction of board gender diversity and CEO power is estimated using the following equation.

$$CEI_{i,t} = \beta_{10} + \beta_1 Gender\ Diversity_{i,t} + \beta_2 CEO\ Power_{i,t} + \beta_3 Gender\ Diversity_{i,t} xCEO\ Power_{i,t} + \sum_{n}^{N} \beta_{4n} Controls_{i,t} + \beta_5 IndustryFE \tag{2}$$
$$+ \beta_6 YearFE + \varepsilon_{i,t}$$

Table 2
Summary statistics.

Variable	Obs.	Mean	Std. Dev.	Min	Max
CEI	4879	68.371	33.77	0	100
Critical Mass	4879	.846	.361	0	1
Token	4879	.588	.492	0	1
CEO Formal Power	4879	1.06	1.068	0	4
CEO Informal Power	4879	.661	.874	0	3
Board Independence	4879	86.131	7.551	0	100
Board Size	4879	11.286	2.254	1	26
Board Meeting	4879	8.465	3.775	1	43
Leverage	4879	4.327	1.348	−3.912	11.473
Firm Size	4879	8.325	1.829	−.713	12.682
ROA	4879	6.224	6.067	−51.91	157.56
Liquidity	4879	2.6	10.845	0	238.74

4. Results

Table 2 presents the summary statistics of the data. The mean CEI score is 69, with a standard deviation of about 34 %, demonstrating significant variance in the CEI score across the sample. These results are broadly comparable to that reported by Shan et al. (2017) and Brodmann et al. (2021). The mean of the critical mass dummy is 0.87, and the mean of the token dummy is 0.59. The data further reveal that about 84 % of firm-years observations have a critical mass of three or more female directors, whereas only 31 % of firm-year observations have token presence of one or two female directors in the boardroom. Regarding the CEO power measures, Table 2 shows that the mean of CEO formal power index is 1.06 with a standard deviation of 1.068, whereas the mean of CEO informal power index is 0.661 with a standard deviation of 0.874. This indicates that CEO formal power is more popular among the sample firms than CEO informal power. This is consistent to that reported by Huang and Gao (2022). Table 2 also shows the mean values of the control variables. The mean of board independence is 86.13 with a standard deviation of 7.551. The mean value is close to that reported by Ahmad et al. (2021) and Pichler et al. (2018). This figure is also consistent with average percentage of independent directors across S&P 500 firms in the post-Sarbanes Oxley period (Rahman and Kabir, 2023). The mean of board size is 11.29 with a standard deviation of 2.25. This figure is consistent to that reported by Pichler et al. (2018), and Joecks et al. (2013). From these figures it is apparent that the board size of the sample firms is fairly large across the time period. The mean of board meeting is 8.47 with a standard deviation of 3.8. This is to some extent higher than that reported by Ahmad et al. (2021). From this considerably high mean board meeting figure, it is evident that the sample firms are committed towards their advisory role. The firm-level control variable, leverage, has a mean of 4.32 with a standard deviation of 1.35. This is similar to that reported by Brodmann et al. (2021), Huang and Gao (2022), and Hanousek and Shamshur (2011). The mean of firm size is 8.325 with a relatively small standard deviation of 1.83. This is similar to that reported by Pichler et al. (2018) and Brodmann et al. (2022) and also suggests that on average most firms in the sample have relatively large size. The mean ROA is 6.22 with a standard deviation of 6.067. The relatively high standard deviation suggests that there is a significance difference in performance measured by ROA across the sample firms. These figures are variant to that reported by Ahmad et al. (2021) for the UK firms and Ibhagui and Olokoyo (2018) for Nigerian firms. The average liquidity is 2.6 with a standard deviation of 10.845. This suggests that the sample firms have significant variance in their liquidity as indicated by the high standard deviation. The liquidity figures are also different from that reported by Ahmad et al. (2021) in the context of the UK firms.

Table 3 presents the correlation matrix of all the independent and control variables. As shown in Table 3, the correlation coefficients do not exceed the threshold value of 0.8 (Field, 2009). In addition, this study has also tested for potential multicollinearity in the variables by computing the Variance Inflation Factors (VIFs). The maximum value of VIF is 2.4, which is significantly below the threshold of 10 (Gujarati, 2009). Hence, it is apparent that multicollinearity is not a problem in this sample.

4.1. Baseline regression results

The main variables of interest in Panel 1 and Panel 2 of Table 4 are critical mass and token, respectively. This Table shows that the coefficient of critical mass in Panel 1 is positive (18.675) and significant at 1 % level. This lends support to Hypothesis 1a. This suggests that in the presence of a critical mass of three or more female directors, firms are likely to adopt LGBTQ-supportive employee policies in the boardroom. This result is consistent with that reported by Cook and Glass (2016) concerning gender diversity in general. The coefficient of token is positive (0.805) but it is not statistically significant. This suggests that the mere presence of one or two female directors may not be sufficient to sway the boards to adopt LGBTQ-supportive employee policies. This also supports Hypothesis 1b.

In Panel 3 and Panel 4 of Table 4, the main variables of interest are CEO formal power and CEO informal power respectively. The coefficient of CEO Formal Power is positive (4.442) and significant at 1 % level. This lends support to Hypothesis 2a. However, the coefficient of CEO informal power is negative (-4.903) and significant at 1 %. This supports Hypothesis 2b. The result of Panel 3 suggests that CEOs with formal power work towards improving corporate LGBTQ-supportive policies. To the extent that the results support Hypothesis 2a, it can be deduced that CEOs with formal power implement LGBTQ-friendly policies to address stakeholder concerns. Hence, it can be concluded that the result in Panel 3 supports stakeholder theory. The results of CEO informal power are consistent with the findings by Brodmann et al. (2021), who report that CEO power has an adverse effect on firm LGBTQ policies.

In relation to the control variables, the coefficients of board independence are positive and significant at 1 % level. This suggests that presence of more independent directors on board is conducive to the implementation of firm LGBTQ policies. This is also consistent to that reported by Brodmann et al. (2021). The coefficients of board size are also positive and significant at 1 % level. This result appears to lend support to stakeholder theory that large boards are likely to support diverse interests and hence improve firms' LGBTQ initiatives (Kock et al., 2012). The coefficients of board meeting are also positive and statistically significant at different levels of significance. This result suggests that board meeting as an important indicator of board monitoring helps to improve firms' LGBTQ initiatives (Adams and Ferreira, 2009). The coefficients of the control variable leverage are negative but only one of these is significant at a weak significant level of 10 %. This finding weakly supports the notion that high leverage can impede LGBTQ initiatives. The coefficients of ROA are positive and significant at 1 % level. This suggests that firms with higher ROA are likely to support LGBTQ initiatives. This appears to indicate that firms with better performance, measured by ROA have resources in place to implement LGBTQ initiatives. The coefficients of the variable liquidity are positive but it is weakly significant at 10 % level. This appears to suggest that these firms have sufficient resources to help promote LGBTQ policies. This supports the findings by Uyar et al. (2023) and Jihadi et al. (2021) that firms with higher liquidity support CSR initiatives.

Table 5 shows the results of the effect of the interaction of the board gender diversity measures (critical mass and token) with the measures of CEO formal and CEO informal power. Panel 1 shows the coefficient of interaction of the critical mass dummy with the CEO

Table 3

Correlation Matrix.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) CEI	1.000											
(2) Critical Mass	0.187*	1.000										
(3) Token	0.288*	−0.267*	1.000									
(4) CEO Formal Power	0.132*	−0.020	0.004	1.000								
(5) CEO Informal Power	−0.161*	−0.012	−0.031*	0.542*	1.000							
(6) Board Independence	0.152*	0.246*	−0.109*	0.056*	0.096*	1.000						
(7) Board Size	0.239*	0.328*	−0.181*	0.117*	0.180*	0.203*	1.000					
(8) Board Meeting	0.155*	0.092*	−0.050*	−0.015	0.042*	0.098*	0.081*	1.000				
(9) Leverage	0.036*	0.125*	−0.074*	0.013	0.063*	0.147*	0.125*	0.186*	1.000			
(10) Firm Size	0.070*	0.001	−0.016	0.079*	0.108*	0.046*	0.073*	0.043*	0.070*	1.000		
(11) ROA	0.005	−0.030**	0.016	−0.011	0.003	0.001	−0.098*	−0.204*	−0.191*	0.046*	1.000	
(12) Liquidity	0.039**	−0.016	−0.009	−0.017	−0.004	0.025	0.034**	0.014	−0.031	−0.100*	0.057*	1.000

*** $p < 0.10$, ** $p < 0.05$, * $p < 0.01$.

Table 4
Baseline regression results.

	CEI	CEI	CEI	CEI
	(1)	(2)	(3)	(4)
Critical Mass	18.675***			
	(3.17)			
Token		0.805		
		(1.57)		
CEO Formal Power			4.442***	
			(5.44)	
CEO Informal Power				−4.903***
				(−5.52)
Board Independence	0.457***	0.647***	0.578***	0.585***
	(3.95)	(5.42)	(4.88)	(4.96)
Board Size	2.432***	3.406***	3.346***	3.163***
	(6.01)	(8.30)	(8.26)	(7.74)
Board Meeting	1.003***	0.98***	1.054***	1.004***
	(4.64)	(4.35)	(4.73)	(4.51)
Leverage	−1.077*	−0.757	−0.774	−0.792
	(−1.62)	(−1.10)	(−1.13)	(−1.16)
Firm Size	1.514***	1.428***	1.348***	1.313***
	(3.52)	(3.20)	(3.05)	(2.97)
ROA	0.6***	0.587***	0.474***	0.454***
	(4.18)	(3.90)	(3.21)	(3.06)
Liquidity	0.09*	0.084	0.102*	0.093*
	(1.67)	(1.51)	(1.84)	(1.67)
Constant	−29.442***	−46.196***	−46.806***	−43.358***
	(−2.74)	(−4.18)	(−4.29)	(−3.97)
Number of obs.	4879	4879	4879	4879
No. of firms	348	348	348	348
R-squared	0.52	0.49	0.63	0.49
Industry FE	Yes	Yes	Yes	Yes
Year Controls	Yes	Yes	Yes	Yes

This table presents the regression results of the effect board gender diversity measures, measured by critical mass and token and CEO power measures, measured by CEO formal and informal power on firm CEI scores. *t*-statistics are shown in the parenthesis. The definitions for all the variables are same as shown in Table 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

formal power index. This coefficient of interaction is positive (3.111) and significant at 1 % level. This suggests that a critical mass of three or more female directors positively impacts firm LGBTQ-supportive employee policies in the presence of CEO formal power. The coefficient of interaction of critical mass dummy with CEO informal power is positive (1.146), and this is significant at 1 % level. From these results, it is apparent that a critical mass of three or more female directors exerts a significant positive impact in the boardroom both in the presence of CEO formal and informal power. Specifically, in the presence of CEO formal power, a critical mass of female directors reinforces boards' commitment to implementing LGBTQ-supportive policies. The positive coefficient of the interaction term of critical mass and CEO informal power suggests that a critical mass of female directors moderates the negative effect of CEO informal power on firm LGBTQ-friendly policies.

Panel 3 of Table 5 shows the coefficient of interaction of the token dummy with CEO formal power. This coefficient is positive (0.799) and significant at 5 % level. Panel 4 shows the coefficient of interaction of the token dummy with CEOs' informal power. The coefficient is negative (-3.931) and significant at 5 % level, suggesting that CEOs with informal power have an adverse effect on LGBTQ-supportive employee policies in the absence of sufficient gender diversity in the boardroom. These results suggest that under the token presence of female directors, CEO motivations from both formal and informal sources of power take precedence in determining firms' LGBTQ policies.

4.2. Robustness test

We have conducted several tests to test the robustness of the main findings and the results of the interaction of gender diversity measures with CEO power measures. The results of these tests are in line with the main results.

The issue of endogeneity is one of the major concerns in the study of corporate governance research. We use two methods to address the endogeneity concerns. First, endogeneity concern is in relation to reverse causality, that is, whether CEI scores could explain gender diversity and the extent of CEO power in the firm. We run a two-stage instrumental variable regression to tackle this endogeneity concern. This approach has been used by many studies (Owen and Temesvary, 2018; Sheikh, 2018, 2019a) and is considered an appropriate technique to address the issue of reverse causality (Wooldridge, 2010). Under this method, the instrumental variable should be exogenous to the model but correlated to the explanatory variable, which is endogenous with the explanatory variable. The instrument should also be uncorrelated with the error term.

In this study, I used two instruments for the two main sets of explanatory variables: board gender diversity (measured by critical mass and token dummies) and CEO power (measured by CEO formal and informal power). For board gender diversity, we have used

Table 5

Effect of interaction of board gender diversity measured by critical Mass and token with CEO formal and informal power on firms' LGBTQ friendly policies.

	CEI	CEI	CEI	CEI
	(1)	(2)	(3)	(4)
Critical Mass	2.065**	2.731***		
	(2.12)	(3.11)		
Token			1.74	1.116
			(1.60)	(0.85)
CEO Formal Power	5.287***		4.78***	
	(5.19)		(4.56)	
CEO Informal Power		−2.936***		−3.151***
		(−2.95)		(−2.77)
Critical Mass*CEO Formal Power	3.111***			
	(2.95)			
Critical Mass*CEO Informal Power		1.146***		
		(5.45)		
Token*CEO Formal Power			0.799**	
			(2.28)	
Token*CEO Informal Power				−3.931**
				(−2.20)
Board Independence	0.415***	0.414***	0.592***	0.609***
	(3.60)	(3.64)	(4.98)	(5.14)
Board Size	2.294***	2.045***	3.223***	3.084***
	(5.71)	(5.09)	(7.90)	(7.50)
Board Meeting	1.035***	0.961***	1.065***	0.979***
	(4.80)	(4.52)	(4.75)	(4.38)
Leverage	−1.016	−0.973	−0.667	−0.615
	(−1.54)	(−1.49)	(−0.97)	(−0.90)
Firm Size	1.464***	1.289***	1.283***	1.26***
	(3.42)	(3.05)	(2.89)	(2.84)
ROA	0.545***	0.526***	0.538***	0.52***
	(3.81)	(3.71)	(3.60)	(3.47)
Liquidity	0.108**	0.113**	0.094*	0.091*
	(2.02)	(2.13)	(1.70)	(1.65)
Constant	−30.024***	−26.618**	−44.645***	−40.735***
	(−2.81)	(−2.51)	(−4.08)	(−3.71)
Number of obs.	4879	4879	4879	4879
No. of firms	348	348	348	348
R-squared	0.48	0.67	0.54	0.68
Industry FE	Yes	Yes	Yes	Yes
Year Controls	Yes	Yes	Yes	Yes

This table shows the regression results of the effect of interaction of board gender diversity measures, measured by critical mass and token and CEO power measures, measured by CEO formal and informal power on CEI scores. The definitions for all the variables are same as shown in Table 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

the share of independent directors as the instrumental variable (IV) following Owen and Temesvary (2018). This is defined as the total shares held by the independent directors on the board. It is argued that independent directors with a larger share in the firm are likely to sway the board towards gender diversity in the boardroom. This instrument is appropriate as a board selected from a larger group of external professionals are likely to include more women on the board than if it it was selected by a smaller group of internal board members. The result shows that this variable is indeed highly correlated with critical mass and token dummies. However, this variable is uncorrelated with the CEI score and also with the error term. We have added the results of both first and second stage IV regression in Table 6.

Following Khanna et al. (2015), Sheikh (2018), and Sheikh (2019b), I have used non-executive CEO top executive/director deaths as an instrument. This variable is considered an exogenous shock as the sudden deaths of non-executive CEOs/ directors are unrelated to performance pressures. This variable is measured as the number of executive/directors who have left their role because of their death during the current CEOs tenure up to the current year and this is defined year by year. The death of executives/ directors is unlikely to affect CEI scores but is highly correlated with CEO formal and informal power indexes. Indeed, the results shows that this variable has high correlation with CEO formal and informal power and is uncorrelated with CEI score. The results of first stage and second stage IV regressions are shown in Panels 1 to 8 of Table 6. The results support the findings of the baseline regressions reported in Table 4. Panels 1 to 8 of Table 7 show the results of interaction board diversity measures (critical mass and token) with CEO Formal and Informal power using two-step IV regression with the same instruments used in Table 6. The results are consistent with those reported in Table 5 for the baseline regressions.

To address endogeneity, we also conducted a two-step system GMM estimation since it includes lagged dependent variables as a control to tackle dynamic endogeneity (Ahmad et al., 2021). System GMM has been commonly applied by related studies in corporate governance (Sila et al., 2016). System GMM is aimed at autoregressive models as it allows to deal with the problem of dependent variables being affected by their past values (Arellano and Bover, 1995). System GMM also considers the endogenous variables' lags;

Table 6

Endogeneity test: Effect of board gender diversity and CEO power on firms' LGBTQ friendly policies.

	CEI	CEI	CEI	CEI	CEI	CEI	CEI	CEI
	IV−2SLS 1st Stage (1)	IV−2SLS 2nd Stage (2)	IV−2SLS 1st Stage (3)	IV−2SLS 2nd Stage (4)	IV−2SLS 1st Stage (5)	IV−2SLS 2nd Stage (6)	IV−2SLS 1st Stage (7)	IV−2SLS 2nd Stage (8)
Share of Independent Directors	0.0141*** (3.21)		0.328** (2.18)					
Executive/Director Death					−0.293** (−2.13)		−0.235** (−2.12)	
Critical Mass		6.84*** (3.34)						
Token				0.858 (1.41)				
CEO Formal Power						1.358*** (2.62)		
CEO Informal Power								−1.382** (−2.25)
Board Independence	0.085* (1.78)	0.41*** (3.49)	0.072* (1.85)	0.682*** (4.00)	0.059 (0.96)	0.398*** (2.87)	0.017* (1.69)	0.386*** (2.78)
Board Size	0.029** (2.36)	1.824*** (4.35)	0.317 (0.86)	3.114*** (5.31)	0.183* (1.86)	3.433*** (7.01)	1.062* (1.76)	3.039*** (2.82)
Board Meeting	−0.452 (−0.92)	1.03*** (4.70)	−0.171 (−1.10)	1.128*** (3.50)	1.017* (1.91)	0.686 (0.93)	−0.075 (−1.24)	0.952*** (3.51)
Leverage	−0.042 (−0.73)	−1.119 (−1.67)	0.316 (1.34)	−0.157 (−0.16)	−0.062 (−0.27)	0.832 (0.46)	−0.187 (−0.83)	1.506 (1.55)
Firm Size	0.027* (1.79)	1.526*** (3.52)	0.034* (1.89)	1.374** (2.16)	0.046** (2.28)	1.2*** (2.59)	1.53 (1.16)	0.849 (1.28)
ROA	0.053** (2.18)	0.658*** (4.50)	0.028** (2.45)	1.053*** (4.73)	0.165** (2.04)	0.548 (1.32)	0.027* (1.88)	0.335 (1.02)
Liquidity	0.031 (0.95)	0.087 (1.61)	0.075 (1.74)	0.041 (0.51)	0.087 (1.34)	0.156 (1.50)	0.237 (1.54)	0.169** (2.03)
Constant	−1.162** (−2.19)	−22.293** (−2.04)	−2.214** (2.36)	−26.277* (−1.65)	−2.69*** (−3.16)	−10.675 (−0.20)	−9.36*** (−2.89)	−27.813** (−2.18)
Number of obs.	4879	4879	4879	4879	4879	4879	4879	4879
No. of firms	348	348	348	348	348	348	348	348
R-squared	0.57	0.45	0.46	0.38	0.62	0.68	0.67	0.55
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This table presents the IV-2SLS regression results of the effect of board gender diversity measures, measured by critical mass and token and CEO power measures, measured by CEO formal and informal power on firm CEI scores. *t*-statistics are shown in the parenthesis. The definitions for all the variables are same as shown in Table 1. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

therefore, additional instruments are not required as in instrumental variable regression or two-stage least square regression. Blundell and Bond (1998) advance that these lags could be used in levels or differences, and in this study, we have taken the second lags of the endogenous variables as instruments. Moreover, system GMM is deemed robust to serial correlations and panel-specific heteroscedasticity. The GMM regressions include all the explanatory and control variables used in Eqs. 1 and 2. The results of the two-step system GMM regressions are shown in Table 8. The results in Table 8 across all the Panels 1 to 4 are consistent with those reported in Table 4 for the baseline regression.

Panels 1 to 4 of Table 9 show the two-step system GMM results of the interaction of gender diversity measures (critical mass and token) with CEO formal and informal power. The results are consistent with the baseline regression results reported in Table 5.

5. Conclusion

Recent evidence suggests that discrimination against LGBTQ employees in terms of homophobia and hostility is still prevalent at workplace (Drydakis, 2015; Willis, 2012). There has been an increasing drive by firms to implement LGBTQ-supportive policies at work as they endeavour for an inclusive workplace. An inclusive workplace is beneficial for firms, too, as empirical evidence has suggested LGBTQ-supportive policies have led to better stock price performance, worker commitment, and increased productivity (Blazovich et al., 2013; Badgett et al., 2013; Wang and Schwartz, 2010).

Our study sought to examine the effect of LGBTQ-supportive policies on two fundamental corporate governance mechanisms: board gender diversity and CEO power. Past studies have investigated the role of gender diversity on firm LGBTQ policies (Cook and Glass, 2016) and the role of CEO power on firm LGBTQ policies (Brodmann et al., 2021). Drawing from the social role theory, we advance that female directors bring different social norms that instil equity and inclusion in the boardroom. From the lens of critical mass theory, we argue that the mere presence of female directors in the boardroom may not substantially impact on LGBTQ policy implementations, and only a critical mass of three or more female directors could create such an impact. The CEO power literature shows that CEO formal and informal power bring two distinct sources of power to the board. Hence, the effects of these two distinct

Table 7

Endogeneity test: Effect of interaction of board gender diversity measured by critical mass and token with CEO formal and informal power on firms' LGBTQ friendly policies.

	CEI	CEI	CEI	CEI	CEI	CEI	CEI	CEI
	IV−2SLS 1st Stage (1)	IV−2SLS 2nd Stage (2)	IV−2SLS 1st Stage (3)	IV−2SLS 2nd Stage (4)	IV−2SLS 1st Stage (5)	IV−2SLS 2nd Stage (6)	IV−2SLS 1st Stage (7)	IV−2SLS 2nd Stage (8)
Share of Independent Directors	0.0216** (2.37)		0.117** (2.28)					
Executive/Director Death					−0.109** (−2.06)		−0.181* (−1.98)	
Critical Mass		5.211** (2.22)		1.308*** (2.81)				
Token						1.182 (1.24)		1.209 (1.19)
CEO Formal Power		4.748*** (3.46)				2.185*** (2.73)		
CEO Informal Power				−1.396* (−1.82)				−3.391* (−1.83)
Critical Mass*CEO Formal Power		6.076** (2.00)						
Critical Mass*CEO Informal Power				1.995** (2.38)				
Token*CEO Formal Power						1.031** (2.26)		
Token*CEO Informal Power								−1.043** (−2.15)
Board Independence	0.021 (1.27)	0.004 (0.18)	−0.167 (−1.09)	0.018 (0.96)	0.027 (1.18)	0.042** (2.10)	0.211** (2.25)	0.041** (2.23)
Board Size	0.109 (1.56)	0.303 (0.16)	1.019 (1.16)	1.664 (0.65)	1.114 (0.76)	1.432** (2.29)	1.183** (2.07)	6.27** (2.11)
Board Meeting	0.415* (1.76)	0.529 (1.05)	0.118* (1.79)	0.973*** (3.16)	1.216*** (2.81)	1.941** (2.13)	1.176** (2.26)	−1.283 (−1.06)
Leverage	−1.109 (−1.18)	−2.473 (−0.86)	−1.109 (−0.98)	−1.287 (−0.68)	−1.091 (−0.77)	−1.178 (−1.21)	−1.082* (−1.87)	−1.35** (−2.07)
Firm Size	2.189** (2.46)	3.327*** (2.61)	1.892** (2.72)	1.77* (1.87)	1.56** (2.08)	1.535** (2.08)	1.123** (2.17)	2.955** (1.94)
ROA	0.526 (1.37)	0.756** (1.99)	0.117* (1.83)	1.055 (1.60)	1.109* (1.85)	0.169 (1.05)	0.102 (1.65)	0.735** (2.01)
Liquidity	−0.178 (−0.97)	−0.027 (−0.16)	−0.119 (−0.65)	−0.027 (−0.21)	−0.103* (−1.78)	0.598** (2.30)	0.611*** (2.72)	0.643 (1.51)
Constant	−2.216** (−2.37)	−1.664 (−1.18)	−1.101** (−2.13)	1.896 (0.54)	1.115 (0.76)	−1.953 (−1.19)	−1.173 (1.26)	−1.016** (−2.01)
Number of obs.	4879	4879	4879	4879	4879	4879	4879	4879
No. of firms	348	348	348	348	348	348	348	348
R-squared	0.58	0.53	0.63	0.59	0.61	0.64	0.52	0.48
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This table shows the IV-2SLS results of the effect of interaction of board gender diversity measures, measured by critical mass and token and CEO power measures, measured by CEO formal and informal power on CEI scores. The definitions for all the variables are same as shown in Table 1. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

sources of power on firm LGBTQ policies are driven by different motivations. In light of these discussions, we have examined the effects of board gender diversity and LGBTQ policies through the perspectives of social role theory and critical mass theory. Second, our analysis sought to investigate whether CEO formal and informal power have varied impact on firm LGBTQ policy implementation. We examine this through two distinct theoretical perspectives, stakeholder theory and agency theory, respectively. Third, this study addresses the key issue in the literature on the effect of the interaction of board gender diversity and CEO power on firm LGBTQ policies.

Using a sample of 348 Fortune 500 firms from 2003 to 2023, first, the results lend support to critical mass theory and social role theory as it shows that a critical mass of three or more female directors exerts a positive effect on firms' adoption of LGBTQ-supportive employee policies, while the mere token presence of one or two directors has no impact on firms' adoption of such policies. This supports our Hypotheses 1a and 1b and appears to suggest that gender specific social norms have been successful in promoting inclusion and equity in the boardroom. We also find that CEO formal power generates a favourable impact on firm LGBTQ policies while CEO informal power has an adverse impact on these policies thus supporting Hypotheses 2a and 2b. Based on previous theoretical and empirical evidence, the positive impact of CEO formal power on LGBTQ-supportive policies lends support to stakeholder theory, while the negative effect of CEO informal power suggests that agency theory is unsupported. Third, we find that the interaction of CEO formal power with the gender diversity measures, critical mass, and token are both positive, suggesting that CEOs with formal power driven by stakeholder concerns positively influence firm LGBTQ policies irrespective of the level of gender diversity in the boardroom.

Table 8
Endogeneity test: Effect of board gender diversity and CEO power on firms' LGBTQ friendly policies.

	CEI	CEI	CEI	CEI
	GMM (1)	GMM (2)	GMM (3)	GMM (4)
Critical Mass	3.19***			
	(9.09)			
Token		1.601		
		(1.15)		
CEO Formal Power			0.503***	
			(4.87)	
CEO Informal Power				−1.164**
				(−2.09)
Board Independence	0.004	0.036**	0.019	0.017
	(0.22)	(2.00)	(0.85)	(0.85)
Board Size	0.328***	0.524***	0.531***	0.511***
	(7.53)	(10.57)	(12.18)	(13.12)
Board Meeting	0.161***	0.187***	0.188***	0.187***
	(5.45)	(8.88)	(7.62)	(7.90)
Leverage	−1.707***	−1.433***	−1.509***	−1.559***
	(−14.38)	(−5.50)	(−12.09)	(−11.58)
Firm Size	0.222**	0.163	0.462***	0.496***
	(2.28)	(1.51)	(3.49)	(3.82)
ROA	0.079***	0.091***	0.1***	0.094***
	(4.47)	(5.57)	(5.12)	(6.02)
Liquidity	0.088***	0.068***	0.074***	0.08***
	(3.36)	(3.47)	(4.76)	(5.07)
Constant	18.61***	14.008***	12.246***	13.316***
	(7.81)	(5.67)	(4.68)	(4.94)
Number of obs.	4879	4879	4879	4879
No. of firms	348	348	348	348
Industry FE	Yes	Yes	Yes	Yes
Year Control	Yes	Yes	Yes	Yes
AR (1) (p-value)	−6.93(0.00)	−6.937(0.00)	−6.836(0.00)	−5.968(0.00)
AR (2) (p-value)	0.113(0.91)	0.098(0.92)	0.113(0.91)	−0.178(0.85)
J-test (p-value)	141.34(0.15)	142.14(0.14)	139.39(0.17)	114.19(0.75)

This table presents the system-GMM regression results of the effect of board gender diversity measures, measured by critical mass and token and CEO power measures, measured by CEO formal and informal power on firm CEI scores. *t*-statistics are shown in the parenthesis. The definitions for all the variables are same as shown in Table 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The result further shows that the interaction of CEO informal power with critical mass is positive, but the interaction of CEO informal power with the token is negative. From these results, one can argue that CEO power can act as a double-edged sword on firm LGBTQ-supportive policies, and a gender-diverse board with a critical mass of three or more directors could boost such policy implementation under both CEO formal and informal power.

These findings have a number of implications. First, our results reinforce the argument about promoting gender diversity in the boardroom. From these findings, it is apparent that board gender diversity is key to promoting inclusive HR policies, and this is more pronounced in the presence of CEOs with formal power. These results bear important policy implications and suggest that LGBTQ-supportive policies, which is an essential diversity and inclusion arm of firm CSR, could be positively addressed by the firms in the presence of a critical mass of female directors and CEOs with formal power. These findings further suggest that CEO formal power stemming from structural and ownership power are vital for promoting inclusive policies in the boardroom. Hence firms' internal corporate governance mechanism should aim towards hiring CEOs with formal power as LGBTQ-supportive policies would also promote worker commitment, employee retention, and increased productivity.

Second, our results also shed light on how different sources of CEO power could lead to implementations of policies that would be beneficial for LGBTQ employees as well as the firms at large. This is consistent to other CEO power studies which show how CEO formal power positively influences firm strategies while CEO informal power could adversely affect such strategies (Zou et al., 2021; Huang and Gao, 2022; Shui et al., 2022). Third, our results lend support to empirical evidence that reported the link between board gender diversity and key strategic performances for firms like CSR, transparency, and innovation (Yarram and Adapa, 2021; Miller and Triana, 2009).

This study extends past literature on the impact of board gender diversity and CEO power on LGBTQ-supportive policies by taking previously unexplored areas, specifically the interaction of three distinct theoretical perspectives of critical mass, stakeholder theory, and agency theory. By doing so, this study provides a valuable contribution to the literature on human resource management, corporate governance, and LGBTQ studies. The results are robust across alternative estimation models, instrumental variable regressions, and GMM regressions to address endogeneity concerns.

While our study advances in the areas of board diversity, CEO power, and LGBTQ policy implementations it has some limitations. First, our focus on Fortune 500 firms limits the investigation as it excludes smaller firms and other non-US firms. One scope for further research would be to incorporate a cross-country analysis that would be useful in understanding how differences in rule of law,

Table 9

Endogeneity test: Effect of interaction of board gender diversity measured by critical mass and token with CEO formal and informal power on firms' LGBTQ friendly policies.

	CEI	CEI	CEI	CEI
	GMM (1)	GMM (2)	GMM (3)	GMM (4)
Critical Mass	2.99**	4.748**		
	(2.30)	(2.22)		
Token			1.985	0.788
			(1.47)	(1.26)
CEO Formal Power	1.203***		0.343***	
	(3.54)		(3.59)	
CEO Informal Power		−1.041**		−0.422**
		(−2.27)		(−2.24)
Critical Mass*CEO Formal Power	1.157***			
	(3.03)			
Critical Mass*CEO Informal Power		1.698**		
		(2.45)		
Token*CEO Formal Power			1.272**	
			(2.14)	
Token*CEO Informal Power				−1.315**
				(−2.49)
Board Independence	0.004	0.018	0.042**	0.041**
	(0.18)	(0.96)	(2.10)	(2.23)
Board Size	0.361***	0.343***	0.546***	0.572***
	(6.65)	(1.94)	(3.70)	(3.67)
Board Meeting	0.157***	0.158***	0.185***	0.18***
	(3.37)	(3.55)	(3.80)	(2.72)
Leverage	−1.716***	−1.471***	−1.437**	−1.306*
	(−2.89)	(−3.70)	(−2.09)	(−1.72)
Firm Size	0.219**	0.35***	0.145	0.203*
	(2.22)	(2.61)	(1.20)	(1.79)
ROA	0.078***	0.058**	0.09*	−0.097***
	(4.48)	(2.46)	(1.79)	(−2.86)
Liquidity	0.094***	0.063***	0.072***	0.053**
	(3.85)	(3.10)	(3.22)	(2.45)
Constant	1.067***	13.986***	12.879***	12.489***
	(7.51)	(5.02)	(5.06)	(4.58)
Number of obs.	4879	4879	4879	4879
No. of firms	348	348	348	348
Industry FE	Yes	Yes	Yes	Yes
Year Control	Yes	Yes	Yes	Yes
AR (1) (p-value)	−6.95(0.00)	−6.96(0.00)	−6.87(0.00)	−6.86(0.00)
AR (2) (p-value)	0.098(0.92)	0.073(0.94)	0.092(0.92)	0.139(0.89)
J-test (p-value)	141.15(0.15)	139.92(0.17)	139.12(0.18)	141.70(0.14)

This table shows the system-GMM regression results of the effect of interaction of board gender diversity measures, measured by critical mass and token and CEO power measures, measured by CEO formal and informal power on CEI scores. The definitions for all the variables are same as shown in Table 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

investor protection, and their interactions with corporate governance mechanisms would help in supporting firm LGBTQ policies. Second, while our study focuses on gender diversity and CEO power, future research could look into other board attributes like board demographic diversity in terms of ethnicity, age, and education and their impact on firms' LGBTQ-supportive policies. Third, in this study we have used quantitative research methods. Future study could use a survey-based research design particularly to gather data from smaller firms and other not-for-profit organisations in relation to the measures they have adopted to support LGBTQ employees.

CRediT authorship contribution statement

Agyenim Boateng: Writing – review & editing, Visualization. **Sanjukta Brahma:** Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization.

Declarations of interest

None.

Data availability

Data will be made available on request.

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