

Women Directors: An Empirical Test of Critical Mass Hypothesis

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Received: January 25, 2024

Accepted: March 1, 2024

Online Published: March 27, 2024

doi:10.5539/ibr.v17n2p46

URL: <https://doi.org/10.5539/ibr.v17n2p46>

Abstract

This paper offers integrated theoretical-based empirical evidence regarding the role of female directors in promoting corporate common good using resource dependency model built on critical mass hypothesis. Using panel regression involving 220 firm-year observations from 2011 to 2021, the paper empirically assesses the moderating impacts of diversity and social inclusion policy, and gender-based power separation in determining the direction of causality between composition of female directors and foreign capital importation by the top 20 commercial banks in Nigeria. With approximately 30 per cent female director representation in the sampled banks (i.e., *optimal gender threshold*), the paper offers support to critical mass hypothesis and validates intrinsic benefits of women in corporate boardroom. The empirical result shows that female director representation in boards with strong diversity and social inclusion policy and greater independent non-executive directors, is positively linked to resource dependency role of foreign capital importation. Diversity of power separation is found to be detrimental to such board tasks due to overwhelming tokenism effect that surrounds gender-based power delineation. These key findings are statistically significant and robust to a series of iterated sensitivity tests. In addition to offering emerging market contributions to the growing literature on critical mass theory application, findings from this study demonstrate the inherent value of combining multiple governance theories (such as resource dependency and critical mass models) and the dynamic research framework opportunities it offers for robust empirical testing.

Keywords: women directors, board gender diversity, critical mass hypothesis, collective action, social inclusion

1. Introduction

Board diversity has attracted significant research attention on the back of growing calls for gender balance in management of modern corporations (Jebran et al., 2020; Srivastava et al., 2018; Gallucci et al., 2015; Conyon & Mallin, 1997). Often coined *gender justice*, the anti-*old boys' club* crusaders continue to garner support for more inclusion of women at the top corporate echelon (Min, 2022; Martínez-García et al., 2022; Srinidhi et al., 2020; Ilaboya & Ashafoke, 2017; Liao et al., 2015; Adams & Flynn, 2005). In certain jurisdictions (e.g., Norway, Spain, and France), stringent gender-based regulatory reforms have been implemented, including compulsory quota system to promote gender inclusion (Tyrowicz et al., 2020; Bernile et al., 2018; Lending & Vähämaa 2017; Carter et al., 2010; Nielsen & Huse, 2010).

While these regulatory reforms may appear skewed from a demographic standpoint, business case often cited aside from corporate performance includes the need to promote adherence to ethics and best practices in the aftermath of the escapable scandals that engulfed globally respected corporations like Enron and WorldCom (Farooq et al., 2023; Wang et al., 2022; Arnaboldi et al., 2021; Leyva-Townsend et al., 2021; Saeed et al., 2016; Akpan & Amran, 2014; Boulouta, 2013). The executive management teams and indeed the boards of these corporations shared one common attribute – conspicuous domination of male directors (Martínez-García et al., 2022; Brahma et al., 2021; Srinidhi et al., 2020; Larkin et al., 2012; Brammer et al., 2007). Hence, the case for women's involvement in firm governance is premised on the narrative that they are more ethically-driven and better monitors due to their inherent risk-averse disposition (Almor et al., 2022; Briano-Turrent, 2022; Oever & Beerens, 2021; Abad et al., 2017; Gulamhussen & Santa, 2015).

Motivated by these chronicles and using a variety of classical theories (e.g., agency, resource dependency, stewardship, signalling, stakeholders, managerial hegemony, human capital, etc.), volumes of research have been conducted to empirically validate the influence of women's distinctive factors and composition on board

effectiveness and corporate performance (see; Konadu et al., 2022; Leyva-Townsend et al., 2021; Arioglu, 2020; Gordini & Rancati, 2017; Nguyen et al., 2015). Accordingly, the role of female directors has been examined across multiple performance barometers including profitability and market value (Ararat & Yurtoglu, 2021; Leyva-Townsend et al., 2021; Greene et al., 2020; Lafuente & Vaillant, 2019; Liu et al., 2014; Dezso & Ross, 2012); dividend pay-out (Ye et al., 2019; Saeed & Sameer, 2017; Byoun et al., 2016); risk and corporate misconducts (Wang et al., 2022; Sattar et al., 2022; Jebran, et al., 2020; Sila et al., 2016); environmental sustainability and corporate disclosures (Wang et al., 2021; Amorelli & García-Sánchez, 2019; Liu, 2018); bailouts, divestiture and bankruptcy (Cardillo et al., 2021; Garc á & Herrero, 2021), amongst others.

Although some of these studies appeared to have offered significant insight regarding the effect of gender diversity on board effectiveness, the overall research findings on the direction of causality have been predominantly equivocal and inconclusive (Almor et al., 2022; Schopohl et al., 2021; Shoham et al., 2020; Ahmed & Ali, 2017). Aside from widespread assumption of linear relationship, most past studies have failed to provide a pragmatic research framework that illustrates at what level of gender composition the presence of female directors affects board effectiveness and influences delivery of strategic corporate goals and objectives.

This paper argues that the efficacy of female directors in provoking collective action of corporate “common good” is heavily reliant on the achievement of proportionate critical mass threshold of gender representation in the boardroom. In essence, women’s representation must go beyond tokenism, to having quintessential cognitive and sophisticated ratio of female directors who are likely to behave differently, for the influence of gender diversity to be noticeable (Afolabi et al., 2022; Sattar et al., 2022; Wiley & Monllor-Tormos, 2018; Ilaboya & Ashafoke, 2017; Chen et al., 2016; Brammer et al., 2007; Adams & Flynn, 2005). Empirical evidence so far shows that the efficient frontier for gender critical mass effect lies between 10 and 40 per cent share of board size (see: Dobija et al., 2022; Wiley & Monllor-Tormos, 2018; Adriaanse, 2016; Nguyen et al., 2015; Joecks et al., 2013). Using a combination of resource dependency and critical mass models, this paper tested the validity of adapted critical mass hypothesis and offered empirical evidence regarding the influence of female directors on foreign capital importation by Nigerian commercial banks for the financial periods of 2011 to 2021.

Notwithstanding tremendous progress made in promotion of gender-based social inclusion, studies on board diversity are restricted to the developed markets (e.g., Schopohl et al., 2021; Oyotode-Adebile & Raja, 2019; Dowling & Aribi, 2013; Huang & Kisgen, 2013; Dezso & Ross, 2012; Kang, 2007; Erhardt et al., 2003). The main objective of this paper, therefore, is to offer an emerging market perspective and literature contribution to the gender diversity debate while highlighting our unique peculiarities. It is important to note that empirical evidence from the Nigerian corporate environment would offer watertight validation for gender diversity in view of the 2022 Gender Gap Assessment report issued by the International Finance Corporation (IFC), which showed that women constituted 20 per cent of executive teams in Nigeria – higher than the global average (see Casanova et al., 2022). Secondly, the paper is inspired by the need to de-emphasise research linking board gender diversity to overall corporate performance – which most often presents ambiguous outcomes (Chatterjee & Nag, 2023; Saha, 2023; Simionescu et al., 2021; Nielsen & Huse, 2010). The paper offers a role-based approach with emphasis on how gender disparity among directors affects the effectiveness of boards’ role in facilitating achievement of specific corporate common good such as foreign capital importation.

In Nigeria foreign capital importation is grouped into three segments: foreign direct investment (FDI), portfolio investment and other financial investments (such as trade credit, loans, currency deposits and other claims) (Origin et al. 2021). This paper tested the combined effect of gender diversity on all the three major sources of foreign capital importation. Overall, the paper found statistically significant empirical evidence that shows positive connections between critical mass female directors’ representation of 30 per cent (or at least 3 directors) and resource dependency facilitation role through promotion of foreign capital importation. The result is more evident in commercial banks with greater proportion of independent non-executive directors and an entrenched policy on gender diversity and social inclusion.

The remainder of this paper is organised as follows: Section 2 offers a succinct distillation of classical corporate governance theories and highlight of critical mass assumptions including review of board gender diversity literature and hypotheses. Research methodology, data sample and estimation models are outlined in section 3. Empirical analysis and interpretation of results are presented in section 4. Finally, section 5 captures the conclusion and directions for future research.

2. Board Gender Diversity: Theoretical Background, Literature and Hypothesis

Gender diversity has remained one of the most debated and well researched board demographics (Almor et al., 2022; Menicucci & Paolucci, 2022; Nuber & Velte, 2021; Arioglu, 2020; Saeed et al., 2016; Brammer et al.,

2007). Over the past two decades, researchers have deployed numerous models including cross-field adaptation of assortment theories in the study of gender diversity and its relevance to board effectiveness and task performance (Abdullahi & Lawal, 2023; Chatterjee & Nag, 2023; Chen et al., 2021; Li & Chen, 2018; Gordini & Rancati, 2017). Dominant among these theories include agency, resource dependency, stewardship, signalling, stakeholders, managerial hegemony, and human capital theories (Ferdous et al., 2023; Okoyeuzu et al., 2021; Nwude & Nwude, 2021; Simionescu et al., 2021; Bernile et al., 2018; Garba & Abubakar, 2014). Each of these models was built on a distinctive notion, ranging from self-serving, resource co-optation, executive faithfulness and information asymmetry, to boundary spanning, executive entrenchment, and labour capital heterogeneity, and recommended roles for board of directors – particularly the executive monitoring, control, and mobilization of critical resources (Ferdous et al., 2023; Martínez-García et al., 2022; Brahma et al., 2021; Okoyeuzu et al., 2021; Ye et al., 2019; Evgeniou & Vermaelen, 2017; Gulamhussen & Santa, 2015). Prior studies have used these underlying theoretical premises in probing and often magnifying the role of female directors in achieving corporate objectives (Farooq, et al., 2023; Cardillo et al., 2021; Byoun et al., 2016).

Interestingly, research and policy discourse on board gender diversity has metamorphosed into two dominant knowledge streams: equality and business case (Harjoto et al., 2018; Lawal, 2016; Dowling & Aribi, 2013; Carter et al., 2010; Erhardt et al., 2003). The equality case (also referred to as *corporate fair play*) is a demographic-based proposition premised on gender justice that promotes corporate fairness and addresses board demographics overly skewed in favour of male directors (Abdullahi & Lawal, 2023; Kolev & McNamara, 2020).

Pro-gender parity activists have advanced dozens of arguments, including the need to break through gender inertia, prejudices, and stereotyping, and create opportunities for women to attain their full natural potential in corporate environment (Oever & Beerens, 2021; Konadu et al., 2022; Conyon & Mallin, 1997). Just like the male folks, Carter et al. (2010) argued that females with required intellectual capabilities should be given the chance to participate actively in firm governance, especially at the board level. On the other hand, the business case is rooted in agency and resource dependency role expectations of board of directors, primarily, executive monitoring and control, and facilitation of resource mobilisation (Garcia-Blandon, 2023; Konadu et al., 2022; Cardillo et al., 2021; Ye et al., 2019; Li & Chen, 2018). Advocates of board diversity have argued that gender composition promotes accountability and transparency, with women directors playing a far significant role that induces adherence to corporate best practices (Mather et al., 2021; Srinidhi et al., 2020; Ye et al., 2019). Women directors are said to offer different perspectives which enhance the quality of deliberations, decisions, and overall board efficacy (Farooq, et al., 2023; Chatterjee & Nag, 2023; Khemakhem et al., 2022; Briano-Turrent, 2022; Simionescu et al., 2021). According to Kang et al. (2007) female directors act with a great deal of independent disposition because they are detached from the so-called old boys club; this makes them a better corporate monitor. Hillman (2015) argued that the presence of female directors enables implementation of suitable strategic options that meet stakeholders' expectations. The additional pool of knowledge and social capital of female directors accelerates corporate innovation, adaptation, and competitiveness (Chen et al., 2021; Arioglu, 2020; Gordini & Rancati, 2017; Ilaboya & Ashafoke, 2017; Nguyen et al., 2015; Dezso & Ross, 2012; Miller & Triana, 2009; Erhardt et al., 2003). Moreover, in view of their intrinsic gender configuration women are less overbearing and self-serving (Mather et al., 2021; Chen et al., 2016). Women are also presumably risk averse they tend to be cautious and are hence more likely to encourage high board vigilance to safeguard corporate reputation (Sattar et al., 2022; Schopohl et al., 2021; Ye et al., 2019; Huang & Kisgen, 2013).

However, the recurring inconsistency in research findings has led to growing questions as to whether a numeric threshold – in terms of the number of seats occupied by female directors – matters in facilitating their role play and overall influence on board actions (Lefley & Janeček, 2023; Nuber & Velte, 2021; Leyva-Townsend et al., 2021; Harjoto et al., 2018; Hillman, 2015). To provide empirical evidence support, researchers have turned to critical mass, a collective action theory for insight (Menicucci & Paolucci, 2022; Briano-Turrent, 2022; Brahma et al., 2021; Ilaboya & Ashafoke, 2017; Ahmed & Ali, 2017). Unlike prior studies that relied on traditional resource dependency theory (e.g., Chen et al., 2021; Leyva-Townsend et al., 2021; Nielsen & Huse, 2010), this paper has gone a step further by integrating critical mass model as a mediation framework in illustrating how the presence of female directors induces board resource dependency role in foreign capital importation. Past studies that deployed similar integrated theoretical approach have been empirically consistent. For instance, using a combination of gender socialization and diversity theories, Liu (2018) explored the effect of board gender diversity on corporate environmental violation and found female directors' composition to be positively linked to reduced environmental infringements. Miller & Triana (2009) adopted the dual of signalling and behavioural theories and found significant positive relationship between board gender diversity and innovation.

Similar robust findings have been reported across other performance indicators. Sarkar & Selarka (2021)

deployed a combination of stewardship and agency cost theories and reported significant positive association between women directors in family-owned firms, and market value and returns on assets. Kolev & McNamara (2020), used resource dependency and group dynamic theories in their study, found robust positive links between gender diversity and increased divestiture returns.

As outlined in the research work of Oliver et al. (1985), “*collective action depends on a critical mass that behaves differently from typical group members.*” Gender proponents argue that female directors are susceptible to acting differently due to their intrinsic divergent nature (Khemakhem et al., 2022; Almor et al., 2022; Menicucci & Paolucci, 2022; Arioglu, 2020; Ye et al., 2019; Abad et al., 2017; Dowling & Aribi, 2013; Nguyen et al., 2015). Hence, attaining a potent threshold in the number of female members is presumed to stimulate collective action that promotes “level of good” (e.g., resource mobilization, improved performance, and profitability) and absorb “start-up costs” of internal firm governance (e.g., agency cost) via enhanced executive monitoring and oversight (Torchia et al., 2011; Oliver et al., 1985; Chen et al., 2021; Gul et al., 2011; Li & Chen, 2018; Lefley & Janeček, 2023). Arnaboldi et al. (2021) opine that the influence of female directors is more conspicuous at the attainment of gender diversity critical mass. Garcia-Meca et al. (2022) argue that until this optimal threshold is reached, female directors are unlikely to have noticeable influence on board decisions in the promotion of corporate common good. An earlier study by Ilaboya & Ashafoke (2017) corroborates the above assertion where they reported negative impact of gender diversity on firm performance and argue that the adverse outcome was due to non-attainment of optimality in women inclusion. Dobija et al. (2022) reported that optimal gender diversity (i.e., critical mass) lies between 10 and 40 per cent of board size. Several studies have supported this finding (see Farooq, et al., 2023; Lafuente & Vaillant, 2019; Farag & Mallin, 2017; Joecks et al., 2018). In a study of German listed firms, Joecks et al. (2018) found positive impact of gender diversity on firm performance when the percentage of women directors exceeds 30 per cent (or three female directors in numeric absolute called the “magic number”). Farooq, et al. (2023) reported similar numeric value in recent UK- based studies.

In addition to these empirically linked recommendations, leading countries in advocacy of gender equality have continued to pass sweeping regulations imposing gender representation quotas on corporations within their jurisdictions (Mart ínez-Garc ía et al., 2022; Abad et al., 2017; Sila et al., 2016; Gul et al., 2011). Norway, Spain, and France lead the charge with 40 per cent female representation requirement (Arioglu, 2020; Ye et al., 2019; Lending & V ä h ä n a a 2017; B ø r h e n & Staubo, 2014; Nielsen & Huse, 2010). Germany and Italy share similar rules with a 33 and 30 per cent cap respectively (Menicucci & Paolucci, 2022; Srinidhi et al., 2020; Gordini & Rancati, 2017). These far-reaching gender-based regulations are also resonating across developing economies like Nigeria where corporations have begun implementation of firm level policies that promote gender diversity and inclusion of women in corporate governance (Casanova et al., 2022). Relying on the above policy directions and associated empirical findings (e.g., Garcia-Blandon, 2023; Gharbi & Othmani, 2023), this paper stipulates that:

H1. Adoption of diversity and social inclusion policy enhances the relationship between Female directors and foreign capital importation.

While public sentiment continues to grow in favour of gender diversity (see Gulamhussen & Santa, 2015; Lefley & Janeček, 2023), overall board effectiveness and performance hinges on the degree of freedom from executive entrenchment – otherwise called board independence (Fuji et al., 2016). Agency theorists have offered CEO non-duality and non-executive directors’ composition as agency mitigants that promote board independence (Janse van Vuuren et al., 2023; Mirza et al., 2020; Erhardt et al., 2003).

First, CEO non-duality provides a power separation mechanism that ensures MD/CEOs don’t become judges in their own case via board chair position. Although empirical findings have been equivocal, this power delineation is said to enhance board vigilance and reduce executive overbearing influence on corporate board (Uyar et al., 2022). Curiously, the emergence of gender activism has led to situations where these positions are gradually being shared between genders (Ye et al., 2019; Faccio, et al., 2016). Erhardt et al. (2003) asserted the untenability of continued over-reliance on male executives and offered a case for gender-based diversification of corporate leadership in a way that allows for inclusion of female talent pool – which according to Adams & Flynn, (2005) provides a substitute path to the boardroom.

From the business case perspective, Dadanlar & Abebe (2020) reported that female CEOs are effective corporate gatekeepers in the prevention of diversity-based corporate litigation and commission of fraud (see Wang et al., 2022). Datta et al. (2021) found that firms led by women enjoy positive credit ratings. Nevertheless, empirical literature on gender-based power separation remains limited. The available few equally point to tokenism and

less to a non-significant effect on board effectiveness and corporate performance (Menicucci & Paolucci, 2022; García & Herrero, 2021; Adams & Ferreira, 2009; Lakhali et al., 2015). Lafuente & Vaillant (2019) found a positive relationship between critical mass of women representation and economic performance but indicated that the direction of causality was not driven by the effect of women occupying MD/CEO or board chair positions. Lee & James (2007) reported that market reactions to the appointments of female CEOs are predominantly adverse in contrast to male CEOs. Evgeniou & Vermaelen (2017) opine that female directors in firms with female CEOs are more likely to focus on building social capital and thus are unlikely to be independent. Using the Indonesia data set, Marpaung et al. (2022) found that female CEOs are associated with unfavourable return on assets (ROA). Perhaps a possible deduction from these adverse research findings is that the adoption of a gender power sharing arrangement is often seen as an image laundering strategy designed to project a gender friendly organisation for a specific goal e.g., resource co-optation for an enhanced corporate performance (Min, 2022; Shoham et al., 2020; Lakhali et al., 2015; Akpan & Amran, 2014). Accordingly, this paper is of the view that gender-based power diversity is largely cosmetic-driven and is thus unlikely to enhance contribution of female directors in the boardroom.

H2. *Gender-based diversity of power separation impairs the relationship between female directors and foreign capital importation.*

Secondly, the role of non-executive directors as a catalyst for board independence has been well documented in corporate governance literature (Janse van Vuuren et al., 2023; Dowling & Aribi, 2013). As outsiders, non-executive directors are often viewed as a symbol of board neutrality and detachment from executive influence (Uyar et al., 2022; Okoyeuzu et al., 2021; Ye et al., 2019). More frequently, distinction is often made between non-executive directors. Those external directors who share material affiliation with the MD/CEO are termed *grey* or *ordinary* non-executives (NEDs) and considered passive (Fernández-Temprano & Tejerina-Gaite, 2020), whereas those that are without material relationship with management are considered independent non-executives (INEDs) (Nwude & Nwude, 2021; Lawal, 2016; Cheng, 2008). It is the later class of non-executives – according to Harjoto et al. (2018) – that incite board watchfulness for corporate common good. Saha (2023) posits that the presence of INEDs mitigates agency dilemma because they are primarily responsible for executive monitoring and control. Liao et al. (2015) reported that the presence of independent non-executive directors engenders attainment of financial and non-financial stability as well as reduced conflicts in stakeholders' expectations.

Likewise, there is an emerging postulation that the efficacy of gender diversity is far more strengthened in corporate boards with substantial INEDs composition (Wang et al., 2021; Greene et al., 2020; Lending & Vähämaa 2017). Min (2022) found that executives often use the appointment of female directors as bait to secure board approval of enhanced executive compensation in boards with significant outside directors. Byoun et al. (2016) reported significant positive link between gender diversity and dividend pay-out credited to the presence of INEDs.

Consistent with the above narratives, this paper argues that unlike ordinary NEDs, the intrinsic neutrality of INEDs creates an enabling environment in boardrooms for gender diversity to affect board actions and overall corporate performance. Accordingly, the paper specifies that:

H3a. *Composition of independent non-executive directors boosts the effectiveness of female directors' capital import role play in firms with diversity and social inclusion policy.*

H3b: *Composition of ordinary non-executive directors decelerates the effectiveness of female directors' capital import role play in firms with diversity and social inclusion policy.*

3. Research Methodology and Data Sample

Data Source and Sample

This study is based on panel data drawn from the top 20 commercial banks in Nigeria by foreign capital importation between 2011 and 2021. The board structure data (namely: size, composition, diversity of gender and power separation, female directors' cognitive skills and share ownership) and bank demographic data i.e., bank size and age, were extracted from company financial reports, while the data on foreign capital importation was obtained from the database of the National Bureau of Statistics (NBS). The study sample was restricted to commercial banks with foreign capital importation transactions over an 11-year period, which brought the total number of the observation samples to 220. The paper then applied a simple data filtering mechanism that selected verified samples based on availability of complete relevant data set and those with female directors. This resulted in a final sample of 211 observations used in both the descriptive and multivariate analyses.

Interestingly, the forgoing sampling technique is consistent with those deployed in prior studies (e.g., Afolabi et al., 2022; Menicucci & Paolucci, 2022; Tyrowicz et al., 2020; Greene et al., 2020; Liu, 2018; Boulouta, 2013).

Model Specification

This paper conducts firm level multiple regression to test the influence of female directors on foreign capital importation task using the following expanded ordinary least squares (OLS) models.

Moderating Effect Test

$$\text{Model}_1: (\text{Baseline}): \ln FCI = \alpha + \beta_0 + \beta_1 INEDC + \beta_2 INEDC + \beta_3 WDC + \beta_4 WDDSC + \beta_5 WDISC + \beta_6 WDCE + \beta_7 WDEQ + \beta_8 CPDI m' + \beta_9 DPSSm^2 + \beta_{10} \ln BS + \beta_{11} \ln BA + \beta_{12} \ln BnkSize + \varepsilon \dots \dots \dots (i)$$

$$\text{Model}_2: (\text{INEDC Sensitivity}): \ln FCI = \alpha + \beta_0 + \beta_1 INEDC + \beta_2 WDC + \beta_3 WDDSC + \beta_4 WDISC + \beta_5 WDCE + \beta_6 WDEQ + \beta_7 CPDI m' + \beta_8 DPSSm^2 + \beta_9 \ln BS + \beta_{10} \ln BA + \beta_{11} \ln BnkSize + \varepsilon \dots \dots \dots (ii)$$

$$\text{Model}_3: (\text{NEDC Sensitivity}): \ln FCI = \alpha + \beta_0 + \beta_1 INEDC + \beta_2 WDC + \beta_3 WDDSC + \beta_4 WDISC + \beta_5 WDCE + \beta_6 WDEQ + \beta_7 CPDI m' + \beta_8 DPSSm^2 + \beta_9 \ln BS + \beta_{10} \ln BA + \beta_{11} \ln BnkSize + \varepsilon \dots \dots \dots (iii)$$

Robustness (Critical Mass Effect) Test

$$\text{Model}_4: (\text{NEDC Replaced with WEs.}): \ln FCI = \alpha + \beta_0 + \beta_1 INEDC + \beta_2 WCRTM + \beta_3 WEs + \beta_4 WDDSC + \beta_5 WDISC + \beta_6 WDCE + \beta_7 WDEQ + \beta_8 CPDI m' + \beta_9 DPSSm^2 + \beta_{10} \ln BS + \beta_{11} \ln BA + \beta_{12} \ln BnkSize + \varepsilon \dots \dots \dots (iv)$$

$$\text{Model}_5: (\text{INEDC Replaced with WEs.}): \ln FCI = \alpha + \beta_0 + \beta_1 INEDC + \beta_2 WCRTM + \beta_3 WEs + \beta_4 WDDSC + \beta_5 WDISC + \beta_6 WDCE + \beta_7 WDEQ + \beta_8 CPDI m' + \beta_9 DPSSm^2 + \beta_{10} \ln BS + \beta_{11} \ln BA + \beta_{12} \ln BnkSize + \varepsilon \dots \dots \dots (v)$$

$$\text{Model}_6: (\text{Without NEDC \& INEDC}): \ln FCI = \alpha + \beta_0 + \beta_1 WCRTM + \beta_2 WEs + \beta_3 WDDSC + \beta_4 WDISC + \beta_5 WDCE + \beta_6 WDEQ + \beta_7 CPDI m' + \beta_8 DPSSm^2 + \beta_9 \ln BS + \beta_{10} \ln BA + \beta_{11} \ln BnkSize + \varepsilon \dots \dots \dots (vi)$$

$$\text{Model}_7: (\text{INEDC without WEs.}): \ln FCI = \alpha + \beta_0 + \beta_1 INEDC + \beta_2 WCRTM + \beta_3 WDDSC + \beta_4 WDISC + \beta_5 WDCE + \beta_6 WDEQ + \beta_7 CPDI m' + \beta_8 DPSSm^2 + \beta_9 \ln BS + \beta_{10} \ln BA + \beta_{11} \ln BnkSize + \varepsilon \dots \dots \dots (vii)$$

Definition of Variables

Foreign capital importation (*FCI*) is designated as *dependent variable* and defined as the combined value of annual foreign capital import transactions across three (3) foreign investment categories: *foreign direct investment (FDI)*, *portfolio investment*, and *other financial investments (such as trade credit, loans, currency deposits and other claims)*. The *FCI* value is then transformed and measured as the natural logarithm of annualised foreign capital importation (*lnFCI*) to nullify outliers' effect and mitigate heteroskedasticity in the respective regression models (García & Salomon, 2013; Wu, 2000). This paper deploys multiple *explanatory variables* covering board independence and gender diversity measures. On the board independence gauge, non-executive directors' composition (*NEDC*) is defined and measured as the ratio of non-executive directors to board size. Independent non-executive directors' composition (*INEDC*) is defined and measured as the proportion of independent non-executive directors seating on the board (see; Martínez-García et al., 2022; Schopohl et al., 2021; Jebran et al., 2020; Cheng, 2008). The board gender dynamics include women directors' composition (*WDC*) defined and measured as the ratio of women directors to board size (see Tyrowicz et al.,

2020; Mather et al., 2021; Karavitis et al., 2021; Oyotode-Adebile & Raja, 2019). Critical mass of women representation (WCRTM) is defined as the presence of at least three (3) female directors on the board. WCRTM is a dummy variable that takes a value of 1 for boards with minimum of three female directors, and 0 otherwise (Dobija et al., 2022; Arnaboldi et al., 2021; Amorelli & García-Sánchez, 2019; Byoun et al., 2016). The composition of women directors (with direct) share ownership (WDDSC) is defined and measured as the proportion of direct shares owned by female directors, divided by total direct shares owned by members of Board of Directors (Marpaung et al., 2022; Bøhren, & Staubo, 2014). The composition of women directors (with indirect) share ownership (WDISC) is defined and measured as the proportion of indirect shares owned by female directors, divided by total indirect shares owned by board members.

This paper adopts two measures of gender cognitive diversity: experience and educational qualifications. Women directors' cognitive experience (WDCE) is defined as the average years of banking and finance experience by female directors sitting on the board and measured as the natural logarithm of total years of cognitive experience (Andersen et al., 2022). Women directors' educational qualification (WDEQ) is defined in terms of relevant educational qualification held by female directors sitting on the board, with a score of 1 for female directors with both economics/finance and law degrees, 0.5 for either economics/finance or law degrees, and 0 for those with nonrelevant degrees (Andersen et al., 2022; Harjoto et al., 2018; Bernile et al., 2018). In line with the evolving empirical methodology (see: Li & Chen, 2018; Miller & Triana, 2009), this paper deploys two moderating variables: corporate policy on diversity and social inclusion, and diversity of power separation. Diversity and social inclusion policy (CPDI) is defined as the presence of firm-level policy that promotes gender diversity and social inclusion. CPDI is a dummy variable that takes a value of 1 for banks with corporate policy on gender diversity and social inclusion, and 0 otherwise. Diversity of gender-based power separation (DPS) is defined in terms of power sharing among genders and takes a value 1 for banks with MD/CEO and board chair positions occupied by females, 0.5 where the positions are shared, and 0 where the two positions are held by males (Alharbi et al., 2022; Datta et al., 2021; Dadanlar & Abebe, 2020; Evgeniou & Vermaelen, 2017; Gul et al., 2011). The executive management team (EMT) is defined and measured as the total number of executives that make up the EMT, whereas the women executives variable (WEs) is defined and measured as the proportion of women executives on the EMT (Karavitis et al., 2021; Dadanlar & Abebe, 2020). This paper introduces three sets of control variables to mitigate endogeneity and idiosyncrasy. Board size (*InBS*) is measured as the natural logarithm of total number of directors that make up the board to normalize any unobserved effect of outliers (Mather et al., 2021; Srivastava et al., 2018). Bank age (*InBA*) is measured as the natural logarithm of total number of years since incorporation (Sarkar & Selarka, 2021; Cheng, 2008). Bank size (*InBNKSize*) is measured as the natural logarithm of bank's average total assets (Jebran et al., 2020; Liu, 2018).

Table 1. Summary of Variable Definitions

Variable	Definitions
Foreign Capital_Importation (CI)	A natural logarithm of annual total value of foreign capital import transactions.
Non-Executive Directors (NEDC)	Number of non-executive directors divided by board size.
Independent Non-Executive Directors (INEDC)	Number of independent non-executive directors divided by board size.
Women Directors (WDCs)	Number of female directors divided by board size.
Women Directors Critical Mass (WCRTM)	A dummy variable that takes a value of 1 for boards with ≥ 3 female directors, and 0 otherwise.
Women Executives (WEs)	Number of female executives divided by EMT size.
Women Directors' (Direct) Shareownership (WDDSC)	Number of direct shares held by female directors divided by total direct shares held by board members.
Women Directors' (Indirect) Shareownership (WDISC)	Number of indirect shares held by female directors divided by total indirect shares held by board members.
Women Directors Cognitive Experience (WDCE)	A natural logarithm of female directors' years of banking and finance experience.
Women Directors Educational Qualifications (WDEQ)	A score of 1 for female directors with economics/finance and law degrees; 0.5 for either of the degrees; 0 for nonrelevant degrees.
Coporate Policy on Diversity/Inclusivness (CPDI)	A dummy variable that takes a value of 1 for banks with corporate policy on gender diversity and social inclusion, and 0 otherwise.
Diversity of Power Separation (DPS)	A score 1 for banks with female MD/CEO and board chair; 0.5 for either MD/CEO and board chair; and 0 if positions are held by males.
Executive Management Team (EMT)	Number executives in the EMT.
Board Size (InBS)	A natural logarithm of total number of directors that make up the board.
Bank Age (InBA)	A natural logarithm of number years since bank's incorporation.
Bank Size (InBNKSize)	A natural logarithm of average total asset.

4. Empirical Analysis and Discussion of Findings

Descriptive Statistics

The statistical summary of dependent and independent variables is presented in Table 2. Foreign capital importation (CI) values range from US\$0.452 million to US\$2.845 billion with an average value of US\$378.4 million over the reference period. Board Size (BS) averaged 12 directors with minimum and maximum membership of 7 and 17 directors respectively. A significant share of directors are outsiders, which indicates a high level of board independence (see: Lawal, 2016). The proportion of non-executive directors (NED) average

47 per cent of board membership, with 26 per cent designated as independent non-executives (INEDs). The remaining 27 per cent are executive directors, CEO inclusive.

In terms of board gender diversity, an average of 3.55 directors representing 29 per cent of board size are female (WDC), which equals a 71:29 gender spread. There are boards with up to 7 female directors, with minimum female inclusion in the observed sample being one (1). The sample used in this study thus has sufficient female representation on board to test for critical mass effect of gender diversity on board effectiveness (see Farooq, et al., 2023; Lafuente & Vaillant, 2019; Farag & Mallin, 2017; Joecks et al., 2018).

The mean of direct share ownership by female directors (WDDS) is 101,699 units with an average of 820,015 shares held via indirect (WDIS) investments. Approximately 95 per cent of the commercial banks covered in the sample have deliberate corporate policy that aim to promote diversity and social inclusion (CPDI). An average 25 per cent of the banks have diversity of power separation (DPS) with MD/CEO and board chair positions shared among the respective genders. The executive management team (EMT) size averages 14.5, with maximum size of 42 members. Gender diversity of EMT shows that female executives (WEs) average 3.95 members, with maximum representation of 11 women executives representing 26 per cent of the total maximum EMT size. Corporate age of banks (BA) average 43 years with the oldest being 126 years old. This indicates the presence of an outlier bank in the sample, given a minimum bank age of 14 years. Bank size (BNKSize) by average total assets is ₦1,501 million.

Table 2. Descriptive Statistics

Variable	No. of Obs.	Mean	Median	Max.	Min.	Std. Dev.	Skewness	Kurtosis
CI	211	378.486	115.839	2845.717	0.452	669.482	3.013	13.652
NED	211	5.800	5.500	10.000	2.000	2.016	0.132	3.475
INEDC	211	3.250	2.500	9.000	1.000	1.888	1.684	6.918
WDs	211	3.550	3.500	7.000	1.000	1.669	0.356	3.077
WEs	211	3.950	2.000	11.000	0.000	3.300	1.103	3.553
WDDS	211	101.699	0.000	1,750	0.000	399.72	4.339	22.449
WDIS	211	820.015	0.000	10,836	0.000	2,673	3.728	17.988
WDCE	211	58.500	55.000	166.000	0.000	38.807	0.827	5.426
WDEQ	211	1.550	1.500	3.500	0.000	0.916	0.521	4.397
CPDI	211	0.948	1.000	1.000	0.000	0.223	-4.029	17.237
DPS	211	0.254	0.000	1.000	0.000	0.339	0.982	2.736
EMT	211	14.500	11.000	42.000	5.000	9.774	1.582	5.707
BS	211	12.450	12.000	17.000	7.000	2.724	0.095	3.069
BA	211	43.750	31.000	126.000	14.000	29.243	1.730	6.092
BNKSize	211	1501.183	1173.771	4648.114	88.239	1480.079	0.998	3.301

The correlation matrix in Table 3 below shows a consistently low relationship between explanatory variables, which implies the absence of multicollinearity in the sampled dataset (see Gallucci et al., 2015; Gharbi & Othmani, 2023). However, it is important to note the positive and statistically significant correlation between compositions of independent non-executive directors (INEDC), women directors (WDC) and foreign capital importation (InFCI). For these explanatory variables the correlation coefficients are significant at less than 1% and 5% respectively. Accordingly, and except for board size (InBS), the control variables i.e., bank age (InBA) and bank size(InBNKSize) exhibit positive correlation with the dependent variable.

Table 3. Correlation Matrix: Analysis of Dependent and Independent Variables

Variables	Log_CI	NEDC	INEDC	WDC	WDDSC	WDISC	WDCE Avg.	WDEQ Avg.	CPDI	DPS	Log_BS	Log_BA	Log_BNKSize
Log_CI	1.000												
NEDC	-0.030	1.000											
INEDC	0.434	0.102	1.000										
WDC	0.380	0.346	0.356	1.000									
WDDSC	-0.338	-0.157	-0.177	0.074	1.000								
WDISC	-0.085	-0.322	-0.032	0.282	0.353	1.000							
WDCE (Avg.)	-0.248	0.329	0.242	0.207	0.175	0.021	1.000						
WDEQ (Avg.)	-0.325	-0.143	0.041	-0.193	0.038	0.024	0.581	1.000					
CPDI	0.059	-0.052	0.102	-0.017	0.080	0.073	-0.025	-0.017	1.000				
DPS	-0.122	-0.189	-0.030	0.238	0.663	0.359	0.045	-0.168	0.176	1.000			
Log_BS	-0.114	-0.054	-0.073	-0.162	0.038	-0.554	0.136	0.466	0.203	0.104	1.000		
Log_BA	0.078	-0.123	0.171	0.002	0.254	0.016	-0.104	0.018	-0.001	0.110	0.154	1.000	
Log_BNKSize	0.301	-0.514	-0.120	0.193	-0.008	0.171	-0.213	0.136	-0.087	0.274	0.327	0.149	1.000

Multivariate Analysis – Test Results from the Baseline Models

In line with the empirical models outlined in the preceding section, three sets of base forecasts and three additional sets of robustness and sensitivity tests were conducted using EViews software. Preliminary result of

Model 1 shows that the presence of women directors (WDC) has a positive effect on foreign capital importation at 1% statistical level of significance (1.7970, $p=0.0047$). Whereas the empirical outcome indicates that the observed relationship is positively induced by the first moderator [i.e., the existence of corporate policy on diversity and social inclusion (CPDIm¹)], the second moderator [i.e., gender diversity of power separation (DPSm³)] is found to be detrimental, impairing the relationship of WDC and capital importation. Both findings were statistically significant at 1% (0.8612, $p=0.0003$) and 5% (-0.6083, $p=0.0126$) levels respectively.

The ratio of independent non-executive directors (INEDC) shows strong positive link to the dependent variable at less than 1% level of statistical significance (2.3171, $p<0.00$). Though not statistically significant, the composition of non-executive directors (NEDC) is negatively associated with foreign capital importation. On the effect of share ownership, the result shows that the proportion of direct shares owned by female directors (WDDSC) is positively related to foreign capital importation yet remains statistically insignificant (0.0382, $p>0.01$). The ratio of indirect shares owned by female directors (WDISC) is negative and significant at 1% (-1.7301, $p<0.01$). With regards to cognitive diversity parameters, Model 1 found no statistically significant relationship between foreign capital importation and women directors' years of relevant cognitive experience (WDCE) including their educational qualifications (WDEQ) measured in terms of law and finance-based university degrees.

The results obtained in Model 1 were further subjected to a two-stage sensitivity test in models 2 and 3 using board independence variables (i.e., NEDC and INEDC). In model 2, the paper tested for sensitivity effect of non-executive directors' composition by retaining INEDC and dropping the NEDC element as a variable of interest. That notwithstanding, the forecast results were found to be stable and consistent with the empirical outcome of Model 1. For instance, the presence of INEDC (2.3885, $p<0.01$), WDC (1.6207, $p<0.01$), and adoption of CPDIm¹ (0.8654, $p<0.01$) remained positively linked to foreign capital importation at strong level of statistical significance (i.e., $p<0.01$). Likewise, WDISC (-1.6704, $p<0.01$) and DPSm² (-0.6201, $p<0.05$) are statistically significant but negatively associated with foreign capital importation as earlier obtained in model 1. The dependent variable's relationship with WDDSC, WDCE, and WDEQ remained statistically insignificant as obtained in the preceding assessment.

In the Model 3 estimation, the INEDC variable was dropped and replaced with the NEDC element as a variable of interest. Despite this transposition (and except for the effect of NEDC whose negative impact became statistically significant at less than 1%), the estimation results of other remaining variables showed less significant difference from the subsisting outcome in Model 1. The WDC in the face of first moderator i.e., CPDIm¹ stayed positively linked to foreign capital importation at 1% significance level with coefficient values of 3.9112 and 1,1490 respectively. NEDC and WDISC are inversely related to the dependent variable at $p<0.01$ level of significance with associated coefficient values of -1.5394 and -2.8537. WDDSC showed a negative effect on foreign capital importation variable at 5% level of significance. The observed inverse relationship extended to WDCE and the second moderator i.e., DPSm² with both retaining their negative effects. However, the DPSm² lost its statistical level of significance. Interestingly, the dependent variable's relationship with WDEQ turned positive but remained statistically insignificant even at 10% level.

Discussion of Key Findings from the Baseline Model Tests

In overall, the base estimation offers an interesting outcome which provides overwhelming and distinctive backing for the working hypotheses. The paper found stable empirical support for Hypothesis 1 that predicted positive relationship between female directors and foreign capital importation in banks with an entrenched corporate policy on diversity and social inclusion. This outcome is consistent with findings in prior studies (Simionescu et al., 2021; Kolev & McNamara, 2020; Li & Chen, 2018; Srivastava et al., 2018; Strydom et al., 2017; Liu et al., 2014; Miller & Triana, 2009). Adoption of gender-based power separation is found to be counterproductive in moderating the relationship between female directors and foreign capital importation. This outcome is equally in tune with Hypothesis 2's prediction of an inverse relationship on the basis that such arrangements are perceived to be cosmetic and not business induced. Similar negative moderating effects of power sharing diversity were reported in related studies (see: Afolabi et al., 2022; Uyar et al., 2022; Lafuente & Vaillant, 2019).

On whether the presence of the two classes of outsider directors (i.e., independent non-executive and ordinary non-executive directors) boosts the effect of female directors on foreign capital importation role play, the paper found support for Hypothesis 3a which shows that the addition of independent non-executive directors augments the effectiveness of female directors' capital import role play for banks with diversity and social inclusion policy. Consistent with prior empirical studies, this finding is premised on the belief that new independent

non-executive directors joining the board are more likely to be female and are synonymous with agency roles (Sarkar & Selarka, 2021; Arioglu, 2020; Bernile et al., 2018; Srivastava et al., 2018; Fitzsimmons, 2012; Conyon & Mallin, 1997).

Contrarily, the inclusion of non-executive directors was found to decelerate the effectiveness of female directors' capital import role, thus affirming the prediction of Hypothesis 3b. This empirical find indicates a potential conflict of interest effect, as some non-executive directors may be outsiders yet remain dependent and loyal to the CEO-led executives (see: Fernandez-Temprano & Tejerina-Gaite, 2020). This class of non-executive directors is often referred to as "grey directors" – which implies an extension of executives even though they remain outside part-timers (Lawal, 2016). The implication of this finding is far reaching as it shows that a simple classification of directors as non-executive should not be construed as board independence, because of a potential connection with the CEO.

Robustness Test

The robustness check was conducted to authenticate accuracy and resilience of the results from the baseline model, and further test the empirical validity of critical mass hypothesis. Here, the objective is to observe behavioural changes in regression coefficients of the core explanatory variables and their corresponding level of statistical significance if an additional explanatory variable is added to or removed from the existing baseline model specification. If the key coefficients retained their statistical stability under the robustness check, then it would be assumed that the estimations obtained in the base assessments are indeed precise and robust (Lu & White, 2014). To accomplish this, and like other related studies (e.g., Lee et al., 2022; Cheng, 2008), the paper introduces critical mass variable (WCRTM) and another false and unrelated variable i.e., women executives (WEs) which represents gender diversity of executive management team, into the baseline equation (as presented in Table 5 models 4, 5, 6 and 7) to observe how these inclusions impacts the estimation outcome. WCRTM is a dummy variable that takes a value of 1 for boards with at least three (3) female directors, and 0 for those with less than critical mass gender representation (e.g., Ararat & Yurtoglu, 2021; Shoham et al., 2020; Ahmed & Ali, 2017; Chen et al., 2016).

Table 4. Moderating Test of Diversity Policy/Power Separation Effect on the Relationship between Women Directors and Foreign Capital Importation

	Model 1 (Base Model)		Model 2: Sensivity of INEDC		Model 3: Sensivity of NEDC	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Constant	2.2974** (2.1901)	T-St.	2.1340** (2.1654)	0.0315	4.4230* (4.1204)	0.0001
NEDC	-0.2440 (-0.4615)	0.6450			-1.5394* (-2.9311)	0.0038
INEDC	2.3171* (6.0553)	0.0000	2.3885* (6.8389)	0.0000		
WDC	1.7970** (2.8613)	0.0047	1.6207* (3.2576)	0.0013	3.9112* (6.8991)	0.0000
WDDSC	0.0382 (0.1183)	0.9060	0.0815 (0.2646)	0.7916	-0.7636** (-2.3893)	0.0178
WDISC	-1.7301* (-3.2557)	0.0013	-1.6704* (-3.2473)	0.0014	-2.8537* (-5.2773)	0.0000
WDCE (Avg.)	-0.0097 (-1.0013)	0.3179	-0.0106 (-1.1285)	0.2605	-0.0060 (-0.5685)	0.5703
WDEQ (Avg.)	-0.8142*** (-1.6150)	0.1079	-0.8123*** (-1.6145)	0.1080	0.0029 (0.0056)	0.9956
CPDIm ¹	0.8612* (3.7117)	0.0003	0.8654* (3.7400)	0.0002	1.1490* (4.6594)	0.0000
DPSm ²	-0.6083** (-2.5175)	0.0126	-0.6201* (-2.5864)	0.0104	-0.1321 (-0.5324)	0.5950
Log_BS	-3.5653** (-2.8942)	0.0042	-3.5621* (-2.8974)	0.0042	-5.6204* (-4.3707)	0.0000
Log_BA	0.0204 (0.0991)	0.9211	0.0046 (0.0225)	0.9821	0.5378* (2.6380)	0.0090
Log_BNKSize	0.9219* (6.5655)	0.0000	0.9598* (8.4494)	0.0000	0.6371* (4.4342)	0.0000
No. of Obsevation	211		211		211	
R ²	0.613		0.612		0.541	
Adjusted R ²	0.589		0.591		0.516	
F-statistic	26.113		28.580		21.330	
p-Value(F-statistic)	0.000		0.000		0.000	

Note: ***, **, * are statistically significant respectively at 1%, 5%, and 10% levels; t-statistics results are presented in parentheses ().

Results from the Robustness Tests

The test results obtained from the robustness assessment were significantly consistent with those reported in the preceding baseline analysis. Specifically, WCTRM – a critical mass proxy for female directors' presentation – is positively linked to capital importation and statistically significant at 1% and 5% levels of confidence in models 4 (0.8069) and 7 (0.6224), and models 5 (0.3672) and 6 (0.3254) respectively. The WCTRM effect is found to be impacted by the degree of board independence in terms of NEDC and INEDC representation, with the former being a dampener while the latter is a reinforcer, as shown in models 4 and 5 results. The WEs show positive statistically significant relationship with dependent variable (2.8464; p-value <0.05) when INEDC variable was introduced into the estimation as shown in model 4 outcome but turned inverse with the introduction of NEDC and/or elimination of INEDC variable. This result further reaffirms our earlier deduction that the effects of gender diversity are more pronounced in boards with significant INEDC (see Sarkar & Selarka, 2021). The behaviour of moderating variables (CPDIm¹ and DPSm³) remained consistent with the outcome reported in Base Model 1. While the CPDIm¹ showed significantly positive moderating effect in models 4, 5, 6 and 7 at 1% level, the second moderator (i.e., DPSm³) remained inversely related to the dependent variable at 1% and 10% significance levels. Conclusively, in contrast to the relevance of gender-based power sharing arrangement, having corporate policy on diversity and inclusion is critical to the promotion of women participation and performance in corporate boardrooms.

WDDSC showed a mixed outcome, with observed positive association in models 4 and 7, and a negative connection in models 5 and 6. This is an indication of sensitivity response of estimation models to the inclusion of NEDC and INEDC variables. The negative relationship between indirect share ownership by female directors (WDISC) and the dependent variable was found to be robust and sustained with statistically significant coefficients in models 4 (-3.0255) and 7 (-1.9596) at 1% level. Female directors' cognitive experience and educational qualifications are inversely linked to foreign capital importation, though not significant even at 10% level. Unlike the base model, robustness tests offered unambiguous outcomes regarding gender cognitive diversity variables at attainment of required threshold (critical mass). Female directors' cognitive experience (WDCE) showed inverse relationship in the presence of INEDC (see model 4 and 7), but positively related to foreign capital importation at 5% statistically significant level when INEDC was excluded from the estimation model (refer to models 5 and 6). Finally, the presence of female directors with economics and/or finance educational qualifications (WDEQ) significantly deaccelerated foreign capital importation as reported in models 5, 6, and 7. This equivocal finding on WDCE and WDEQ is consistent with Andersen et al. (2022) study, where they argued that the connective "depth and breadth" of these cognitive diversity variables are often not easily spotted.

Discussion of Key Findings from the Robustness Tests

Overall, empirical evidence from robustness tests substantially reaffirms key findings of the baseline models and represents a watertight confirmation of structural validity of reported outcomes including the explanatory power of the estimation models. Lu & White (2014) argued that if the coefficients obtained in the estimation models are "plausible and robust," that implies presence of "structural validity". The positive and statistically significant level of relationship between composition of female directors and foreign capital importation remained stable and unchanged at each stage of robustness testing iteration, even at the attainment of critical mass of women representation. The evidence that the direction of causality is moderated by presence of corporate policy on gender diversity and social inclusion was equally sustained at high statistical level of significance (mostly <1% degree of confidence). Again, this outcome indicates support for Hypothesis 1. Similarly, the paper finds strong empirical affirmation in favour of Hypothesis 2, that the adoption of forced gender-based power separation may be counterproductive and impair the relationship between female directors' effectiveness and foreign capital importation. This finding points to the tokenism effect of corporate efforts of eradicating gender-based prejudices and stereotypes (Min, 2022; Uyar et al., 2022; Alharbi et al., 2022; Lakhal et al., 2015; Akpan & Amran, 2014; Fitzsimmons, 2012).

In support of Hypothesis 3a, the robustness test reveals that having a composition of independent non-executive directors engenders female directors' critical role play in board performance. Here, the paper finds empirical evidence which shows stable and statistically significant positive effect of independent non-executive directors on the effectiveness of female directors' capital import role, specifically in firms with diversity and social inclusion policy. The observed evidence indicating that this class of directors enhance foreign capital mobilization is not unique to this study but consistent with empirical finds in past investigations (Saha, 2023; Abdullah, 2014; Conyon & Mallin, 1997). The paper finds partial evidence to admit Hypothesis 3b on the deaccelerating effect the composition of ordinary non-executive directors has on the effectiveness of female

directors' foreign capital importation role play, especially in firms with diversity and social inclusion policy. Though not statistically significant, this finding is particularly instructive as to the fact that being an outsider director does not amount to independence of opinion and/or action. Some directors may be non-executives, yet maintain close ties with the executives, which potentially weakens their objectivity and ability to checkmate executive excesses and overbearing influence on corporate boards (Liao et al. 2015). Likewise, it is important to note that the finding of an inverse direction of causality is not strange but rather consistent with findings reported in past studies (see Abdullahi & Lawal, 2023, Chatterjee & Nag 2023; Marpaung et al., 2022; Okoyeuzu et al., 2021; Nwude & Nwude, 2021). This finding further substantiates the rationale behind separation of ordinary non-executives i.e., "grey directors" from independent non-executive directors who are most likely to act differently (see Sarkar & Selarka, 2021; Lawal, 2016).

Table 5. Robustness test: Distinctive Effect of Critical Mass Threshold on the Relationship between Women Directors and Foreign Capital Importation

Variable	Model 4		Model 5		Model 6		Model 7	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Constant	4.2829*** (3.9382)	0.0001	3.8937*** (2.8720)	0.0045	3.6567*** (2.8631)	0.0046	3.7712*** (3.4957)	0.0006
NEDC			-0.2767 (-0.5288)	0.5975				
INEDC	3.5640*** (8.8105)	0.0000					2.9290*** (9.4897)	0.0000
WCRTM	0.8069*** (5.1942)	0.0000	0.3672** (1.9447)	0.0532	0.3254** (1.9012)	0.0587	0.6224*** (4.5630)	0.0000
Women Exec. (WEs)	2.8464** (2.3905)	0.0178	-3.9803*** (-3.7361)	0.0002	-4.0434*** (-3.8263)	0.0002		
WDDSC	1.6591*** (2.6402)	0.0089	-2.2275*** (-4.2221)	0.0000	-2.2278*** (-4.2302)	0.0000	0.3396 (1.1175)	0.2651
WDISC	-3.0255*** (-4.5190)	0.0000	-0.8367 (-1.1313)	0.0077	-0.7723 (-1.0605)	0.2902	-1.9596*** (-3.8780)	0.0001
WDCE	-0.0433*** (-3.2434)	0.0014	0.0257** (1.9788)	0.0492	0.0247** (1.9281)	0.0553	-0.0213** (-2.1768)	0.0307
WDEQ	0.8639 (1.0415)	0.2989	-3.0535*** (-3.6847)	0.0003	-3.0303*** (-3.6684)	0.0003	-0.8037* (-1.7702)	0.0782
CPDIm ¹	1.1090*** (4.7154)	0.0000	1.3691*** (4.9762)	0.0000	1.3681*** (4.9818)	0.0000	1.1156*** (4.6886)	0.0000
DPSm ²	-0.7169*** (-3.1943)	0.0016	-0.4476* (-1.7064)	0.0895	-0.4410* (-1.6861)	0.0934	-0.7414*** (-3.2684)	0.0013
Log_BS	-6.5523*** (-4.4309)	0.0000	-3.0837* (-1.8352)	0.0680	-3.0589* (-1.8245)	0.0696	-4.5916*** (-3.6881)	0.0003
Log_BA	-0.5573** (-2.5875)	0.0104	0.2567 (1.1132)	0.2669	0.2737 (1.2008)	0.2312	-0.4167** (-1.9878)	0.0482
Log_BNKSize	1.0737*** (9.1157)	0.0000	0.7546*** (5.0824)	0.0000	0.7890*** (5.9186)	0.0000	0.9604 (8.8034)	0.0000
No. of Observations	211		211		211		211	
R ²	0.641		0.501		0.500		0.630	
Adjusted R ²	0.619		0.470		0.472		0.610	
F-statistic	29.429		16.540		18.084		30.853	
p-Value(F-statistic)	0.000		0.000		0.000		0.000	

Note: ***, **, * are statistically significant respectively at 1%, 5%, and 10% levels; t-statistics results are presented in parentheses ().

5. Conclusion and Recommendations

Drawing on a combination of resource dependency theory and critical mass hypothesis, this paper examined the effect of board gender diversity and gender representation thresholds on foreign capital importation. The study was premised on the postulation that the impact of female directors is better measured on specific task basis. This presumption is consistent with arguments put forth in similar studies (e.g., Dezsó & Ross, 2012; Nielsen & Huse, 2010) where it was hypothesised that "some tasks, more than others," tend to benefit from gender diversity. The paper found consistently positive and statistically significant relationship between composition of female directors and foreign capital importation. This remarkable outcome offers far reaching implications for diversity and social inclusion research and public policy.

First, the finding corroborates the underlying assumption of critical mass hypothesis which states that with required numeric threshold and enabling environment, female directors are likely to behave differently in provoking collective action for corporate common good (which in the case of this paper was represented by foreign capital importation). Female directors in the dataset averaged 3.5 membership, equivalent to almost 30 per cent of average board size. This gender representation value is consistent with minimum numeric strength of women participation considered critical (i.e., *spark threshold*) for engendering collective action that promotes

and increases the “level of good” in corporate boardrooms (see; Lawal, 2023; Menicucci & Paolucci, 2022; Briano-Turrent, 2022; Lee et al., 2022; Brahma et al., 2021; Wiley & Monllor-Tormos, 2018; Strydom et al., 2017; Liu et al., 2014; Joecks et al., 2013).

Secondly, findings on the moderating effects of diversity and social inclusion policy and gender-based power separation are instructive and provide avenue for future research exploits. Empirical deduction from distinctive behaviour of these two sets of moderators is that female directors’ role in supporting valuable corporate actions like foreign capital importation is weighty and more evident in commercial banks with entrenched diversity and social inclusion policy. The evidence thus suggests that having deliberate policy on diversity and social inclusion creates an enabling environment that allows firms profit from corporate diversity with far reaching benefits that extend beyond the board of directors. The paper however, found that the benefit of board gender diversity does not include adoption of gender-based power sharing where management team and corporate boards are headed by different genders.

Thirdly, divergent findings on the bolstering effect of ordinary non-executive and independent non-executive directors highlights methodological flaw of prior studies with an oversimplified definition of board independence using either class of non-executive directors as proxy. This paper separated the two outsider director categorizations as distinct explanatory variables and measured their individuality effect on the dependent variable. Interestingly, the correlation matrix in Table 3 reveals the weak relationship between the two variables which invalidates interchangeable usage due to absence of collinearity. Evidence from multivariate assessments and robustness tests offered empirical support on the need for distinction. While composition of independent non-executive directors boosted the effectiveness of female directors, the presence of ordinary non-executive directors deaccelerated their efficacy on foreign capital mobilization tasks. As highlighted in the preceding section, this finding simply re-affirms the already heightened concern regarding cosmetic board composition with outside directors that are heavily reliant on the executives.

It is important to note that some key findings of this paper may not be generalised due to limited dataset and focus being on the emerging market – specifically Nigeria. Divergent findings are thus probable with extended longitudinal data and under different regulatory conditions (Lafuente & Vaillant, 2019; Carter et al., 2010). For instance, findings on the effect of female directors’ direct and indirect share ownership, cognitive experience and educational qualifications were somewhat equivocal and not conclusive. More thorough studies are therefore recommended to attain empirical consistency that validates the use of critical mass theory in board diversity research. Future research must be mindful of observed methodological pitfalls of the past studies, including, but not limited to, assumption of linear relationship in research framework, simplistic model constructs, and interchangeable use of unrelated proxies, amongst others (see Garc á & Herrero, 2021; Nuber & Velte, 2021; Kolev & McNamara, 2020; Wiley & Monllor-Tormos, 2018; Nguyen et al., 2015; Lawal, 2012). Future studies may also benefit from delineation of different classes of directors as explanatory variables, combination of multiple theories and preliminary testing at data sampling stage to diagnostically establish whether threshold of critical mass in female directorship representation is attained prior to empirical valuation.

Lastly, the paper calls for more emerging markets-based research concerning the role of gender diversity on additional but specific board task performance(s). This includes validating the effectiveness of women directors in attracting foreign investments and capital importation, as well as testing for the relevance of firm level policy on diversity and social inclusion in promotion of women participation in corporate governance.

Acknowledgments

Not Applicable

Authors contributions

Not Applicable

Funding

Not Applicable

Competing interests

I declare that I have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Canadian Center of Science and Education.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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