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Does Board and Audit Effectiveness Mitigate Financial Constraint of Nigerian Firms?

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Abstract

This study assessed whether board and audit effectiveness reduce financial constraint of the non-financial firms in Nigeria. The KZ index was used to measure financial constraint, and gender diversity and independence of the audit committee were adopted as determinants of effectiveness of the board and audit. Using data extracted from the annual reports of all the 87 listed non-financial firms in the Nigerian Stock Exchange (NSE), the analysis was done by running the descriptive statistics, correlation and regression. The results of the analysis show that gender diversity has negative and significant effect on financial constraint, while audit committee independence although has negative association, but is not significant in mitigating financial constraint of non-financial firms in Nigeria. This study therefore concludes that gender diversity helps save firms from financial constraint problem, while independence of the audit committee does not mitigate financial constraint of firms in Nigeria. These simply imply that that while high gender diversity on the boards of directors reduces financial constraint of firms, independence of the audit committee does not mitigate financial constraint situation of firms in Nigeria. It was however recommended that firm should ensure more gender diversity as it helps unveil more access to finances, reduces information asymmetry, minimizes agency conflicts, and aids transparent financial reporting and control, thereby improving access to finance.

Keywords

Financial Constraint, Board Gender Diversity, Audit Committee Independence, Corporate Governance, Nigeria

1. Introduction

The non-financial firms constitute the bedrock of any economy as they contribute immensely to the growth and development of any country. The sector comprises both non-financial services as well as the manufacturing and agriculture. Ishola and Olusoji (2020) reports that about 80% of US, and 60% of India gross domestic product (GDP) comes from the non-financial sector economic activities. Also among African countries, the contribution of these sectors to the GDP in Uganda is 40%, and 50% in Zambia. In Nigeria, this sector recorded between 70% and 80% of the GDP from 2016 to 2021 (Statista, 2022). These reports simply indicate how significant the survival of the sector to the development of the country. However, the firms in these sectors have been faced with difficulty in accessing finances both from external and internal sources. As reported by the Nigerian Stock Exchange (2021) that firms in Nigeria have been constraint financially both from internal and external sources, hence making them loose investments with gains. Similarly, Farooq (2020) discovered access to external financing to be a fundamental issue restricting businesses; as a result, they are forced to employ internal financing to meet their financial needs. Financial constraint happens when there is a significant differential between the cost of external finance and opportunity cost of internal finance (Fazzari et al., 1987; Kaplan & Zingales, 1997).

However, it has been argued in the literature that many firms facing financial difficulties were due to ineffective corporate governance. As such with strong and effective governance system, firms are expected to mitigate financial difficulties, and thus have more access to finances and reduce information asymmetry. According to Li et al. (2018) better corporate governance especially diversity helps prevent information asymmetry and liquidity problems between businesses and financial institutions, improving an organization's capacity to access and successfully use outside funding. In addition, Reddy et al. (2013) opined that good corporate governance structure, enables firms to have easy access to finance and other resources, reduce cost of capital, improve stakeholder reputation, and boost organisational performance. To buttress this, Owolabi et al. (2021) discovered that absence or weak diversity and independence in the board contributes immensely to poor corporate governance among firms in Nigeria as that hinders quality financial disclosure and increases chances of information asymmetry. Similar to this, Kabara et al. (2022) attributed decline in overall performance of the firms in Nigeria to insufficient women on board of directors, and hence suggested more women involvement in boards to increase trust among stakeholders and also improve financial strength of the firms.

Osemwegie and Ugbogo (2019) opined that having an independent and diverse board ensures effective monitoring, protecting the interest of the investors by ensuring quality financial disclosure and reduces information asymmetry. Similarly, poor corporate governance was identified as one of the major contributing reasons for cases of reported firm's distress in Nigeria (Abdullahi, 2011). According to the World Economic Forum survey report (2018) Nigeria was ranked 133 out of 149 countries in terms of board gender diversity, which is among the bottom globally. Li et al. (2018) observed that governance effectiveness, financial openness, the calibre of financial reporting, and the financial experience of the directors has significant influence on financial conditions of firms. Similarly, Farooq (2020) also found that board gender diversity improves access to finance, reduces liquidity risk problem and improves financial performance of firms. In another research, audit committee effectiveness and board independence reduces financial and liquidty problems (Silvera et al., 2022; Tessema, 2019). Also, Lee and Byun (2017) study revealed that board characteristics and audit features have positive relationship with financial constraints and liquidity of firms.

There have been scarce studies linking gender diversity and audit independence to financial constraint. Majority of the studies observed investigated other governance attributes on performance and value of the firms. In addition, even among the few observed, many were done using subsector of the non-financial firms or financial sectors. This study has however expanded the scope to capture the entire non-financial sectors of the country in order to facilitate generalization. In addition, this research also attempt to find out whether the claim by agency theory on mitigating financial constraint through reduction in information asymmetry, better information flow and proper financial disclosure by firms can hold. In view of the above, the following research questions have been developed:

1) Does board gender diversity have significant influence on financial constraint of non-financial firms in Nigeria?

2) Does audit committee independence have significant effect on financial constraint of non-financial firms in Nigeria?

2. Literature Review

2.1. Concept of Financial Constraint

Financial constraint occurs when firms have limited access to funds to meet investment needs. However, there are two major sources of finance by firms namely: internal (retained earnings, cash and cash flows) while the external sources include; debts and equity. He and Ren (2018) viewed financial constraints as the amount of funds firms possess to satisfy profitable investments. Also, Kumar (2018) opined that choosing the most feasible financing option for investment, is the key objective of firms in a financial constraint situation. Financial constraints, as defined by Chen (2016), are the difficulties a firm face when it needs capital but is unable to obtain it. Additionally, a lack of credit, corporate taxes, the inability to borrow, the inability to issue shares, a lack of bank loans, or the illiquidity of an asset's value might result in financial constraints (Cheng et al., 2014). According to He and Ren (2018) firms in a financial constraint situation face higher capital costs and project delays because they are more likely to fail, which increases the risk of crash in stock prices. Thus, a key consideration in the financing and investment decisions made by organizations is financial constraint (Xiao & Wang, 2020). An index called KZI, based on some key indicators of access to finance such as debts, equity, Tobin's q, dividends, cash flows and cash was developed by (Kaplan & Zingales, 1997), and has been widely used and proven to be an integral measure of financial constraint of firms (Ahmed et al., 2022; Farooq, 2020; Li & Ling, 2021; Akhbar et al., 2021; Shaikh et al., 2021). However, some scholars argued for other measures such as the ACW index, WW index, SA index as well as the text based index to measure financial constraint (Almeida et al., 2004; Whited & Wu, 2006; Hadlock & Pierce, 2010; Hoberg & Maksimovic, 2015). This study has adopted the KZ index as a proxy for financial constraint because it encapsulates virtually key indicators of financial constraint of firms.

2.2. Concept of Corporate Governance Attributes

The concept of corporate governance is constantly being researched to meet the needs of the modern economy, the effects of globalisation, and the information requirements of investors and other parties with an interest in the company (Dudukalov et al., 2016; Ivanova et al., 2019). Additionally, corporate governance is the process of directing and controlling the organisations activities in order to enhance business performance and increase long-term shareholder value while taking other stakeholders' interests into account (Lehoux et al., 2019). The interactions between stakeholders, their boards, and their leadership are controlled by strong corporate governance (Bhagat & Bolton, 2019). In this light, this study has adopted two key governance attributes such as board gender diversity and audit committee independence, and investigates how they mitigates financial constraint of firms.

On the issue of board diversity, the literature has divided diversity into distinct categories using perspectives such as skills, experiences, duties, observable and non-observable factors, personality, demographic, cognitive abilities, and cohort membership (Aggarwal et al., 2019; Bernile et al., 2018; Bhat et al., 2019; Fernandez-Temprano & Tejerina-gaite, 2020; Jebran et al., 2020). Board diversity, according to Yousaf et al. (2021) refers to the heterogeneity of the board members, who may have a wide range of characteristics, including age, gender, education, expertise, independence, tenure, ethnicity, religion, and nationality. Diversity can give the directors board with members who contribute a variety of experiences, talents, and abilities, which is likely to positively improve the efficacy of its crucial function of management control and supervision, favouring the decrease of agency disputes (Bear et al., 2010).

Abad et al. (2017) stated that Norway and Spain mandated 40% female members on boards, and businesses that met this requirement were given preference in the awarding of government contracts, while there would be no official consequences. In order to increase board effectiveness, female directors employ board development tools like work instructions, assessments, and development programmes to lower conflict levels on corporate boards (Onyekwere et al., 2019). In another point of view, Azmi and Barrett (2013) asserted that women are more cautious, risk-averse, possess better knowledge about accounting and finance, and effective decision-makers. Also, in Nigeria, the Central Bank of Nigeria issued a regulatory guideline requiring at least 30% female representation on boards (Onyekwere & Babangida, 2022). Nevertheless, majority of the board are still less than the required standard. According to earlier research, gender diverse boards lead to greater and better public disclosure by businesses. According to research by Adams and Ferreira (2009) women are more likely to serve on corporate governance committees, which actively work to increase openness, and committees with monitoring responsibilities like audit.

To safeguard the interests of the shareholders, the board is divided into executive and non-executive members. Outside directors, non-executive directors, and independent directors are terms that are frequently used synonymously. Non-executive directors will be unable to carry out their duties successfully and render objective decisions without independence (Naseem et al., 2017). Independent ACs are essential for preventing managerial power abuse (Norziaton & Hafizah, 2019). In the study by Ogbechie and Koufopoulos (2010) non-executive directors are referred to as independent directors because they have no personal nor professional ties to the corporation. Accordingly, a non-executive director is any director who serves on the management board but is not an executive director, a representative of a shareholder, or a member of that shareholder's immediate family. They must also have no commercial relationship with the company in order to serve in this capacity. Thus, the ratio of independent or non-executive directors to the audit committee's overall membership may be a strong indicator of the committee's independence.

2.3. Review of Empirical Studies and Hypotheses Development

Between 2007 and 2016, Yousaf et al. (2021) investigated whether certain board diversity features may be utilised to predict financial difficulty among Chinese companies. Age and gender diversity was classed as relation-oriented diversity, education and experience as task-oriented diversity, and independence as structural diversity. The findings show that characteristics of board diversity can considerably predict a firm's financial problems. Li et al. (2018) asserts that using 2848 Chinese enterprises, governance quality and financial transparency are essential in deciding how to allocate credit resources that effect financial restrictions. The study established that financial transparency minimizes financial constraint. Further, Lode and Bajrei (2018) used 64 firms in the UAE to investigate the relationship between governance features and information asymmetry. They discovered that board size and information asymmetry are directly associated, whereas board ownership and firm size have an inverse relationship. Additionally, between 2014 and 2016, Al-Karasneh and Bataineh (2018) studied how corporate governance affects agency cost reduction using data from 46 Jordanian enterprises. The researchers found no connection between agency costs and governance traits. Tessema (2019), who conducted his research more recently, examined corporate governance and information asymmetry in financial organisations between 2012 and 2016. In order to quantify information asymmetry, the study looked at share return volatility, market value of traded shares, and share trading volume. According to the findings, information asymmetry is strongly correlated with board size, board independence, institutional ownership, block holders, and ownership. Also, Nazir and Afza (2018) surveyed audit features, board, and ownership and compensation structure mechanism and against value of firms in Pakistan and found that corporate governance have positive influence on firm value by mitigating agency costs. Further, effective governance mechanism reduces information asymmetry and financial constraint.

Khurshid et al. (2018) claimed that financial constraints is in relation to the audit, board, and ownership structure, board size, duality, independence, management ownership, board activity, audit quality, institutional ownership, and ownership among businesses in Pakistan. According to the results, factors that negatively affect financial distress include board size, executive directors, audit quality, managerial ownership, institutional financial ownership, and business profitability. On the other hand, duality, board independence, board activity, financial restraints, and leverage considerably reduce financial difficulty. Similarly, Chu et al. (2016) investigated financial constraints and corporate governance among 157 family-controlled businesses in Malaysia. It was discovered that family-controlled enterprises use internal funds and lessen their reliance on the debt market for their investments, but non-family firms substantially rely on the external debt market. This confirms family firms' financial limits. Additionally, CEO duality results in family enterprises' investments becoming stagnant rather than minimizing financial restrictions. It was shown that independent directors were ineffective at managing family businesses. It suggests that their existence in family businesses limits investment prospects for those businesses through internal cash flow or external loan funding, which over time lowers the long-term worth of the business. The impact of financial constraints and corporate governance as moderator on the causes of tax avoidance, which include international trade, corporate social responsibility, and political ties in Indonesia, was also experimentally examined by (Silvera et al., 2022). The research revealed that political ties, social responsibility, and overseas operations all had a big impact on tax avoidance. The findings also showed that corporate governance, including foreign activity, corporate social responsibility, and political connections, minimizes tax avoidance. Furthermore, it was discovered that financial constraints strengthened the beneficial effects of corporate social responsibility on tax evasion. Therefore, firms that practice effective corporate governance may see a drop in corporate tax avoidance, which can tarnish a company's reputation and lower its worth. Kang (2019) analyzed impact of corporate governance on financial constrain of firms in Korea. Using dividends and investments as management decisions, and corporate governance was measured by; major stockholders' shares and foreign investors' shares. The findings show that substantial shareholders had little bearing on dividends, but that they had a positive correlation with investments in financially sound companies and a negative correlation with such investments. However, foreign investors favor firms to increase dividends but they decrease investments only in financially constrained firms. The study established that financial constrained firms use dividends for their investment and *foreign investors* decrease investments under financial constraints. But for dividends decisions, foreign investors give significant positive impacts irrespective of financial constraints conditions of firms.

Similarly, Farooq (2020) examined corporate governance, financial distress cost, and financial constraints using 215 firms in Pakistan. The results show that an effective corporate governance structure protects businesses against financial limitations and reduces financial distress. Additionally, good governance measures, such as a competent audit committee and board, are essential to a company's success. Additionally, the salary and financial incentives given to top executives shield businesses from financial limits and the costs associated with financial difficulties. Additionally, the presence of block holders, foreign ownership, and institutional ownership needs to be strengthened in order to play their crucial roles in protecting the company from any adverse situations in the future. More specifically, a composite measure of the governance index shows a substantial negative relationship between the cost of financial distress and financial constraints, suggesting that better corporate governance reduces financial constraints and lowers financial distress costs. Abad et al. (2017) looked at gender diversity on corporate boards and the degree of information asymmetry in the Spanish stock market interaction. The study anticipates that companies with higher levels of gender diversity on their boards will display lower levels of information asymmetry in the market since prior research demonstrates that the inclusion of women on director boards boosts the amount and quality of public disclosure by corporations. The extent of information asymmetry in the stock market was found to be inversely correlated with the gender diversity on boards. The findings provide more evidence that gender diverse boards have positive effects on stock markets, which supports the changes in governance legislation that have been implemented in various countries to raise the share of female corporate directors. From 2005 to 2011, corporate governance's impact on financial distress among banks in the European Union was examined by Baklouti et al. (2016). It was discovered that separating the roles of CEO and board chairman increases board oversight capabilities and keeps the company out of financial trouble. Ombaba and Kosgai (2017) looked at how board governance elements, such as board size, independence, tenure, and members' financial expertise, affected the financial constraints of 39 companies in Kenya between 2004 and 2013. It was found that board independence has a substantial negative relationship, whereas board tenure has a significant positive relationship with financial hardship.

The impact of board diversity on the financial results of manufacturing companies in Nigeria was studied by (Adegboyegun & Igbekoyi, 2022). The study was motivated by the requirement to develop the most suitable board with the ideal mix required to ensure the absence of corporate failure. Out of the 64 listed manufacturing firms from 2011 to 2020, 20 firms were purposefully chosen to represent a cross-section of the industry. The research demonstrates that, aside from financial expertise diversity, which positively impacts performance, gender, ethnicity, and educational background have no discernible impact on the performance of the firms. Therefore, it is advised that manufacturing companies take more steps to ensure that their boards have a higher percentage of members with financial expertise, and that directors with certified financial expertise should be permitted to serve on their boards for longer in order to ensure improved performance over the long term. Board diversity and performance of listed industrial enterprises in Nigeria were explored by (Owolabi et al., 2021). Board independence, board gender diversity, and board size were the factors used to quantify board diversity. After-tax profit was used to gauge financial success, and firm size served as a control. The research demonstrates that board independence, board gender diversity, and board size have a small but favourable impact on performance. Thus, it was determined that there was a weakly positive correlation between the performance of Nigerian listed firms and the diversity of their board of directors. Therefore, it is necessary to increase the diversity of the boards of directors of Nigerian businesses. Onyekwere and Babangida's (2022) looks into the impact of board diversity on the financial performance of Nigeria's listed banking institutions. Board diversity was measured by board independence and board gender diversity, whereas performance was assessed using return on equity and return on assets. The results of the study, which used 12 listed banks on the NSE between 2015 and 2019, demonstrate that board gender diversity has a considerable beneficial influence on both measures of performance while board independence has a large negative impact on performance. Therefore, increasing the proportion of female directors on the boards of banking organisations is strongly advised. In order to capitalise on their presence on the board, the report also makes recommendations for how to highlight the contributions of female and independent directors.

Among Chinese non-financial enterprises between 2003 and 2017, (Ali et al., 2022) look into the impact of diversity in gender, age, tenure, and education on investment decisions. The surface-level (age and gender) and deep-level (diversity) diversity of these four diversity attributes was separated (tenure and education). The hypotheses were put to the test using GMM, fixed effect regression, and a few robustness tests. The outcomes showed that diversity in the board's tenure, education, and gender lowers the level of business investment. The sensitivity of investments to growth opportunities is also found to be adversely correlated with gender and age diversity, but tenure and educational diversity are positively correlated with investment-Q sensitivity. Additionally, deep level diversity has a beneficial impact on investment-Q sensitivity, but surface level diversity diminishes the sensitivity of investments to growth possibilities. Overall research indicates that deep diversity on boards improves business investment decisions while surface diversity on boards is linked to ineffective investment policies. It was recommended that because surface-level diversity has little bearing on employment, regulations should be developed to lessen its detrimental effects. Additionally, deep-level diversity (very tied to a particular profession) enhances investment decisions, therefore businesses and policymakers should support it to reap the rewards of a diverse board. Additionally, Kabara et al. (2022) conducted research on how board diversity in terms of the gender and educational level of directors affects the performance of firms listed on the NSE using 67 firms from 2012 to 2019. Data was analyzed through fixed effect and generalised method of moments (GMM) estimations, and results support the existence of a significant positive influence of both education and gender diversity on the companies' performance, which is also consistent with agency and resource dependence claims. Further, Adams and Ferreira (2009) found *board diversity* reduces chances of default and improve firm performance, while CEO duality promote chances of default, and adversely affect firm's stock price. Similarly, Ombaba and Kosgai (2017) examined the board governance characteristics, including the *size*, independence, *gender diversity*, tenure, and financial expertise of the members, and tested their impact on the financial distress of 39 Kenyan firms. The results showed that board tenure is highly correlated with financial distress, while board independence, size, and diversity have a significant negative association.

Between 2010 and 2019, Haddad et al. (2021) used 112 banks from America, Asia, Africa, and Europe to study the relationship between audit committee effectiveness and financial performance of banks before and during the subprime crisis. It was discovered that the audit committee decreased the profitability of two different types of banks. Furthermore, it reduced the effectiveness of conventional banks while reporting an uncertain impact on Islamic banks. Additionally, it was found that the audit committee had a favourable influence on the liquidity of conventional banks whereas the same effect appeared to be unclear for the liquidity of Islamic banks. The audit committee had a favourable effect on conventional banks' solvency, but had a negative impact on Islamic banks. Additionally, Li et al. (2018) used 2848 Chinese enterprises, and found governance quality and financial transparency are essential in deciding how to allocate credit resources that effect financial restrictions. The study established that financial transparency minimizes financial constraint. In line with the above, the following hypotheses were formulated:

H1: Board gender diversity has significant influence on financial constraint of non-financial firms in Nigeria.

H2: Audit committee independence has significant effect on financial constraint of non-financial firms in Nigeria.

2.4. The Agency Theory

The *agency theory* was used to explain the link between corporate governance attributes (board gender diversity and audit committee independence) and financial constraint of firms. According to Jenson and Meckling (1976) the agency relationship is seen in terms of "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf and which involves delegating some decision-making authority to the agent". The theory believes that the board comprising (both the board of directors and audit committee) should take care of the management and control and use of compensation as motivations. It claims that managers as agent of the firm who should exercise their fiduciary duties with utmost good faith, are self-interested, and works to satisfy their own needs at the expense of the organization and its investors, thereby leading to information asymmetry and possibility of conflict of interest between the manager and investors. **Figure 1** below presents the diagram that shows the relationships:

Figure 1 below presents the model of the study showing the links between corporate governance attributes and financial constraint. Specifically, the model depicts whether board gender diversity and audit committee independence, have a direct influence on financial constraint of firms.

3. Research Methodology

This study employed a quantitative research design because it aims to explain the relationships between two or more independent and dependent variables over a predetermined time period (Kothari & Garg, 2016). The population and sample comprises the eighty (87) non-financial firms listed on the NSE as at December, 2021. Data was extracted from financial reports of the firms and analyzed using Stata version 16 to run the descriptive, correlation, regression estimations. The descriptive statistics captures the mean, median, standard deviation, minimum and maximum value of the data, while the correlation and regression shows the pattern and degree of influence between corporate governance attributes; gender diversity and audit committee independence, and financial constraint. In addition some diagnostic tests (normality, multicollinearity and heteroskedasticity) and specification (fixed effect, random effect, hausman, lagrangian multiplier) tests were done to ensure fitness of the data and choose the best regression result. Financial constraint was measured using the KZ index developed by (Kaplan & Zingales, 1997), while gender diversity was

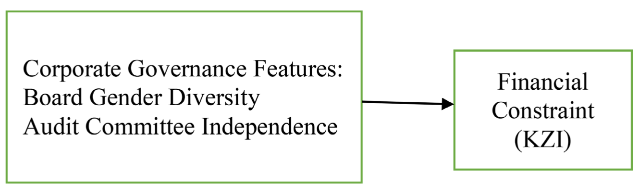

Figure 1. Research model.

measured by ratio of women on board to total board size, and audit committee independence measured by ratio of independent or non-executive directors in audit committee to the total size of the audit committee. The model also used three (3) control variables such as: Firm Size (Log of Total Assets), Leverage (Total Debts to Total Assets Ratio), and Firms Age (Number of year the firm has been in operation).

4. Results and Discussions

4.1. Descriptive Analysis

The descriptive analysis shows the mean, median, standard deviation, minimum and maximum values of both the dependent and independent variables under investigation. These could be observed in Table 1 below.

From Table 1 below, financial constraint shows an average of (−10.365), median (−0.156), minimum (−991.277) and maximum of (71.559). These indicate that firms in the non-financial sectors were averagely constrained financially given the negative index. In addition, board gender diversity has a mean value of (0.15), median (0.125), standard deviation (0.145), minimum (0), and maximum (0.667), indicating that average firms in the non-financial sector has (15%) female members on the board. Further, audit committee independence showed an average (mean = 0.483), with minimum being (0.167) and maximum (1). This means that majority of the firms have at least 48% independent non-executive members on the boards. The control variable firm size (FS) shows a mean of (4.18), median of (4.04), standard deviation of (0.83), minimum value of (2.33), and maximum of (6.38), indicating that firms in the non-financial sector have an average firm size of (4.18) measured by log of total assets. The second control variable denoted by leverage shows a mean score of (0.68), median (0.62), standard deviation of (0.53), minimum (−1.03), and a maximum value of (4.91), implying that majority of firms within the non-financial sector finance large portion of their assets by use of debts given the average value (68%) leverage. The lastly, firms age denoted by has a mean score of (40.22), median (38), standard deviation (20.5), minimum (3) and maximum of (98). These simply implies that majority of firms in the non-financial sector have an average of (40) years of operations.

Table 1. Descriptive statistics.

Variables	Mean	Median	Std. Dev.	Min	Max
Financial constraint	−10.365	−0.156	55.685	−991.277	71.559
Board gender diversity	0.154	0.125	0.145	0.000	0.667
AuditComInd	0.483	0.500	0.079	0.167	1.000
Firm Size	4.177	4.038	0.825	2.330	6.379
Leverage	0.679	0.623	0.527	−1.029	4.908
Firm age	40.236	38.000	20.504	3.000	98.000

4.2. Correlation

The correlation matrix shows the degree of associations between the dependent variable, and independent and control variables, as well as the connections among the independent variables themselves, and also in relation to the control variables. These were presented in Table 2 below.

Table 2 below shows a negative association between financial constraint and board gender diversity (−0.089) indicating that the more the gender diversity, the lower the chances of financial constraint by firms. Also, an inverse links was shown between financial constraint and audit committee independence (−0.050) indicating independence of the audit committee reduces financial constraint of firms. The matrix also shows that financial constraint has a positive relation with firm size (0.044) which means that firm size control increase in financial constraint by approximately (4%). Further, financial constraint shows a positive link with leverage (0.087) implying that the more the leverage, the more the firms face financial constraint problem. In addition, financial constraint also revealed a positive link with firm age (0.105) which means that firm size increase financial constraint of firms. However, all the control variables were held constant, and hence, not influencing the relationships.

The second column shows a positive link between the gender diversity and audit committee independence (0.050), suggesting that gender diversity help to enhance independence of the audit committee. Similarly, gender diversity on boards has a positive relation with firm size (0.164), but negative association with leverage (−0.053), and firm age (−0.016) indicating that firm size improves gender diversity by (16%), but leverage and firm age reduces gender diversity by (5%) and (2%) respectively. In addition, firm size shows a positive correlation with audit committee independence (0.39), but leverage and firm age shows inverse connections with audit independence given by (−0.018) and (−0.073) respectively. These simply implies that while firm size help to promote audit committee independence, both leverage and firm age reduces it. Lastly, the control variable firm size (FS) has negative relation with leverage (LEV = −0.097), and positive link with firms age (AGE = 0.031) indicating that leverage reduces (9.7%) of the firm size, while firm's age improve the firm size by (3.1%). Similarly,

Table 2. Correlation matrix.

Variables	1	2	3	4	5	6	VIF
1) Financial constraint	1.000						
2) Board gender diversity	−0.089	1.000					1.03
3) AuditComInd	−0.050	0.050	1.000				1.01
4) Firm Size	0.044	0.164	0.039	1.000			1.04
5) Leverage	0.087	−0.053	−0.018	−0.097	1.000		1.02
6) Firm age	0.105	−0.016	−0.073	0.031	0.080	1.000	1.01

leverage (LEV) was also found to have positive link with firm age (AGE = 0.08) indicating that firm age improve (8%) of the firm's leverage. Furthermore, the VIF column shown also verifies the absence of multicollinearity problem in the correlation matrix, as all the VIF values were less than the threshold of 10.

4.3. Board Gender Diversity, Audit Committee Independence and Financial Constraint

This section shows the influence of board gender diversity and audit committee independence on financial constraint of firms. This is presented in Table 3 below:

Table 3. Board gender diversity, audit committee independence and financial constraint.

Financial Constraint	Pooled OLS	Fixed Effect	Random Effect*
Board gender diversity	−41.033** (0.049)	−55.888* (0.079)	−35.578** (0.036)
AuditComInd	−29.415 (0.358)	−33.365 (0.362)	−27.723 (0.368)
Firm Size	5.075 (0.225)	11.511 (0.305)	4.414 (0.139)
Leverage	6.517. (0.221)	3.878 (0.574)	8.435* (0.068)
Firm age	0.255 (0.141)	0.469 (0.702)	0.251** (0.035)
Constant	−25.700 (0.299)	−55.201 (0.421)	−25.736 (0.202)
Poolability test	2.640*** (0.000)		
Hausman test		1.210 (0.944)	
BP LM test			58.920*** (0.000)
Normality test			0.000***
Heteroskedasticity test			0.088***
Mean VIF			1.020
Auto correlation test			0.467
R^2	0.030	0.024	0.029
Adjusted R^2	0.020	0.011	0.009
P. value	0.000	0.000	0.084*
Obs	522	522	522

$^{***}P < 0.01$, $^{**}P < 0.05$, $^{*}P < 0.1$.

Table 3 above shows the pooled OLS, the fixed effect and the random effect regression results showing the influence of board gender diversity and audit committee independence on financial constraint of firms. The specifications tests shows that the random effect regression result was the most feasible given the Hausman (*P*. value = 0.944). Also, the Breus Pagan Langrangian Multiplier test for random effect showed a (*P*. value = 0.000), indicating that the random effect estimate was still better than the pooled OLS. The result of the random effect estimate shows that (Prob > chi^2 = 0.084), and (R-squared = 0.029), indicating fitness of the model and that the independent variables; gender diversity and audit committee independence explain about (3%) of the financial constraint variability. The result also shows that gender diversity (bgd) has negative and significant effect on financial constraint given the *P*. value (0.036) and coefficient (−35.578). This indicates that board gender diversity helps to minimize financial constraint of the non-financial firms in Nigeria. In line with this result, hypothesis (H1) which states that board gender diversity has significant effect on financial constraint of non-financial firms in Nigeria was accepted given the result in Table 3 showing that gender diversity has negative and significant influence on financial constraint.

Further, audit committee independence was found to have negative but not significant influence on financial constraint with a (*P*. value = 0.368) and coefficient (−27.723). This implies that independence of the audit committee does not have influence in mitigating financial constraint of the non-financial firms in Nigeria. In addition, the control variables: firm size shows an insignificant (*P*-value = 0.139) and (Coef. = 4.414), leverage revealed a significant (*P*-value = 0.068) and (Coef. = 8.435), and firms age was also significant showing (*P*-value = 0.035) and (Coef. = 0.251) which means that, although all the control variables were assumed to be held constant and not affecting the interactions, but both leverage and firm age were significant in mitigating financial constraint of firms in Nigeria. Accordingly, hypothesis (H2) which states that audit committee independence has significant effect on financial constraint (kzi) of non-financial firms in Nigeria was rejected based on the result in Table 3 showing that independence of the audit committee has negative but no significant influence on financial constraint.

4.4. Findings

The result shows that gender diversity has negative and significant effect on financial constraint indicating that board gender diversity helps to minimize financial constraint of the non-financial firms in Nigeria. In line with this result, hypothesis (H1) which states that board gender diversity has significant effect on financial constraint of non-financial firms in Nigeria was accepted. Further, audit committee independence also shows a negative but insignificant influence on financial constraint. This implies that independence of the audit committee does not have influence in mitigating financial constraint of the non-financial firms in Nigeria.

4.5. Discussions

The results from the regression analysis revealed that board gender diversity was significant in mitigating financial constraint of non-financial firms in Nigeria. This result indicates that having an average of (15%) gender diversity on board helps reduce financial constraint situation of firms in Nigeria. Previous studies also confirms similar results that high gender diversity save firms from financial constraints (Yousaf et al., 2021; Farooq, 2020; Li et al. 2018). It implies that having a high percentage of female members on the board ensures more diverse and better decision-making, and that these factors are crucial in lowering information asymmetry and improving performance. This is consistent with earlier studies who opined that greater gender diversity on boards can lessen the risk of informed trading and differences in the amount of information that various market participants possess (Nazir & Afza, 2018; Abad et al., 2017). Moreso, having high proportion of women on the boards might help firms in mitigating against chances of information asymmetry and agency cost issues because women are known to be more meticulous and diligent in discharging their responsibilities.

The idea that gender diversity might lead to more thorough and well-informed board debates as well as more information sharing between board members and other stakeholders was backed by Abad et al. (2017). As a result, there may be a reduction in information asymmetry and a richer information environment in which providing private information has fewer advantages (Gul et al., 2011; Pucheta-Martínez et al., 2016). This also corroborates with the agency theory's presumptions, which stressed the need of diversity on the board of directors. The theory explains the significance of having women on the board by contending that they lower the level of conflict on corporate boards and efficiently utilise board development initiatives like work instructions, evaluations, and development programmes to increase board efficiency and effectiveness. Women are also more careful, risk-averse, knowledgeable, honest, and good decision-makers. This is also in line with the idea that diverse boards perform better because of the attributes that directors from different backgrounds bring to the table (Ararat et al., 2015; Kagzi & Guha, 2018). Thus, organisations should involve more women in strategic positions to minimize financial constraint problems and boost their level of performance. To put it in a nutshell, firms should understand that the higher the diversity on the board, the more the opportunities to access finances cheaply and safely due to more effective supervision and decisions from the diverse board, and thereby reduces financial constraints problems, leading improvement in performance of the firm. This result supports outcomes from previous research such as (Sixtus et al., 2019). However, it was observed from the descriptive analysis that many firms still maintain less than the 30% diversity proposed by regulatory agencies as a threshold to achieving effectiveness of the board. This is in line with the study claiming that firms still hold on to lower gender diversity, despite instruction from the Central Bank of Nigeria that least 30% diversity in terms of gender should be maintained on boards (Onyekwere & Babangida, 2022).

On the other side, audit committee independence was found to have inverse but insignificant effect on financial constraint of firms in Nigeria. This means that although the independence of the audit committee is negatively linked to financial constraint of firms, but despite that, it does not save firms from financial constraint problem. This correlates with previous researched who claimed that (Nazir & Afza, 2018) who found that audit committee independence have weak influence on firm performance by mitigating agency costs. Nevertheless, effective governance mechanism especially audit and board features, reduces information asymmetry and financial constraint. This result implies that high audit committee independence (at least half) may not attenuate financial constraint of the non-financial firms in Nigeria, but could enhance transparency, better information flows, and fair and honest assessment of the financial state of the firms. This is in line with the findings of previous studies suggesting that effective and independent of the audit committee helps firms minimize financial constraint, information asymmetry and boost performance (Farooq, 2020; Nazir & Talat, 2018). In essence independence of the audit committee helps firms monitor the financial activities, enhancing information flow, safeguards shareholders' rights, protects stakeholders' issues, optimization of shareholder's wealth, minimizes the agency conflict, and probability of financial constraint.

Explaining further, having more independent or non-executive directors in the audit committee, may not directly reduce financial constraint, but was observed that, it helps to reduce information asymmetry and risk management through the financial reporting process (Nazir & Talat, 2018). In the same vein, Farooq (2020) argues that an AC monitors financial activities of the firm and ensures that relevant information is available to stakeholders. The reason is that the independent or non-executive directors exercise their fiduciary responsibilities with utmost good faith by ensuring strict supervision of the activities of the board and management, as well giving fair and honest view of the firm's financial reports. As observed in Baklouti et al. (2016) who found that audit committee independence strengthens monitoring capability and saves the firm from financial constraint situation. This is in line with the outcome of previous studies which showed that having more independent or non-executive directors in the audit committee increases the capability of the directors in monitoring, protecting the interest of the shareholders by ensuring quality financial disclosure and reduces information asymmetry, which tends to increase the confidence of shareholders and encourage new investors, and thus increase the financial strength, efficient management of resources, manifesting in to improved performance (Owolabi et al., 2021; Osemwegie & Ugbogo, 2019).

5. Conclusion

In line with findings, this study concludes that board gender diversity mitigates financial constraint of firms in Nigeria. Specifically, having high proportion of female members on boards helps reduce financial constraint problems by providing diverse opinions among members of various ways to access finances, thereby minimizing chances of financial constraint. In other words, high proportion of female members on board ensure more diverse and better decision making, reduce chances of information asymmetry, minimize agency cost issues, and as such play a key role in reducing financial constraint. Additionally more diversity in terms of gender encourages the use of board development techniques such work instructions, assessments, and development programmes to increase board effectiveness and efficiency, as well as the reduction of conflict on corporate boards. Further, women make better decisions and are more careful and risk-averse. This study concludes that audit committee independence does not influence significantly financial constraint of firms in Nigeria, even though they are negatively correlated. This means that independence of the audit committee only helps firms monitor and supervise the financial activities, enhance information flow, safeguards shareholders' rights, optimization of shareholder's wealth, minimizes the agency conflict, but does not play significant role in saving the firm from financial constraint problem, thereby not having a direct impact financial constraint. The reason is that the independent or non-executive directors only exercise their fiduciary responsibilities with utmost good faith by ensuring strict monitoring and supervision of the activities of the board and management, as well giving fair and honest view of the firm's financial situation.

The findings imply that firms with an average high gender diversity could mitigate financial constraint of non-financial firms in Nigeria. However, the implications of this are that firms should ensure at least (30%) women on boards, to meet up with the requirements of the regulatory agencies (SEC), because such could ensure more diverse opinions in the board, foster innovations, more effective decisions, reduce chances of information asymmetry, reduce the level of conflict, and minimize agency cost issues, thereby improving board efficiency and effectiveness. In addition, women are more meticulous, honest, risk-averse, exhibit more expertise, and hence would avoid any investment without possibility of profit. Conversely, independence of the audit committee does not save firms from financial constraint problem, because the audit committee only exercises their professional fiduciary responsibilities by ensuring effective monitoring and supervision of the financial activities of the company. Hence, such could only promote more financial disclosures, transparency, protect and enhance the investors' rights, but does not directly create more access to funds to undertake profitable investments opportunities.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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