Does Female Board Presence Moderate on the relationship between Board Characteristic and Capital Structure? Evidence from Nigeria Listed Firms

Abstract

The study examines how female board presence moderates the relationship between corporate governance and capital structure of non-finance companies listed in Nigeria. The study covers a period of ten years from 2012 to 2021 using data obtained from Machame ratios database. A sample size of sixty non-finance listed firms were used. Using Stata version 14, he OLS pooled regression, diagnostic and robustness tests are carried out. result shows that larger board size of big and small non-finance firms in Nigeria tend to reduce their capital structure. Similarly, independence of the board of directors of big non-finance firms in Nigeria tend to reduce their capital structure.However, the board independence of smaller non-finance firms tends to increase their debt to asset ratio insignificantly. Again, the outcome shows that having a female director on a large board significantly decreases the level of leverage of the smaller firms in the sample. The study also shows that having a female director on an independent board significantly increases the debt-to-asset ratio of the bigger firms in the sample. The study recommendsat least one female director on a large board,increasein firms share capital and a review of the policies on female board members.

Key words: Corporate governance, Capital structure, female board presence, board size, board independence, leverage and Nigeria.

1. Introduction

In this paper, we examine how female board presence moderates the relationship between corporate governance and capital structure of non-finance companies listed in Nigeria. The corporate governance code for public companies(the 2003 code of corporate governance and the codes issued by the securities and exchange commission (SEC) in 2003 and 2011) applies to all listed companies in Nigeria. This excludes financial institutions and banks and acts as a driver for the sustainability of all listed firms. The code, therefore, relies on the board for compliance with the relevant laws. There also has been continued revision of corporate governance practices (Isukul&Chizea,2017, Adegbite & Nakajima, 2011 and Adegbite, 2015), even with poor compliance(Adegbeti, 2012). Finance literature has long debated the association between corporate governance and capital structure. Although these studies are primarily in the developed economies where the economies are market-based, for instance, UK and bank based, for instance, France. They have proven that board structure impacts capital structure (Ezeani, Kwabi, Boutaine& Komal, 2021). Therefore, strengthening the board of directors has been identified as a sure way of bridging the gap and solving the agency relationship issue. Efficient control of

leverage is essential to ensure an optimal level of debt. Though Nigeria is a mixed market economy, shareholders must be considered when decisions on leverage are made. Given the vast responsibility which lies on the board of directors to ensure the firm's continued existence, it is essential to examine the board characteristics which influences finance decisions of a firm in a mixed market economy.

To continue to improve board of directors' effectiveness, several factors have been considered, ranging from the diversity of skills, experience, background, age and gender. Gender diversity have received great attention (Bravo & Reguera- Alvarado, 2019) and yet women have remained underrepresented in the board, (Sudheen, Reddy & Aditya, 2019). In Nigeria, there are no specific regulations for gender representation except for some regulations. Examples include the stock exchange code of corporate governance and the Nigerian code of corporate governance which requires women to be considered when selecting board members.

The literature has posed several arguments on the need to include women and the board of directors of companies (Agyemang & Hannu, 2019). The argument has been anchored on their competence, qualification and experience, some have argued that these experiences, knowledge and values have influenced their behaviour in terms of ethical and risk attitude, (Adusei & Yaa, 2018). According to Elmegrhi, Ntim, Malagila, Fosu and Tunyi, (2020), board gender diversity has become a new way of strengthening corporate governance as the females in the board enhance monitoring and independence by sharing their diverse knowledge and ideas (Gyapong, Ahmed, Ntim and Nadeem, 2021). Lu, and Herremans(2019), found a positive association between board gender diversity and firm environmental performance. Nadeem, Suleman and Ahmed (2019) found that both gender diversity positively affects firm performance and moderate firm risk. However, there is still a paucity of literature on how board gender diversity affects non-financial firms in a mixed market developing economy like Nigeria. Therefore, our study seeks to find the interactive effect of female board presence on the association between corporate governance board characteristics and capital structure. Several studies have attempted to research in the area of gender diversity. Although, majority of the works have centred their studies on board diversity and firm performance (Khatib,Abdullah, Elamer &Abueid,2021, Mohammad, Abdullalif&Zakzout, 2018), more research is needed in the area of board characteristics and capital structure and the moderating effect of female presence.

This paper focuses on how gender presence moderates on the relationship between board characteristics and capital structure in Nigerian listed non-financial firms. The argument for Nigeria is necessary because female board presence is still not a law, so voluntary and low participation is still experienced. The listed corporations are the engine of the economy and the investments must be secured especially as there is divorcement between the owners of the business and the managers. This study is therefore very necessary to mirror the importance of the board gender presence in Nigeria-listed firms in the management of the capital structure, especially as previous studies have not been on Nigeria and non-financial institutions. The rest of this paper is structured as follows. Section 2 discusses the literature review while looking at related theories and hypotheses development. Section 3 presents the data and methodology, data

and variables employed in this study. Section 4 presents and discusses the empirical results, endogeneity issues and robustness checks. Section 5 concludes the study.

2 Literature review

Several management theories have been used to underpin discussions and research concerning board of directors and board diversity. However, the most cited of the theories are the Agency and the Resource dependency theories. Therefore, for this research, we shall employ the Agency and Resource Dependency theories.

Agency Theory explains the connection between the managers (agent) and the shareholder (principal). Usually, there is asymmetry of information between the agent and the principal, leading to conflict. The managers may sieve information shared with the shareholders, thereby causing conflict. However, with the board of directors, more reliable information is available for shareholders. This gives rise to effective oversight of the managers (Fama & Jensen, 1983). With proper oversight and governance, the interests of the shareholders are safeguarded as agents are compelled to maximise shareholder return regardless of whether there is a conflict of interest (Jensen & Meckling, 1976). Board characteristics have been identified in the literature to affect firms' capital structure. Through board activities, agency theory is mitigated (Adames,2010; Ezeani et al., 2021), as well as firms' decisions (Hu, Toboada& Zhang, 2020).

The Resource Dependency Theory is popular in the research on corporate governance and board diversity. This theory assumes that a diverse board amounts to a valuable resource which may help organisations achieve better financial results. This theory believes the organisation is an open system that is dependent on the external environment for survival. It believes that a diverse board represents more talent and valuable information which can improve the adverse function of managers and lead to an enhanced decision for the organisation. Management will therefore depend on the blend of human and social capital that the diverse board members provide (Prefer &Salancik, 1978; Hillman & Dalziel, 2003). The board members, therefore, employs a variety of resources such as information, their reputation, knowledge and skills in order to fulfil their obligations to the shareholders and other stakeholders.

Therefore, by recruiting a diverse board, the required skill, experience, and expertise of the female board members will be brought to bear to assist the firm in making conscious decisions on the firm’s capital structure.

Board size is a vital mechanism of corporate governance. Several arguments have followed to prove or disprove the vital role played in the monitoring function of the board. First, there have been arguments that a large board size will very unlikely make decisions that are drastic as their decision-making will involve compromises or concessions (Cheng 2008), as they offer quality guidance (Coles, Daniel and Naveen 2008). Therefore, board size has been emphasised to greatly impact unfavourable decision. Also, Gyapong et al (2021) corroborated that board size is inversely related to firm leverage.

However, in support of agency theory, Pillai & Al Malkawi (2018), have proven that a smaller board size may be more efficient if the board must engage in monitoring function. This is also corroborated by the findings of Chow, Muhammad, Bany-Ariffin and Cheng, (2018), who found that board size and board independence are ineffective governance mechanisms. This again contradicts the perspective of the resource dependence theory which believes that large boards are preferable for equality deliberation (Cheng, 2008; Cole et al, 2008).

Board independence is one of the corporate governance characteristics that influence capital structure. Board independence have been emphasised to reduce agency conflict. Studies have severally supported outsiders' domination of the board if shareholders' interests must be protected, (Weisbach, 1988; Fama & Jensen, 1983; Cole et al., 2003). Fama & Jensen (1983) found that firms' insiders inhibit board independence. Yekini et al (2015) also argued that having majority of the directors from outside was a signal of board independence.

Gender diverse board is that which have at least one female as a member. It has been argued that female brings quality to the discussion on the board and increase the monitoring ability of the board, (Kao et al.,2020; Komal, Ezeani, Shazad, Usman & Sun, 2021), as well as diverse perspective to the board (Frye & Pham, 2018; Reguers-Alvarado, Fuentes &laffarga, 2017). In addition, the presence of female directors encourages discussions and openness, reducing information asymmetry. Thus, openness prevents managers from exploiting the information gap to the detriment of the business owners. However, several studies have also reported that women have less risk appetite and therefore make less risky decisions (Adusei & Obeng, 2019; Faccio et al., 2016;Palvia et al. 2015).

Ezeani et al, (2021), argue that this low-risk appetite makes it very unlikely that they will choose financing decisions or actions with significant risk. Therefore, the leverage of firms where women are on the corporate board will likely be lower than the level desired by the firm's management. However, this notion is countered by Muhammad et al. (2019), who investigated the impact of gender diversity on a firm's equity risk and its effect on firm performance. They found a significant negative relationship between both gender diversity and firm risk and the same outcome between risk and firm performance. They argue that the positive contribution from board gender diversity is not due to risk averseness rather it is due to less information asymmetry and better decision-making through increased board deliberation.Chijoke-Mgbame, Boateng, and Mgbame (2020), and Agyemang & Hannu (2019), also contributed that firm performance is stronger with at least a female in the board, especially during a crisis period.

In spite of the extant literature on the effect of corporate board on firms, there still exists a knowledge gap as to how female presence in the board moderates on the connection between corporate governance characteristics and capital structure in a non-financial institution. While contributing to the body of knowledge on board gender diversity and corporate governance, the firm size, growth and age of firm were considered as control variables.

3. Data and Methodology

This study covers Nigerian non-finance companies listed on the Nigerian stock exchange.Due to the difference in business model and the extent of debt usage of companies in the finance sector, this group has been excluded from this study. Data for the annual report of non-finance firms from 2012 to 2021 was obtained from the Machemeratios database. As of December 2021, they were 109 firms listed on the floor of the Nigerian Exchange Group (NGX) (NGX Factbook, 2021). Specifically, the population of this study is drawn from 10 non-finance sectors on the NGX website; these include agriculture (5), conglomerate (5), consumer goods (22), construction and real estate (9), healthcare (10), ICT (9), oil and gas (9), industrial goods (17), natural resources (5), and services (24). Hence, the total of 109 non-finance firms from the sectors mentioned above forms the population of this study. Using filtering sampling technique, the population was filtered. The sample was selected based on the fact that the firms were listed on the Nigerian stock exchange between the periods 2012-2021. The annual financial statementof these firms are also available on the Machemeratios data base as well as extracted data. Furthermore, newly listed firms are also excluded from the study. In summary, only non-finance firms which had all relevant data and had continuously existed within the study period were included in the sample. The final sample size used included 60 listed non-finance firms in Nigeria. This study employed Stata version 14 and Microsoft excel analytical software for the analysis. The secondary data was analysed using descriptive statistics, correlation, and regression analysis. Descriptive statistics was used first to present the data showing mean, maximum, minimum, and the standard deviation and also carry out a check for normality of the data. Based on literature and earlier empirical studies, we formulate our model as:

$$\boldsymbol{DETA_{it} = \beta_0 + \beta_1 BODS_{it} + \beta_2 BODI_{it} + \beta_3 FBMP_{it} + \beta_4 ASGR_{it} + \beta_5 FSIZ_{it} + \mu_{it}} \text{ ... (1)}$$

$$\boldsymbol{DETA_{it} = \beta_0 + \beta_1 BODS_{it} + \beta_2 BODI_{it} + \beta_3 FBMP * BODS_{it} + \beta_4 FBMP * BODI_{it} + \beta_4 ASGR_{it} + \beta_5 FSIZ_{it} + \mu_{it}} \text{ ... (2)}$$

Where:

DETA	=	Debt to Total Asset
BODS	=	Board Size
BODI	=	Board independence
FBMP	=	Female board member presence
ASGR	=	Asset Growth
FSIZ	=	Firm Size
β_0	=	Constant
β_1- β_3	=	Slope Coefficient
μ	=	Stochastic disturbance
i	=	i^{th} company
t	=	time period

4. Empirical Results and Discussion

This study explores the moderating effect of female board member presence (FBMP) on the connection between board size (BODS), board independence (BODI) and the capital structure (DETA) of listed non-finance firms in Nigeria from 2012 to 2021. Furthermore, the study employed the variable of asset growth (ASGR) and firm size (FSIZ) to control the model's goodness of fit. Remarkably, this section of the study shows the descriptive statistics, the regression analysis, and the discussion of findings.

Descriptive Statistics

A summary of the descriptive statistics for both the explanatory and dependent variables of interest is presented in table 1. For each variable, the mean, standard deviation, maximum and minimum is examined.

Table 1: Summary of Descriptive Statistics

VARIABLES	MEAN	SD	MIN	MAX	NO OBS
DETA	66.85	43.05	-20.78	395.45	591
BODS	8.43	2.46	3	19	588
BODI	69.34	13.47	16.67	100	586
FBMP	0.61	0.49	0	1	600
ASGR	7.08	30.13	-100	244.08	595
FSIZ	6.97	0.83	5.03	9.38	591

Source: Author (2023)

The table presented above summarises the descriptive statistics for this study. From the presentation above, it is observed that the mean of capital structure measured in terms of the ratio of debt to equity is 66.85 while the standard deviation is 43.05. In the case of the independent variables, we find that the mean of board size is 8 members and a standard deviation of 2 members. This implies that on the average, the board of directors of the firms under investigation was 8 members during the period under study. The descriptive also that the mean of board independence was 69.34 with a standard deviation of 13.47. The table reveals that the mean of female board member presence was 0.61 with a standard deviation of 0.49. This also implies that on the average, about 61% of the firms under study had a female as part of the board of directors. In the case of the control variables, we find that the mean of asset growth was 7.08 with a standard deviation of 30.13. We also find that the mean of firm size is 6.97 with a standard deviation of 0.83. Specifically, we note that the median of firm size is 6.84. This indicates that firms with higher values of the median of firm size are regarded as larger firms and those below the median of firm size are regarded as smaller firms in our sample.

Regression Analyses

However, the study used a robust regression technique to examine the cause-and-effect relationships between the dependent and independent variables and test the formulated hypotheses. The pooled OLS and robust regression results obtained are presented and discussed below.

Table 2: Regression Results

	Model 1: Before Moderation		Model 2: After Moderation	
	DETA Model (Pooled OLS)	DETA Model (Robust Regression)	DETA Model (Pooled OLS)	DETA Model (Robust Regression)
CONS.	89.700 {0.000} ***	45.079 {0.000} ***	86.317 {0.000} ***	56.567 {0.000} ***
BODS	-3.137 {0.000} ***	-2.701 {0.000} ***	-1.849 {0.160}	-1.794 {0.018} **
BODI	-0.073 {0.580}	-0.139 {0.069}	-0.146 {0.480}	-0.348 {0.004} **
FBMP	8.400 {0.025} **	5.196 {0.016} **		
ASGR	-0.190 {0.002} **	-0.038 {0.280}	-0.192 {0.002} **	-0.035 {0.327}
FSIZ	0.754 {0.760}	6.324 {0.000} ***	1.215 {0.624}	6.143 {0.000} ***
FBMP*BODS			-1.510 {0.330}	-0.953 {0.286}
FBMP*BODI			0.133 {0.621}	0.370 {0.018} **
F-statistics/	6.27 (0.0000) ***	9.59 (0.0000) ***	4.53 (0.0000) ***	7.65 (0.0000) ***
R- Squared	0.0515	0.0515	0.0450	0.0450
VIF Test	1.19		2.29	
Hettest	65.31 (0.0000)		46.95 (0.0000)	

Note: (1) bracket {} are p-values; (2) **, *, implies statistical significance at 5% and 1% levels respectively**

The table presented above shows the results obtain from the moderated and unmoderated models in this study. From the table, it is observed that the OLS pooled regression had an R-squared value of 0.0515 for the unmoderated model and 0.0450 for the moderated model. This shows that about 5% of the systematic variations in the capital structure as measured by the ratio of debt to asset of the pooled non-finance listed firms throughout study was jointly explained by the independent and control variables in both models respectively. The unexplained part of capital structure can be attributed to the exclusion of other independent variables that have impact on capital structure but were, however, captured in the error term. The F-statistic value of 6.27 (unmoderated model) and 4.53 (moderated model) and their associated P-value of 0.0000 and P-value of 0.0000 shows that the pool OLS regression of both model on the overall are statistically significant at 1% level respectively. This means that the regression models are valid and can be used to draw statistical inference. However, the study further subjected the estimates of the OLS

regression of both models to a diagnostic test. These tests include multicollinearity and heteroscedasticity. Specifically, as indicated in the table above, a mean VIF value of 1.19 for the unmoderated model and 2.29 for the moderated model shows that the VIF is within the benchmark value of 10. This is an indication of the absence of multicollinearity, and this means no independent variable should be dropped from the model. The result obtained from the regression of both models as shown in the table above reveals a probability value of P-value: 0.0000 for the unmoderated and moderated models. This result indicates that the assumption of homoscedasticity has been violated since a very low P-values which is statistically significant at 1% level is observed for both models. However, the study re-specifies the model to cater for this error by employing the robust regression as recommended by Greene, (2003). Specifically, we performed a robustness check where the sample was split into larger and smaller samplers. Notably, we note that the median of firm size is 6.84. This indicates that firms with higher values of the median of firm size are regarded as larger firms and those below the median are regarded as smaller firms. The result obtained from the robustness check is presented below:

Table 3: Robustness Check

	LARGER FIRMS SAMPLE				SMALLER FIRMS SAMPLE			
	Model 1: Before Moderation		Model 2: After Moderation		Model 1: Before Moderation		Model 2: After Moderation	
	DETA Model (Pooled OLS)	DETA Model (Robust Reg)	DETA Model (Pooled OLS)	DETA Model (Robust Reg.)	DETA Model (Pooled OLS)	DETA Model (Robust Reg)	DETA Model (Pooled OLS)	DETA Model (Robust Reg.)
CONS.	95.834 {0.000} ***	101.412 {0.000} ***	110.386 {0.000} ***	128.268 {0.000} ***	108.583 {0.000} ***	81.351 {0.000} ***	91.061 {0.000} ***	79.565 {0.000} ***
BODS	-2.242 {0.002} **	-1.107 {0.015} **	-2.133 {0.142}	-2.273 {0.011} **	-5.612 {0.000} ***	-4.288 {0.000} ***	-2.675 {0.166}	-0.771 {0.474}
BODI	-0.117 {0.417}	-0.382 {0.000} ***	-0.320 {0.181}	-0.660 {0.000} ***	-0.066 {0.760}	0.045 {0.711}	-0.044 {0.891}	-0.247 {0.166}
FBMP	2.218 {0.593} **	-2.086 {0.416}			13.411 {0.028} **	11.534 {0.001} **		
ASGR	-0.062 {0.291}	0.030 {0.417}	-0.058 {0.325}	0.041 {0.256}	-0.450 {0.000} ***	-0.183 {0.007} **	-0.455 {0.000} ***	-0.169 {0.013} **
FBMP*BODS			-0.143 {0.932}	-0.143 {0.162}			-4.687 {0.097}	-5.725 {0.000} ***
FBMP*BODI			0.325 {0.278}	0.401 {0.029} **			-0.126 {0.773}	0.463 {0.059}
F-statistics/	3.16 (0.0145)	7.68 (0.0000)	2.71 (0.0207)	7.95 (0.0000)	7.74 (0.0000)	9.69 (0.0000)	5.77 (0.0000)	8.42 (0.0000)
R- Squared	0.0421	0.0421	0.0451	0.0451	0.0977	0.0977	0.0919	0.0919
VIF Test	1.03		2.99		1.05		1.78	
Hettest	10.66 (0.0011)		6.71 (0.0096)		39.62 (0.0000)		30.86 (0.0000)	

Note: (1) bracket {} are p-values; (2) **, *, implies statistical significance at 5% and 1% levels respectively**

The table presented shows the results obtained from the moderated and unmoderated models of this study's larger and smaller firm samples. From the table presented, it is observed that the OLS pooled regression had an R-squared value of 0.0421 for the unmoderated model and 0.0451 for the moderated model of the larger firm samples in this study. This implies that about 4% and 5% systematic variations in the capital structure as measured by the ratio of debt to asset of the pooled non-finance listed firms throughout study was jointly explained by the independent and control variables in both models, respectively. Similarly, we observed an R-squared value of 0.0977 for the unmoderated model and 0.0919 for the moderated model of the smaller firm samples in this study. This implies that about 10% and 9% systematic variations in the capital structure as measured by the ratio of debt to asset of the pooled non-finance listed firms throughout study was jointly explained by the independent variables as well as thecontrol variables in both models respectively. The unexplained part of capital structure can be attributed to the exclusion of other independent variables that can impact on capital structure but were captured in the error term. Furthermore, in terms of the larger firms in the sample, the F-statistic value of 3.16 (unmoderated model) and 2.71 (moderated model) and their associated P-value of 0.00145 and P-value of 0.0207 indicates that the pool OLS regression of the two models are statistically significant at 5% level respectively, this means that the regression models are valid and can be used to make statistical inferences.

Discussion of Findings

In terms of the causal effect of board size and board independence on capital structure, we find from the robust regression in table 2 and 3 (unmoderated models) that board size {coeff: -2.701; p-value: (0.000} has a negative and significant effect on the capital structure of listed non-finance firms in Nigeria during the period under study. Furthermore, our result indicates that board size {coeff: -1.107; p-value: (0.015)} has a negative significant effect on the capital structure of big non-finance firms in Nigeria. Board size {coeff: -4.288; p-value: (0.000)} also has a negative and significant effect on the capital structure of our smaller firm sample. From the foregoing, we reject the null hypothesis, indicating that board size has a significant effect on the capital structure of listed non-finance firms in Nigeria.Our result implies that larger board sizes of big and small non-finance firms in Nigeria tend to reduce their capital structure as measured in terms of debt-to-asset ratio during the period under study. Our finding here aligns with Berger et al (1997). They argue that firms with large board members usually supported capital structure with low debt ratio. They argue that large board size put pressure on the corporate board into adopting lower leverage in other to achieve high performance (Ernest et al 2021). This finding contradicts the findings of Jensen (1986) who found that firms with large board size was synonymous with high leverage and Chow et al (2018) who argued that board independence are ineffective governance mechanism. We also find from the robust regression in table 2 and 3 (unmoderated models) that board independence {coeff: -139; p-value: (0.069} has a negative and insignificant effect on the capital structure of non-finance firms listed in Nigeria during the period under study. Furthermore, our result indicates that board independence {coeff: -0.382; p-value: (0.000)} has a significant negative effect on the capital structure of big non-finance firms in Nigeria. However, result show that board independence {coeff: 0.045; p-value: (0.000)} has a positive

and insignificant effect on the capital structure of our smaller firm sample. From the foregoing, we reject the null hypothesis, indicating that board independence has a significant effect on the capital structure of listed non-finance firms in Nigeria. However, this is specific to the smaller firm sample of non-finance firms in Nigeria. Our result implies that the independence of the board of directors of big non-finance firms in Nigeria tends to reduce their capital structure as measured in terms of debt-to-asset ratio during the period under study. However, our result also implies that the independence of the board of directors of smaller non-finance firms tends to insignificantly increase their debt-to-asset ratio.This finding contradicts the resource dependency theory and corroborates the finding of Chow et al (2018) where they found board size and board independence as ineffective governance mechanism. Njuguna and Obwogi (2015) also argue that a positive and significant relationship exist between independent board and capital structure in the listed companies studied. They believe that the presence of independent directors will increase the capital structure of the firm.

The result from the robust regression shows that female board member presence {coeff: -0.953; p-value: (0.286)} has a negative and insignificant interacting effect on the relationship between board size and capital structure. Similarly, for our bigger firm sample, we find that female board member presence {coeff: -0.143; p-value: (0.162)} has a negative and insignificant interacting effect on the relationship between board size and capital structure. However, we find that female board member presence {coeff: -5.725; p-value: (0.000)} has a negative and significant interacting effect on the relationship between board size and capital structure. This implies that having a female director on a large board significantly decreases the debt-to-asset ratio of the smaller firm sample of our non-finance firms under study.This finding is synonymous with the findings of Kao et al (2020), Komal et al (2021) who argue that females bring quality contribution to the board discussion and also increase the monitoring ability of the board. Their presence reduces information symmetry and their openness discourage exploitation by the manager. Even though they have been argued to be more risk-averse and therefore will make less risky decisions (Ezeani et al 2021). This finding shows that their presence will reduce Agency problem.

Finally, the result from the robust regression shows that female board member presence {coeff: 0.370; p-value: (0.018)} has a positive and significant interacting effect on the relationship between board independence and capital structure.We therefore reject the null hypothesis indicating that female presence in an independent board impacts on the level of leverage. Similarly, for our bigger firm sample, result show that female board member presence {coeff: 0.401; p-value: (0.029)} has a positive and significant interacting effect on the relationship between board independence and capital structure. However, for our smaller firm sample, we find that female board member presence {coeff: 0.463; p-value: (0.059)} has a positive and insignificant interacting effect on the relationship between board independence and capital structure. This implies that having a female director on an independent board significantlyincrease the debt-to-asset ratio of bigger firm sample of our non-finance firms under study. This therefore contradicts the works of Kao et al (2020) and Komal et al (2021).

5. Conclusion and Recommendations

We explore the moderating effect of female board member presence (FBMP) on the link between board size (BODS), board independence (BODI) and the capital structure (DETA) of listed non-finance firms in Nigeria from 2012 to 2021. Furthermore, the study employed the variable of asset growth (ASGR) and firm size (FSIZ) to control the model's goodness of fit. With the meadian firm size as 6,84,we conclude that larger board size of big and small non-finance firms in Nigeria tend to reduce their capital structure as measured in terms of debt to asset ratio during the period under study.

Furthermore, we conclude that the independence of the board of directors of big non-finance firms in Nigeria tend to reduce their capital structure.However, our result also implies that the independence of the board of directors of smaller non-finance firms tends to increase their debt to asset ratio insignificantly. We also conclude that having a female director on a large board significantly decreases the debt-to-asset ratio of the smaller firm sample of our non-finance firms under study. Finally, we conclude that having a female director on an independent board significantly increases the debt-to-asset ratio of the bigger firm sample of our non-finance firms under study.Succinctly, we recommend that the management of non-finance firms should have at least one female director on a large board since female directors can often influence managers' decisions to adopt lower leverage. Additional options could include the increase of the firm’s equity base. This can be achieved through the increase of the number of shares. Partnerships could also be formed with other equity investors. Furthermore, we recommend that policies on female board members be reviewed, especially when the board is highly independent. A combination of a female board member and an independent board will ensure better management decisions are made and will also help non-finance firms attract better resources given the knowledge and experience of the independent and diverse board members. The difference in business model and the extent of debt usage of companies in the finance sector necessitates their exclusion from this study. This group provides a direction for further studies. Having studied the non finance sector, research into the finance sector will pose a worthy course to examine the effect of independent board and board size on the capital structure of the finance companies, as well as the moderating effect of female presence in the board. Other Corporate Governance characteristics may be tested to find out if they have effects on the capital structure decision of both the finance and non-finance sector.

References

Adams, R. B., Hermalin, B. E., & Weisbach, M. S. (2010). The role ofboards of directors in corporate governance: A conceptual frame-work and survey.*Journal of Economic Literature*, *48*(1), 58–107.

Adegbite, E. (2015). Good corporate governance in Nigeria: Antecedents, propositions and peculiarities. *International business review*, *24*(2), 319-330.

Adegbite, E. (2012). Corporate governance regulation in Nigeria. *Corporate Governance: international journal of business in society*, *12*(2), 257-276.

Adegbite, E., & Nakajima, C. (2011). Corporate governance and responsibility in Nigeria. *International journal of Disclosure and Governance*, *8*(3), 252-271.

Adusei M, Obeng EYT (2019) Board gender diversity and the capital structure of microfinance institutions: A global analysis. *Q Rev Econ Finance 71*:258–269. https://doi.org/10.1016/j.qref.2018.09.006

Agyemang-Mintah, P., &Schadewitz, H. (2019). Gender diversity and firm value: evidence from UK financial institutions. *International Journal of Accounting & Information Management*. . 27 (1), 2-26. https://doi.org/10.1108/IJAIM-06-2017-0073

Alves, P., Couto, E.B., & Francisco, P.M., (2015). Board of directors' composition and capital structure. Research in International Business and Finance,35, 1-32.

Cheng S (2008) Board size and the variability of corporate performance. *J Financ Econ 87*(1):157–176

Chijoke-Mgbame, A. M., Boateng, A., &Mgbame, C. O. (2020, July). Board gender diversity, audit committee and financial performance: evidence from Nigeria. In *Accounting Forum* 44, (3): 262-286

Chow, Y.P., Muhammad, J., Bany-Ariffin, A.N. & Cheng, F.F. (2018). "Macroeconomic uncertainty, corporate governance and corporate capital structure", *International Journal of Managerial Finance*,14(3), 301-321. https://doi.org/10.1108/IJMF-08-2017-0156

Coles JL, Daniel ND, Naveen L (2008). Boards: Does one size fit all? *Journal of Financial Economics 87*(2):329–356.

Elmagrhi, M. H., Ntim, C. G., Elamer, A. A., & Zhang, Q. (2018). A study of environmental policies and regulations, governance structures, and environmental performance: The role of female directors. *Business Strategy and the Environment*, *28*(1), 206–220

Ezeani, E., Salem, R., Kwabi, F., Boutaine, K., & Komal, B. (2021).Board monitoring and capital structure dynamics: Evidencefrom bank-based economies.*Review of Quantitative Finance and Accounting*, *58*, 473–498.

Faccio M, Marchica M-T, &Mura R (2016) CEO gender, corporate risk-taking, and

the efficiency of capital allocation. *J Corp Finance 39*:193–209

Farrell, K. A., & Hersch, P. L. (2005). Additions to corporate boards: The effect of gender. *Journal of Corporate Finance, 11*(1–2): 85–106 https://doi.org/10.1016/j.jcorpfin.2003.12.001

Frye M B, & Pham D T (2018). CEO gender and corporate board structures. *The quarterly Review of Economics and Finance, 69*:110–124. https://doi.org/10.1016/j.qref.2017.12.002

Galbreath, J. (2017). The impact of board structure on corporate social responsibility: A temporal view. *Business Strategy and the Environment, 26*(3), 358–370. https://doi.org/10.1002/bse.1922

Gyapong, E., Ahmed, A., Ntim, C. G., & Nadeem, M. (2021). Board gender diversity and dividend policy in Australian listed firms: the effect of ownership concentration. *Asia Pacific Journal of Management, 38*, 603-643.

Henry, L. A., Buyl, T., & Jansen, R. J. G. (2019). Leading corporate sustainability: The role of top management team composition for triple bottom line performance. *Business Strategy and the Environment, 28*(1), 173–184. https://doi.org/10.1002/bse.2247

Herremans, I., Herschovis, M., & Bertels, S. (2009). Leaders and laggards: The influence of competing logics on corporate environmental action. Journal of Business Ethics, 89(3), 449–472. https://doi.org/10.1007/s105510080010z

Herremans, I., Nazari, J., &Mahmoudian, F. (2016). Stakeholder relationships, engagement, and sustainability reporting. *Journal of Business Ethics, 138*(3), 417–435. https://doi.org/10.1007/s10551-_015-_2634-_0

Hu, J., Li, S., Taboada, A. G., & Zhang, F. (2020). Corporate boardreforms around the world and stock price crash risk.*Journal of Corporate Finance, 62*, 1015579

Isukul, A. C., &Chizea, J. J. (2017). Corporate governance disclosure in developing countries: A comparative analysis in Nigerian and South African banks. *Sage Open, 7*(3), 2158244017719112.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics, 3(4), 305–360.

Kao, E.H., Huang, HC., Fung, HG.& Liu X (2020) Co-opted directors, gender diversity, and crash risk: evidence from China. *Review of Quantitative Finance Accounting 55*(2):461–500

Khatib, S. F., Abdullah, D. F., Elamer, A. A., &Abueid, R. (2021). Nudging toward diversity in the boardroom: A systematic literature review of board diversity of financial institutions. *Business Strategy and the Environment, 30*(2), 985-1002.

Komal, B., Ezeani, E., Shahzad, A., Usman, M., & Sun, J. (2021). Age diversity of audit committee financial experts, ownership structure and earnings management: Evidence from China. *International Journal of Finance & Economics*.

Lu, J., &Herremans, I. M. (2019). Board gender diversity and environmental performance: An industries perspective. *Business Strategy and the Environment*, *28*(7), 1449-1464.

Nadeem, M., Suleman, T., & Ahmed, A. (2019). Women on boards, firm risk and the profitability nexus: Does gender diversity moderate the risk and return relationship?. *International Review of Economics & Finance*, *64*, 427-442.

Okike, E. N. (2007). Corporate governance in Nigeria: The status quo. *Corporate Governance: An International Review*, *15*(2), 173-193.

Palvia A, Vähämaa E, Vähämaa S (2015) Are female ceos and chairwomen more conservativeand risk averse? Evidence from the banking industry during the financial crisis. *J Bus Ethics 131*(3):577–594. https://doi.org/10.1007/s10551-014-2288-3

Pucheta- Martínez, M. C., & Bel- Oms, I. (2018). What have we learnt about board gender diversity as a business strategy? The appointment of board subcommittees. *Business Strategy and the Environment*, *28*(2), 301–315.

Pucheta- Martínez, M. C., Gallego- Álvarez, I., & Bel- Oms, I. (2019). Board structures, liberal countries, and developed market economies. Do they matter in environmental reporting? An international outlook. *Business Strategy and the Environment*, *28*(5), 710-723.

Reddy, S., & Jadhav, A. M. (2019). Gender diversity in boardrooms – A literature review. *CogentEconomics & Finance, 7(1)*: 1644703 https://doi.org/10.1080/23322039.2019.164470

Reguera-Alvarado N, de Fuentes P, Laffarga J (2017) Does board gender diversity influence financial performance? Evidence from Spain. *J Bus Ethics 141*(2), 337–350. https://doi.org/10.1007/s10551-015-2735-9

Sewpersadh, N. S. (2019). Governing board attributes as profitability influencers under endogeneity: An econometric analysis in South Africa. *ACRN Journal of Finance and Risk Perspectives*, *8*, 133.

Wang, M., & Kelan, E. (2013). The gender quota and female leadership: Effects of the Norwegian gender quota on board chairs and CEOs. *Journal of Business Ethics, 117*(3), 449–466.