Original Article

Determinants of Leverage in Emerging Markets and the Moderating Effect of Foreign Ownership: Evidence from Nigeria

Global Business Review
1–22

DOI: 10.1177/09721509241295526
journals.sagepub.com/home/gbr


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Abstract

Managers of corporations are usually faced with several strategic decisions to make, including those related to capital structure and financial leverage. This study examines the determinants of leverage practices of listed non-financial firms, both local and foreign, and the moderating effect of foreign ownership. The study uses data from 61 listed non-financial firms over the period 2011–2021 and employs the generalized method of moments estimation technique to explore direct and moderating relationships. The key findings show that profitability, firm growth, liquidity, asset tangibility, capital expenditure, dividend and foreign ownership decrease leverage significantly, while holding more cash increases leverage practices significantly. In particular, firm growth, asset tangibility and dividend increase leverage insignificantly (significantly for cash), whereas return on asset and liquidity significantly decrease leverage in local firms (insignificantly for capital expenditure). On the other hand, all firm characteristics, except cash and dividends, significantly decrease leverage in foreign firms. Moreover, foreign firms have more debt financing compared to the local firms in Nigeria. It is also evident that foreign ownership moderates the relationship between return on asset, firm growth and leverage practices. Such findings should assist managers, investors and regulators in Nigeria to understand the determining factors of leverage and to consider the accruing benefits of debt financing over equity financing.

Keywords

Firm characteristics, foreign ownership, generalized method of moments, leverage, Nigeria

1. Introduction

Managers of corporations are usually faced with several strategic decisions to make, including those related to capital structure and financial leverage, which involve the right balance between borrowed and

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owner's funds to embark upon, as the firm survival depends on such decisions (Danso & Adomako, 2014). Moreover, different, and sometimes conflicting, needs of debtholders and shareholders make finding such balance even harder (Singh et al., 2021) and has become a challenging debate for academics and practitioners. On the other hand, despite some benefits that debt might have, such as deductions of interest for tax purposes, other firms might prefer to have a substantial amount of cash held to finance their operations (Dangl & Zechner, 2021; Hando & Sharma, 2014), while Cuong et al. (2020) stated that firm operations are usually affected by its country's economic environment. Several empirical studies and theories on capital structure have been developed following the work of Modigliani and Miller in 1958 about the irrelevance of capital structure (Rehman et al., 2016).

Debt financing practices from the perspective of firm-specific characteristics have received lots of attention, and even currently, by several scholars around the world, from the Asian region (Al-Ahdal et al., 2022; Gulzar & Haque, 2022; Zeitun & Goaied, 2021) to the European region (Bilgin & Dinc, 2019; Sikveland & Zhang, 2021; Yarba & Guner, 2019) and to the African region (Bolarinwa & Adegboye, 2020; Chipeta & Deressa, 2016; Munisi, 2017) and also the American region (Chen et al., 2021; El-Khatib, 2017).

The selection of Nigeria for the conduct of this study is very important for several reasons. First, Nigeria is known to be the biggest economy in Africa in terms of gross domestic product. Second, it is among the top two stock exchanges in Africa as regards to market capitalization and attracts a lot of foreign investors. Also, as a developing nation with lots of prospects, it is important to know the leverage practice from the perspective of a developing nation. There are similar studies in Africa but a limited number in Nigeria in particular. Munisi (2017) studied 12 sub-Saharan African countries but considered only 5 years (2005–2009). Chipeta and Deressa (2016) studied 12 sub-Saharan African countries but did not compare local and multinational firms in the selected firms. Bolarinwa (2020) studied several firms in Nigeria but did not consider the influence of foreign ownership on leverage.

However, to the best of the researchers' knowledge, there is no literature on the moderating effect of foreign ownership on the relationship between firm-specific characteristics and corporate leverage of firms in Africa, Nigeria to be precise, and also comparing local and foreign firms. Therefore, this study aims to fill this gap by looking into the corporate leverage practices in Nigeria, taking into account the influence of multinational companies (MNCs), to answer this research question: What are the determinants of leverage in emerging markets, and does foreign ownership have any influence? A couple of objectives have been identified to help tackle this question:

1. To identify firm characteristics which have an impact on corporate leverage practices in Nigeria.
2. To explore the role of foreign ownership and whether it has any moderating impact on how firm characteristics affect leverage in Nigeria.

This study has several contributions, including the construction of a manually collected data set of Nigerian non-financial firms for over 10 years. It also expands the literature on the determinants of financial leverage practices in Nigeria, and whether the use of debt financing differs between locally owned companies and MNCs. It further explores the moderating effect of such foreign ownership on the determinants of financial leverage and offers new insights to understand why such factors affect Nigerian firms differently.

The rest of the article is organized into four sections. The literature review is discussed next in the second section. Then, the third section consists of methodology, followed by results and discussion in the fourth section. The study ends with a conclusion, including a summary of key findings, policy implications, limitations and areas for further research.

2. Literature Review

Several theories have been used to explain leverage practices by several researchers, especially from the perspective of a firm's specific characteristics. The tradeoff theory explains that firms consider the benefit from tax as well as the cost of bankruptcy when setting their leverage ratio target (Hang et al., 2018). In other words, the capital structure of a firm is a function of the cost and benefit of debt, and also a function of the attributes of the assets of a firm (Axelson et al., 2013; Gungoraydinoglu & Öztekin, 2011). Some of these benefits include the deduction of interest from tax (Onofrei et al., 2015).

On the other hand, the pecking order theory posits that a firm's choice of financing is in preferential order; internal funds, debt financing and then equity financing (Adair & Adaskou, 2015). Companies prefer debt financing to equity (Hang et al., 2018). As regards to pecking order theory, debt follows after considering the retained earnings of firms, and then ordinary shares (Orlova et al., 2020). Table 1 shows a summary of previous literature on leverage that have been reviewed, including the title, country, methodology, and findings. Based on the aforementioned, this study contributes to the literature on the determinants of financial leverage practices in Nigeria, both in local and foreign firms. It further explores the moderating effect of such foreign ownership on the determinants of financial leverage and offers new insights to understand why such factors affect Nigerian firms differently.

2.1. Profitability and Leverage

The common belief is that profitable firms tend to have more debt financing, but most of the empirical evidence suggests otherwise (Eckbo & Kisser, 2021). Instead, highly profitable firms tend to borrow less (Frank & Goyal, 2014). Sikveland and Zhang (2021) clarify that there are more earnings retained from profitable firms, which will lessen the chances of embarking on debt financing because firms usually consider their internal funds first before external. The majority of the studies reviewed reported profitability as having a negative effect on leverage (Al-Ahdal et al., 2022; Duarte et al., 2021; Zeitun & Goaied, 2021). Although there are few other reported positive effects (Fitzgerald & Ryan, 2018; Gulzar & Haque, 2022; Jahanzeb et al., 2015). Based on the above previous studies and supported by pecking order theory, the below hypothesis is proposed:

H_1: Profitability has a negative significant impact on leverage.

2.2. Growth and Leverage

There is a higher need for external funds for firms with high growth prospects (Ghose & Kabra, 2020). Munisi (2017) is of the opinion that lenders perceive high-growth firms as being able to generate future positive cash flow which will enable them to service their debt and as a result, they easily lend funds to those types of firms. The majority of the studies reviewed reported mixed results, as some reported positive effects (Kizildag & Ozdemir, 2016; Li & Stathis, 2017; Rehman et al., 2016) and others negative effects (Guner, 2016; Mateev et al., 2012; Sikveland & Zhang, 2021). Based on the above previous studies and supported by the pecking order theory of a positive effect, the below hypothesis is proposed:

H_2: Growth has a positive significant impact on leverage.

2.3. Asset Tangibility and Leverage

Collaterals are usually involved in borrowing, and tangible assets serve as one in which firms place as collateral in a way to assure the lenders of recovering their borrowed finance from creditors, on one hand (Munisi, 2017). The majority of the studies reviewed, including more recent ones, reported a positive effect (Bilgin & Dinc, 2019; Bolarinwa & Adegboye, 2020; Hando & Sharma, 2014), while few others reported a negative effect (Jahanzeb et al., 2015; Mateev et al., 2012; Prime & Qi, 2013). Based on the above previous studies and supported by the pecking order theory and trade-off theory of positive effect, the below hypothesis is proposed:

H_3: Asset tangibility has a positive significant impact on leverage.

2.4. Liquidity and Leverage

The pecking order theory explains that firms fund their investment using internal funds in the form of liquidity before opting for external funding/borrowing. This situation will see debt decrease with an increase in liquidity (Onofrei et al., 2015; Zafar et al., 2019).

The majority of the studies reviewed reported liquidity having a negative effect on leverage (Bhat et al., 2020; Bolarinwa & Adegboye, 2020; Dakua, 2018; Jahanzeb et al., 2015; Onofrei et al., 2015; Prime & Qi, 2013; Rehman et al., 2016; Serghiescu & Vaidean, 2014; Zafar et al., 2019), while few other studies have recorded positive effects (Al-Ahdal et al., 2022; Hando & Sharma, 2014; Zeitun & Goaied, 2021). Based on previous studies and supported by the pecking order theory, the below hypothesis is proposed:

H_4: Liquidity has a negative significant impact on leverage.

2.5. Cash Holdings and Leverage

According to Sanchez-Vidal (2014), cash is an internally generated resource, which, if sufficient, would result in lesser external finance such as debt. With this regard, Lian et al. (2011), Sanchez-Vidal (2014), Proenca et al. (2014), Magerakis et al. (2015) and Jumah et al. (2023) found that more cash holdings are related to less leverage, which means that cash holding has a negative impact on financial leverage. Therefore, and supported by the pecking order theory, the below hypothesis is proposed:

H_5: Cash holdings have a negative significant impact on leverage.

2.6. Capital Expenditure and Leverage

Capital expenditure is an outflow which will result in increased leverage (Kizildag & Ozdemir, 2016). A study was carried out in Jordan by Khasawneh and Staytieh (2017) using fixed effect regression. It was found that capital expenditure positively affected leverage. A similar study was carried out on firms in the United States by Kizildag and Ozdemir (2016) for the period between 1990 and 2015, and the same positive effect was reported. Chang et al. (2014) studied the capital structure of China firms and its determinants, covering the period between 1998 and 2009. The study revealed a negative effect between capital expenditure and leverage. This finding was supported by Li and Stathis (2017) who studied Australian firms and found negative effects as well.

Based on the above previous studies and supported by the pecking order theory (positive effect), the below hypothesis is proposed:

H_6: Capital expenditure has a positive significant impact on leverage.

2.7. Dividends and Leverage

Dividends, which are sourced from internally generated funds, tend to reduce debt with an increase in dividends. Just like the pecking order theory posits that firms utilize internal funds for investment first before considering external funds.

A study was carried out on Pakistan firms by Jahanzeb et al. (2015) for the period between 2003 and 2012. The study looked at dividends and leverage and the findings reported the existence of a positive effect. Do et al. (2019) carried out a similar study on Taiwanese firms and found a positive effect. This was supported by the findings of Yamada (2019) who studied Japanese firms. Using quantile regression, Sanchez-Vidal (2014) carried out a study on leverage determinants in Spanish firms. The study evidenced a negative effect of dividends on leverage. This finding was supported by El-Khatib (2017).

Based on the above previous studies, the below hypothesis is proposed:

H_7: Dividend has a negative significant impact on leverage.

2.8. Foreign Ownership and Leverage

Most of the reviewed studies reported foreign ownership has a negative effect on leverage (Gupta et al., 2020; Khasawneh & Staytieh, 2017). There are also some that recorded positive effects as well (Do et al., 2019). Based on the above previous studies and supported by the pecking order theory, the below hypothesis is proposed:

H_8: Foreign ownership has a negative significant impact on leverage.

This study has several contributions, including the expansion of the literature on the determinants of financial leverage practices in Nigeria, and whether the use of debt financing differs between locally owned companies and MNCs. It further explores the moderating effect of such foreign ownership on the determinants of financial leverage and offers new insights to understand why such factors affect Nigerian firms differently.

3. Materials and Methods

3.1. Data and Variable Descriptions

Quantitative research was employed, and secondary data were collected from the Nigerian Exchange Group (formerly Nigerian Stock Exchange) for the period 2011–2021. The chosen period of study was informed by the need to take into consideration the era of recession in Nigeria between 2011 and 2015. Also, at the time of data collection, most of the companies had 2021 as their latest annual report. The study considered all the companies listed in the Nigerian Stock Exchange, which amounted to 156 as of January 2023. The Nigerian Stock Exchange classified companies into 11 categories: conglomerate,

healthcare, agriculture, construction/real estate, financial services, consumer goods, information and communication technology, industrial goods, natural resources, oil and gas and services. The criteria for the selection of the companies for the study were that the companies must have complete data, especially for leverage all through the period of study (2011–2021). Financial service firms were excluded from the study due to their peculiarities and also avoiding the mixture of both financial and non-financial firms (Ezeoha & Okeke, 2021). Using these criteria, the total sample amounted to 61 companies, out of which 42 are local companies and 19 are foreign companies (see Figure 1).

Figure 1 shows the classification of the non-financial firms (all firms, local and foreign firms) in Nigeria and also the number of firms selected from each classification based on the criteria. The empirical analysis was conducted to determine firm characteristics and their effects on corporate leverage, in which variable definitions and measurements can be found in Table 2.

3.2. Empirical Model

The study adopted a baseline model and implemented a panel regression analysis, since we have a panel data set of many companies over several years, proposing that leverage is a function of profitability, firm growth, liquidity, asset tangibility, capital expenditure, dividend per share, cash holding, foreign ownership, firm size and firm age. Below is the equation:

$$\mathrm{LEV}_{it} = \alpha_0 + \sum_{i=1}^{n} \beta_i \left(\mathrm{ROA, GRW, TANG, LQ, CASH, CAPEX, DPS, FS, FA, FO}\right)_{it-1} + \mu_{it} \quad (1)$$

A second model was proposed to capture the interaction of foreign ownership. As pointed out by Baron and Kenny (1986), the moderating effect could take the form of an interaction, that is to say, the product of the independent variable and the moderating variable, and is stated below:

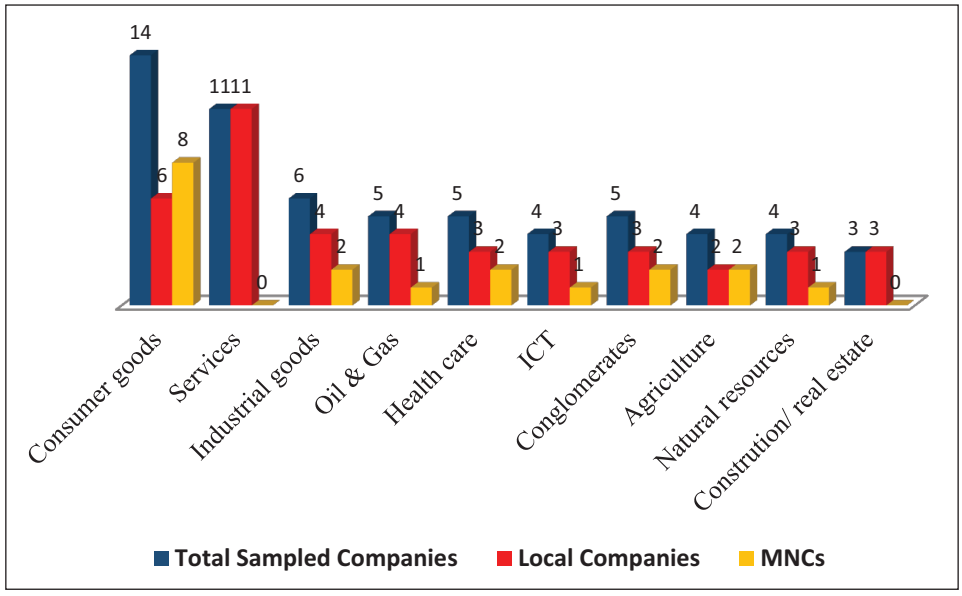

Figure 1. Number of Sampled Companies.

Table 1. Summary Table of Literature.

S/N	Author and Year	Title	Country	Methodology	Findings
Asian region					
1	Yamada (2019)	Inter-firm relationships and leverage adjustment	Japan	System GMM	Dividend has a positive effect on leverage
2	Buvanendra et al. (2017)	Firm characteristics, corporate governance and capital structure adjustments: A comparative study of listed firms in Sri Lanka and India	Sri Lanka and India	System GMM 2004–2013	*For Sri Lanka*, profitability, firm size and tangibility have a positive effect on leverage, whereas growth and net debt tax shield have a negative effect on leverage- *For India*, firm size has a positive effect on leverage, whereas profitability, tangibility, growth and net debt tax shield have a negative effect on leverage
3	Thippayana (2014)	Determinants of capital structure in Thailand	Thailand	Regression	Firm size, tangibility and growth have a positive effect on leverage, whereas profitability has a negative effect on leverage
4	Zafar et al. (2019)	The determinants of leverage decisions: Evidence from Asian emerging markets	Asian countries	Random effect regression	Firm size, tax and growth have a positive effect on leverage, whereas liquidity, profitability and tangibility have a negative effect on leverage
5	Deng et al. (2020)	Tax and leverage: Evidence from China	China	Regression	Tax has a positive effect on leverage
6	Chang et al. (2014)	What are the reliably important determinants of capital structure in China?	China	Regression	Tangibility, firm size and growth have a positive effect on leverage whereas return on asset and capital expenditure have a negative effect on leverage
7	Zeitun and Goaied (2021)	The non-linear effect of foreign ownership on capital structure in Japan: A panel threshold analysis	Japan	Regression	Asset tangibility, liquidity and firm size have a positive effect on leverage, whereas growth and return on asset have a negative effect on leverage
8	Hando and Sharma (2014)	A study on determinants of capital structure in India	India	Multiple regression	Firm age, liquidity, asset tangibility and growth have a positive effect on leverage, whereas profitability, firm size and tax have a negative effect on leverage
9	Gulzar and Haque (2022)	Determining the key factors of corporate leverage in Indian manufacturing firms using dynamic modelling	India	GMM (system) regression	Profitability has a positive effect on leverage whereas growth, firm size and tangibility have a negative effect on leverage

(Table 1 continued)

(Table 1 continued)

S/N	Author and Year	Title	Country	Methodology	Findings
10	Rehman et al. (2016)	Dynamics of financial leverage across firm life cycle in Chinese firms: An empirical investigation using dynamic panel data model	China	GMM regression	Growth and firm size have a positive effect on leverage, whereas profitability, liquidity and tangibility have a negative effect on leverage
11	Gupta et al. (2020)	Impact of foreign ownership on leverage: A study of Indian firms	India	GMM two-step regression	Firm size, tax and growth have a positive effect on leverage, whereas tangibility, age, foreign ownership and profitability have a negative effect on leverage
12	Jahanzeb et al. (2015)	Market power versus capital structure determinants: Do they impact leverage?	Pakistan	Regression	Dividend and profitability have a positive effect on leverage, whereas size, tangibility and liquidity have a negative effect on leverage
13	Prime and Qi (2013)	Determinants of firm leverage	China	Regression	Profitability, liquidity, age, tangibility and firm size have a negative effect on leverage
14	Ghose and Kabra (2020)	Does growth affect firms' leverage adjustment speed? A study of Indian firms	India	Regression	Tangibility, firm size and growth have a positive effect on leverage, whereas profitability has a negative effect on leverage
15	Bhat et al. (2020)	Does firm size influence leverage? Evidence from India	India	GLS regression	Tangibility and age have a positive effect on leverage, whereas liquidity, profitability and size have a negative effect on leverage
16	Al-Ahdal et al. (2022)	Corporate characteristics and leverage: Evidence from Gulf countries	Gulf countries (Saudi, Qatar, Oman, UAE)	Regression	Return on equity, return on capital employed and liquidity have a positive effect on leverage, whereas return on asset and firm size have a negative effect on leverage
17	El-Khatib (2017)	Determinants of corporate leverage in publicly listed GCC companies—Conventional versus Sukuk	Saudi, UAE, Qatar	Panel OLS regression	Firm size has a positive effect on leverage, whereas profitability, age, market- to-book value and dividend have a negative effect on leverage
18	Dakua (2018)	Effect of determinants on financial leverage in Indian steel industry: A study on capital structure	India	ANOVA	Profitability, size and tangibility have a positive effect on leverage, whereas growth, liquidity and risk have a negative effect on leverage

(Table 1 continued)

(Table 1 continued)

S/N	Author and Year	Title	Country	Methodology	Findings
19	Khasawneh and Staytieh (2017)	Impact of foreign ownership on capital structure and firm value in emerging market: Case of Amman Stock Exchange listed firms	Jordan	Fixed effect regression	Firm size, tangibility, ag, capital expenditure and liquidity have a positive effect on leverage, whereas foreign ownership and profitability have a negative effect on leverage
20	Do et al. (2019)	Foreign ownership and capital structure dynamics	Taiwan	Regression	Foreign ownership, firm size and dividend have a positive effect on leverage
European region					
21	Sanchez-Vidal (2014)	High debt companies' leverage determinants in Spain: A quantile regression approach	Spain	Quartile regression	Tangibility, firm size and age have a positive effect on leverage, whereas dividend, cash flow, profitability and growth have a negative effect on leverage
22	Serghiescu and Vaidean (2014)	Determinant factors of the capital structure of a firm—An empirical analysis	Romania	Regression	Firm size has a positive effect on regression, whereas profitability and liquidity have a negative effect on regression
23	Onofrei et al. (2015)	Determinant factors of firm leverage: An empirical analysis at Iasi county level	Romania	Fixed effect regression	Profitability, growth, liquidity, firm size and tangibility have a negative effect on leverage
24	Sikveland and Zhang (2021)	Determinants of capital structure in the Norwegian salmon aquaculture industry	Norway	Regression	Growth and asset structure have a negative effect on leverage, whereas profitability has a positive effect on leverage
25	Proenca et al. (2014)	Determinants of capital structure and the 2008 financial crisis: Evidence from Portuguese SMEs	Portugal	Regression	Firm size and growth have a positive effect on leverage, whereas liquidity, cash flow and tangibility have a negative effect on leverage
26	Bilgin and Dinc (2019)	Factoring as a determinant of capital structure for large firms: Theoretical and empirical analysis	Turkey	Regression	Tangibility, firm size and liquidity have a positive effect on leverage, whereas profitability has a negative effect on leverage
27	Guner (2016)	The determinants of capital structure decisions: New evidence from Turkish companies	Turkey	Panel regression	Growth, profitability, liquidity and size have a negative effect on leverage
28	Mateev et al. (2012)	On the determinants of SME capital structure in Central and Eastern Europe: A dynamic panel analysis	Europe	System GMM regression	Tangibility, liquidity and firm size have a positive effect on leverage, whereas growth has a negative effect on leverage

(Table 1 continued)

(Table 1 continued)

S/N	Author and Year	Title	Country	Methodology	Findings
29	Yarba and Guner (2019)	Leverage dynamics: Do financial development and government leverage matter? Evidence from a major developing economy	Turkey	GMM regression	Firm size and tangibility have a positive effect on leverage, whereas profitability and growth have a negative effect on leverage
30	Adair and Adaskou (2015)	Trade-off-theory vs. pecking order theory and the determinants of corporate leverage: Evidence from a panel data analysis upon French SMEs (2002–2010)	France	OLS	Growth and age have a positive effect on leverage, whereas profitability has a negative effect on regression
31	Fitzgerald and Ryan (2018)	The impact of firm characteristics on speed of adjustment to target leverage: A UK study	UK	Regression	Firm size, tangibility and profitability have a positive effect on leverage, whereas growth has a negative effect on leverage
32	Castro et al. (2016)	Target leverage and speed of adjustment along the lifecycle of European listed firms	European countries	System GMM regression	Growth, tangibility and firm size have a positive effect on leverage, whereas profitability has a negative effect on leverage
American region					
33	Chen et al. (2021)	Determinants of leverage in emerging markets: Empirical evidence	Argentina	Fixed effect regression	Firm size, tangibility and risk have a positive effect on leverage, whereas profitability and growth have a negative effect on leverage
34	Kizildag and Ozdemir (2016)	Underlying factors of ups and downs in financial leverage overtime	USA	Regression	Firm size, growth, capital expenditure and liquidity have a positive effect on regression, whereas profitability and tangibility have a negative effect on leverage
35	Gomez et al. (2016)	Determinants of leverage in mining companies, empirical evidence for Latin American countries	Latin America (Mexico, Colombia, Chile, Brazil, Peru)	System GMM regression	Tangibility and firm size have a positive effect on leverage, whereas growth and profitability have a negative effect on leverage
African region					
36	Munisi (2017)	Determinants of capital structure: Evidence from Sub-Saharan Africa	Sub-Saharan Africa	Pooled OLS regression	Growth, firm size and tangibility have a positive effect on leverage, whereas profitability has a negative effect on leverage

(Table 1 continued)

(Table 1 continued)

S/N	Author and Year	Title	Country	Methodology	Findings
37	Danso and Adomako (2014)	The financing behaviour of firms and financial crisis	South Africa	Fixed effect regression	Tangibility and firm size have a positive effect on leverage, whereas profitability and liquidity have a negative effect on leverage
38	Chipeta and Deressa (2016)	Firm and country specific determinants of capital structure in Sub Saharan Africa	Sub Saharan Africa	GMM regression	For Nigeria, firm size, growth, tangibility and risk have a positive effect on leverage, whereas profitability has a negative effect on leverage
39	Bolarinwa and Adegboye (2020)	Re-examining the determinants of capital structure in Nigeria	Nigeria	System GMM regression	Firm size, tangibility and tax have a positive effect on leverage, whereas profitability and liquidity have a negative effect on leverage
40	Lemma (2013)	Institutional, macroeconomic and firm-specific determinants of capital structure: The African evidence	African countries	System GMM regression	Dividend and tangibility have a positive effect on leverage, whereas firm size, growth and profitability have a negative effect on leverage
41	Chipeta et al. (2013)	Structural breaks in the parameter estimates of the determinants of capital structure: Some evidence from the JSE	South Africa	Regression	Growth, tangibility and firm size have a positive effect on leverage, whereas profitability has a negative effect on leverage
Others					
42	Hang et al. (2018)	Measurement matters—A meta-study of the determinants of corporate capital structure		Weight least square regression	Tangibility and firm size have a negative effect on leverage
43	Frank and Goyal (2014)	The profits–leverage puzzle revisited		Leverage	Firm size and tangibility have a positive effect on leverage, whereas profitability and market-to-book value have a negative effect on leverage
44	Duarte et al. (2021)	Leverage and capital utilization		Regression	Firm size, tangibility and market-to-book value have a positive effect on leverage, whereas profitability has a negative effect on leverage
45	Li and Stathis (2017)	Determinants of capital structure in Australia: An analysis of important factors	Australia	1984–2007 1,368 companies	Growth has a positive effect on leverage, whereas profitability, capital expenditure, tangibility and firm size have a negative effect on leverage

Note: GMM, generalized method of moments; GLS, generalized least squares; OLS, ordinary least squares; ANOVA, analysis of variance.

$$LEV_{it} = \alpha_0 + \beta_1(ROA*FO)_{it-1} + \beta_2(GRW*FO)_{it-1} + \beta_3(TANG*FO)_{it-1} + \beta_4(LQ*FO)_{it-1} + \beta_5(CASH*FO)_{it-1} + \beta_6(CAPEX*FO)_{it-1} + \beta_7(DPS*FO)_{it-1} + \beta_8(FS*FO)_{it-1} + \beta_9(ROA*FO)_{it-1} + \mu_{it} \quad (2)$$

where,

Dependent variable: LEV: Leverage
Independent variables: ROA: Return on assets, GRW: Firm growth, TANG: Asset tangibility, LQ: Liquidity, CAPEX: Capital expenditure, DPS: Dividend per share, CASH: Cash holding
Moderating variable: FO: Foreign ownership
Control variables: FS: Firm size, FA: Firm age

Eventually, the generalized method of moments (GMM) was adopted. This was a result of the presence of endogenous variables and serial correlation from the estimated ordinary least squares (OLS) model (Bolarinwa & Adegboye, 2020; Gulzar & Haque, 2022).

It should be noted here that all variables have been winsorized to eliminate outliers so that outliers have no adverse impact on descriptive statistics and regression analysis below.

4. Results and Discussions

4.1. Descriptive Statistics

This section presents the descriptive statistics for all firms (61 firms) (see Figure 2), as well as for local firms (42 firms) and MNCs (19 firms) (see Figure 3) over the period 2011–2021.

Figure 2 shows the average leverage of the total sampled firms under study from 2011 to 2021. From observation, there was an increase in debt financing from 2011 to 2012, then a reduction from 2012 to 2013, and increased again from 2013 to 2014. It dropped drastically from 2014 to 2015, recording the least debt financing period. An increase was experienced from 2015 to 2018 and dropped again from

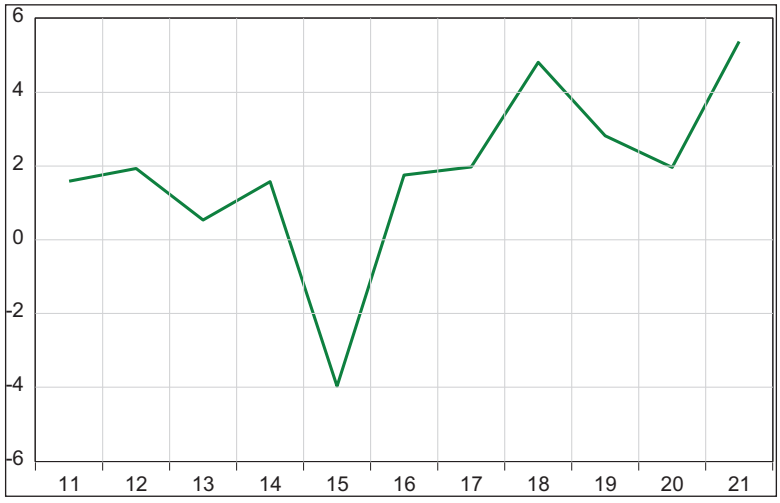

Figure 2. Average Leverage for All Firms.

Table 2. Variable Measurements.

Variables	Label	Measurement	Reference
Dependent			
Leverage	LEV	Ratio of total debt to total equity (book values)	El-Khatib (2017), Zafar et al. (2019), Gupta et al. (2020)
Moderating			
Foreign ownership	FO	Dummy variable, taking 1 for foreign-owned firm and 0 for locally owned firm	Ezeoha and Okeke (2021)
Independent			
Return on asset	ROA	Profit before tax divided by total assets	Hando and Sharma (2014), Munisi (2017), Zeitun and Goaied (2021)
Firm growth	GRW	Ratio of working capital to total turnover	Ezeoha and Okeke (2021)
Asset tangibility	TAN	Ratio of non-current assets to total assets	Danso and Adomako (2014), Chipeta and Deressa (2016), Munisi (2017), Sikveland and Zhang (2021)
Liquidity	LQ	Ratio of current assets to current liabilities	Danso and Adomako (2014), Bolarinwa and Adegboye (2019)
Cash holdings	CASH	Cash and cash equivalent divided by total assets	Lian et al. (2011), Sanchez-Vidal (2014), Proenca et al. (2014), Magerakis et al. (2015), Jumah et al. (2023)
Capital expenditure	CAPEX	Capital expenditure divided by total assets	Khasawneh and Staytieh (2017), Yamada (2019)
Dividends per share	DPS	Dividend paid divided by the number of outstanding shares	Jahanzeb et al. (2015), Zafari et al. (2019)
Firm size	FS	Natural logarithm of total turnover	Lemma (2014), Gomez et al. (2016), Guner (2016), Buvanendra et al. (2017)
Firm age	FA	Number of years since incorporation	Khasawneh and Staytieh (2017), Ahmad et al. (2021)

2018 to 2020. Between the periods of 2020 and 2021, it increased again, and this time, experienced the highest level of leverage. This highest level of leverage can be attributed to the COVID-19 pandemic, which affected businesses adversely and resulted in the firms engaging in higher debt financing to relieve themselves from the shock of the pandemic. Notably, the debt financing practices of non-financial firms in Nigeria have an unstable pattern and this is due to the changing dynamics of businesses in Nigeria.

Figure 3 shows a comparison of the average leverage of local firms and that of foreign firms (MNCs) for the period between 2011 and 2021. From observation, the local firms had so many fluctuations in their leverage pattern when compared with that of the foreign firms which had quite a stable leverage pattern. Also, the local firms had the least leverage in 2015 and also the highest leverage in 2021.

Table 3 reveals the summary statistics of the variables for all sampled firms. It can be observed that all non-financial firms have a leverage of 189.5 on average, which indicates a reliance on debt financing, while the average return on assets is around 4% for the whole sample. On the other hand, growth on average was –76, ranging from –356 to 209, which indicates huge deviations between firms, while

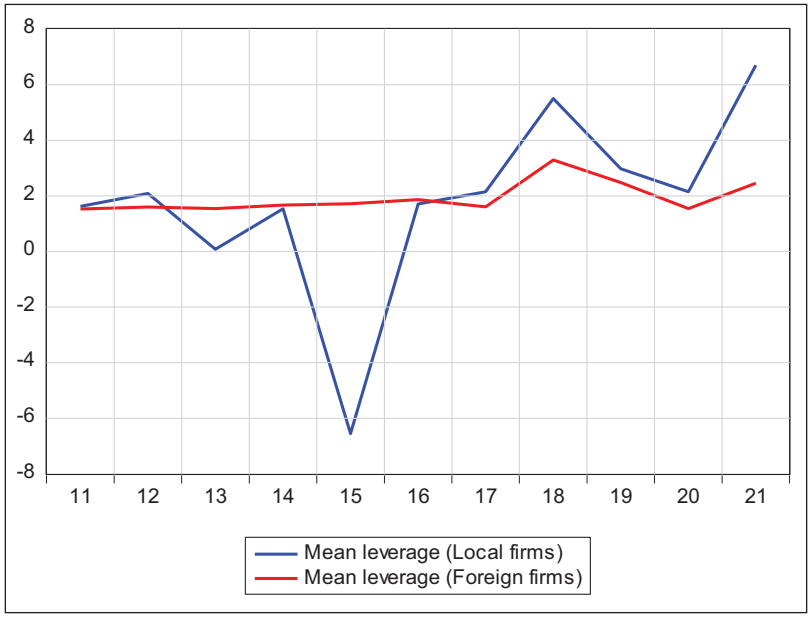

Figure 3. Average Leverage for Local and Foreign Firms.

Table 3. Descriptive Statistics.

Variables	Obs.	Median	Mean	Std. Dev.	Min.	Max.
LEV	671	131.71	189.51	309.29	–868.46	1,855.65
ROA	671	4.60%	4.02%	14.00%	–54.49%	44.40%
GRW	671	4.93	–75.57	429.47	–356.55	208.98
TANG	671	41.06	42.12	23.02	0.10	91.76
LQ	671	1.13	1.21	0.68	0.04	3.66
CASH	671	4.32	5.00	19.96	–100.50	54.29
CAPEX	671	3.24	5.19	5.86	0.00	30.43
DPS	671	0.09	1.15	3.46	0	25
FO	671	0	0.31	0.46	0	1
FS	671	9.97	10.00	0.94	7.21	11.76
FA	671	44	42.38	20.86	6	116

liquidity has an average of 1.21:1 only across all firms, ranging from around 0 to 3.66:1. Foreign ownership averaged 31, while firm age averaged 42 years, ranging from 6 to 116 years.

Asset tangibility averaged 0.421, ranging from 0.0008 to 0.966. Cash averaged 0.045, ranging from –1.961 to 0.688. Capital expenditure averaged 0.053, ranging from 0 to 0.655. The dividend per share averaged 1.345 naira per share, ranging from 0 to 68.197 naira per share.

Table 4. Correlation Matrix of All Variables.

	LEV	ROA	GRW	LQ	FO	FS	FA	TANG	CASH	CAPEX	DPS
LEV	1										
ROA	0.022	1									
GRW	–0.014	0.065	1								
LQ	–0.010	0.139	0.092	1							
FO	0.003	0.159	0.058	0.034	1						
FS	0.010	0.245	0.261	0.019	0.343	1					
FA	–0.029	–0.026	0.092	–0.001	0.428	0.147	1				
TANG	–0.043	–0.185	–0.075	–0.222	–0.046	–0.117	0.013	1			
CASH	0.057	0.397	0.028	0.219	0.145	0.173	–0.079	–0.210	1		
CAPEX	0.009	0.217	0.067	–0.012	0.104	0.226	–0.091	0.165	0.107	1	
DPS	0.022	0.222	0.021	–0.040	0.258	0.319	0.033	0.008	0.061	0.104	1

Table 4 shows the correlation matrix of all variables used in the study. All the variables reported values less than 0.08, as the highest correlation is 0.428 between firm age and foreign ownership. This implies the non-existence of a strong correlation among the variables under study (Okeke et al., 2022).

To determine the difference in the debt financing practices of local and foreign firms, and if it is significant, *t*-test statistics of mean difference were carried out. Table 5, which has the result in the display, revealed that the average leverage of local firms of 1.813 is not statistically different from that of foreign firms of 1.936 (*t*-statistic = –0.089, $P<t> = 0.929$). The implication is that both local firms and foreign firms in Nigeria do not employ different debt financing practices and also foreign firms employ more debt financing (1.936) compared to the local firms (1.813).

The GMM estimation, as shown in Table 6, indicates the assumptions of the GMM estimation were met. First, the number of cross-sections should be greater than the time ($N = 61, 42, 19$, for the different samples; $T = 11$) (Ezeoha & Okeke, 2021). Second, the use of instrumental variables must be exogenous variables and the number of instrumental variables greater or equal to the right-hand side variables (Arellano & Bond, 1991; Blundell & Bond, 1998). Also, the choice of GMM being the most appropriate regression model was informed by the works of previous studies and the understanding that the issue of endogeneity and multicollinearity are usually encountered by firm-specific characteristics variables (Gulzar & Haque, 2022; Yamada, 2019).

Table 6 reveals the GMM estimation outputs for the main relationship, including those for the subsamples (local/foreign firms), as well as the moderating effect of foreign ownership.

4.2. Discussion of Findings

Table 6 shows the regression results, where profitability was found to have a negative and significant effect on cash leverage, which indicates that 1% more profit motivates around 2.385% decrease in leverage. This result confirms the first hypothesis (H_1), supports the pecking order theory and is consistent with most of the reviewed works (Bhat et al., 2020; Bolarinwa & Adegboye, 2020; Chen et al., 2021; Duarte et al., 2021; Ghose & Kabra, 2020; Gupta et al., 2020; Zeitun & Goaied, 2021). It is also clear that such a negative relationship holds in both local and foreign-owned firms, even that much higher impact has been noticed in local firms.

Table 5. *t*-Test Result of Leverage for Local and Foreign Firms.

		All	Local Firms	Foreign Firms
Leverage	μ	1.851	1.813	1.936
	σ	16.570	19.860	3.197
	t-Statistics		–0.089	
	Prob.		0.929	
Obs.		671	462	209
No. of firms		61	42	19
Year		2011–2021	2011–2021	2011–2021

Note: *$p < .05$.

Firm growth, on the other hand, has a negative and significant impact on leverage, in which every 1% extra growth will lead to around 0.0383% less leverage. This result rejects the second hypothesis (H_2), does not support the pecking order theory and is inconsistent with other studies (Rehman et al., 2016; Zafar et al., 2019). Having then compared the results based on foreign ownership, a similar impact was reported in foreign-owned firms, while a positive impact has been found in local firms. This might indicate that local firms with higher growth rates tend to rely more on debt rather than equity.

Table 5 also shows that asset tangibility affects leverage negatively, with an insignificant impact in local firms but a significant one in foreign-owned firms, which implies that firms tend to decrease their leverage 4% times as tangible assets increase by 1%. This result confirms the third hypothesis (H_3), which does not support the pecking order and trade-off theory but is consistent with previous studies (Buvanendra et al., 2017; Munisi, 2017).

Liquidity has a negative and significant impact on leverage, which suggests that a 1% increase in liquidity surprisingly drives a 0.669% decrease in leverage. This finding confirms the fourth hypothesis (H_4), supports the pecking order theory and is consistent with most of the previous literature (Bhat et al., 2020; Bolarinwa & Adegboye, 2020; Zafar et al., 2019).

Cash holdings, on the other hand, have been found to have a positive and significant effect on leverage in both local firms and foreign-owned firms, which implies that 1 unit higher cash holding increases leverage by 4 units. This result rejects the fifth hypothesis (H_5) as well, supports the tradeoff theory and is not consistent with the findings of Lian et al. (2011), Sanchez-Vidal (2014), Proenca et al. (2014), Magerakis et al. (2015) and Jumah et al. (2023). This might indicate that rather than depending on excess cash for investment purpose, managers tend to accumulate it for a different purpose while depending on more debt financing for the firm's investment.

Capital expenditure has been found to have a negative and significant impact on leverage, suggesting that leverage is decreased by 0.916 units with every 1 unit increase in capital expenditure. This finding rejects the sixth hypothesis (H_6), does not support the pecking order theory and is inconsistent with previous literature (Khasawneh & Staytieh, 2017; Kizildag & Ozdemir, 2016). Again, this might be because companies with more capital expenditure avoid borrowing more money as it has already served its purpose of acquiring capital expenditure which can serve its purpose as an asset (generating income).

Moreover, dividends per share have a negative and significant impact on leverage, which implies that 1% extra dividends per share drives around a 0.05% decrease in leverage. This finding confirms the seventh hypothesis (H_7) and is consistent with previous studies (El-Khatib, 2017; Sanchez-Vidal, 2014).

Table 6. System Generalized Method of Moments (GMM) Estimation Output (Two-step).

	(1)	(2)	(3)	(4)
	LEV	LEV	LEV	LEV
Variables	All Sample	With FO Moderator	If Local Firms	If Foreign Firms
LEV = L	0.220***	0.267***	0.283***	0.117***
	(0)	(0)	(0)	(0)
ROA	–2.385***		–5.502**	–1.038***
	(0)		(0.0164)	(0.00147)
GRW	–0.0383***		0.263	–0.0393***
	(0)		(0.514)	(0)
LQ	–0.669***		–1.074**	–0.531***
	(0)		(0.0103)	(0)
FO	–2.083***			
	(5.02e-11)			
FS	0.885***		1.480**	0.317**
	(0)		(0.0209)	(0.0102)
FA	–0.0643***		–0.172***	–0.0362***
	(0)		(8.48e-08)	(0)
TANG	–4.196***		1.958	–4.809***
	(0)		(0.502)	(0)
CASH	4.100***		4.422**	3.893***
	(0)		(0.0291)	(0)
CAPEX	–0.916***		–8.915	–0.541
	(0.00364)		(0.248)	(0.513)
DPS	–0.0512***		0.0114	0.0700**
	(0)		(0.666)	(0.0397)
ROA_FO		0.633**		
		(0.0256)		
GRW_FO		0.407***		
		(0)		
LQ_FO		–1.443***		
		(0)		
FS_FO		0.515***		
		(0)		
FA_FO		0.0552***		
		(6.29e-06)		
TANG_FO		–2.508***		
		(1.14e-09)		

(Table 6 continued)

(Table 6 continued)

	(1)	(2)	(3)	(4)
	LEV	LEV	LEV	LEV
Variables	All Sample	With FO Moderator	If Local Firms	If Foreign Firms
CASH_FO		1.464***		
		(0)		
CAPEX_FO		–4.648***		
		(6.50e-05)		
DPS_FO		–0.184***		
		(0)		
Constant	–1.406**	–0.180***	–3.008	2.315**
	(0.0298)	(0)	(0.652)	(0.0274)
Observations	610	610	190	420
Number of firm	61	61	19	42

Note: ***p < .01, **p < .05, *p < .1.

Finally, foreign ownership shows a negative and significant impact on leverage, which implies that leverage is 2% less in foreign-owned firms compared to domestic firms in Nigeria. This finding confirms the eighth hypothesis (H_8), supports the pecking order theory and is consistent with previous studies (Gupta et al., 2020; Khasawneh & Staytieh, 2017). On the other hand, firm size has a positive and significant impact, while firm age has a negative and significant impact on leverage, for both local and foreign-owned firms in Nigeria.

Concerning the moderating impact on foreign ownership, measured by the coefficient of the interaction (Baron & Kenny, 1986), the results show that profitability, growth rate and firm age have now a positive impact on leverage when moderated by foreign ownership, while all other firm characteristics still have similar impact with/without moderating by foreign ownership, but with different coefficients. This indicates that foreign ownership moderates the way that firm characteristics affect corporate leverage practices.

5. Conclusion and Managerial Implications

This study sought to determine firm characteristics and leverage in Nigeria and the moderating effect of foreign ownership. Data were collected from 61 non-financial firms listed in the Nigerian Stock Exchange, with the exclusion of financial firms because of their peculiarity, for a period of 11 years (2011–2021). GMM estimation technique was employed, due to the existence of endogeneity and serial correlation from the OLS estimation technique. The study also separated the local firms from the foreign ones to look at the different practices and found out that foreign firms employed more debt financing than local firms. The key findings of the study show that all firm characteristics for the study influence leverage. Profitability, firm growth, liquidity, cash and capital expenditure drive leverage, whereas foreign ownership, asset tangibility and dividend negatively affect leverage in general. For local firms,

more dividends, capital expenditures and cash result in having more leverage, whereas profitability, firm growth, liquidity and asset tangibility discourage leverage. For foreign firms, all firm characteristics except asset tangibility and dividend drive leverage. This study contributes to the literature on the determinants of financial leverage practices in Nigeria, both in local and foreign firms. It further explores the moderating effect of such foreign ownership on the determinants of financial leverage.

Concerning policy implications, the results will assist managers in Nigeria to understand the determining factors of leverage, and to consider the accruing benefits of debt financing which is to take advantage of interest for tax deduction purposes. It will also be insightful to lenders of capital who will be more informed in their consideration for lending capital to firms in Nigeria. Investors will also draw insight from the study and be more informed in their investment decisions. For regulatory bodies such as the Securities and Exchange Commission, Nigeria, the study will give them an insight into the regulation of non-financial firms in Nigeria as regards leverage, both local and foreign firms.

Finally, despite the significant findings and insights, this study has some limitations that further study should consider. One suggestion is to measure the ratio of foreign ownership rather than simply a binary measure. Also, this study has used foreign ownership as a moderator, and further research could use other macroeconomic moderators because debt financing is affected by the economic environment of a country.

Authors' Contribution

Obiajulu Chibuzo Okeke: Conceived the research idea, designed the study, reviewed literature, and drafted the manuscript.
Tony Abdoush: Conducted data analysis, drafted the results and discussion section, and provided critical revisions.
Alpha Shekwonya Jemutu: Collected data and contributed to manuscript writing.
Wisdom Okere: Contributed to manuscript writing.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Ethical Declaration

The authors abide by all the ethics involved in this academic work and have not submitted it to any other journal.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.

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