Lease-Debt Substitutability Or Complementarity: Evidence from Listed Non-Financial Firms in Nigeria

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Abstract

Despite numerous benefits obtainable with use of finance leases by listed corporate firms, Micro, Small and Medium scale Enterprises (MSMEs) dominate the patronage of lease finance in Nigeria. A recession however, occurred in 2016 with the attendant effect of limiting the availability and access to finance by listed corporate firms in Nigeria. In view of the fact that a pecking order is usually adhered to in corporate financing, the paper sought to examine the nature of relationship between leases and debt (substitutes or complements) on account of the recent economic recession in Nigeria. A correlation-explanatory research design was adopted to determine the moderating effect of economic recession on the relationship between leverage (conventional debt) and finance leases. Based on the pecking order theory, the variables- growth and information asymmetry were examined to provide further insight into the nature of relationship. A sample of 20 listed non-financial firms in Nigeria was studied covering the period, 2010-2017. Two models- one, accounting for independent effects of the variables and the other, accounting for moderating effects of economic recession, were constructed to test formulated hypotheses. Generalized Least Square (GLS) Regression for Model 1 and Fixed Effects Regression for Model 2 were run with the aid of statistical software, STATA. Findings from Model 1 results suggest that the independent variables- leverage and economic recession, have a positive and statistically significant effect on finance leases. Model 2 results show that economic recession significantly moderates the effect of leverage and growth on finance leases. The paper therefore, concludes on a conditional complementary relationship between leases and debt in the context of listed non-financial firms in Nigeria. Recommendation is made that lessors' capacity be enhanced to meet increasing demand for lease finance in the aftermath of a recession.

Keywords: Finance Lease, Leverage, Growth, Information Asymmetry, Economic Recession, Pecking Order Theory, Moderating Effects, Listed Non-Financial Firms, Nigeria

1 Introduction

Literature and evidence from empirical studies in the discipline of Finance, emphasize the funding decision as instrumental to operational feasibilities and creation of economic value by business entities. Financial resources are necessary inputs towards asset acquisition and capitalization on investment opportunities that will sustain the existence of firms in the long run. This financing need, therefore, translates to an active demand by firms that in response, is met with an array of options provided by financial institutions. Management of corporate

firms in deciding on a source of finance examine a number of factors that are of importance. For instance, the decision to use internal sources at no cost, may have to be appraised against the dividend decision and possible negative signaling effects. Assessment of external sources of finance, involves consideration of the cost of capital and attendant impact on firm value as proposed by Modigliani and Miller (1963). The question facing firms thus, is what source of finance would be most optimum to employ.

The foregoing informs the proposition of the pecking order theory (Donaldson,1961; Myers & Majluf, 1984) which asserts that firms have a scale of preference for finance sources and comply with the order of using internal funds first, progressing to external funds (with preference for debt) and lastly, equity. This is supported by the fact that internal funds are adjudged to be cost free though, it could be argued that re-invested funds being attributable to shareholders, have a cost that should be synonymous to the cost of equity. The use of debt by firms lowers the overall cost of capital due to tax-deductible interest expense (Modigliani & Miller, 1963) whereas, equity is deemed expensive as a result of investor perception of over-valuation leading to a discount of issuing firms' share price (Myers & Majluf, 1984).

Inference can therefore, be made from the preceding, on the suitability of debt use by firms. However, within the category of debt compared to other identified sources of finance, there are distinctions in that debt can either be liquid (conventional debt) or asset-based. This distinction in classification begets a financing decision within the choice of debt- a decision to use either traditional forms (cash- based and payable accruals) or leases. Finance lease, a typical representation of an asset-based debt, is a structured non-cancellable agreement with asset use granted in consideration of payments that cover cost and interest over a substantial period of the asset economic life. At termination of the agreement, an option for asset acquisition at a nominal price can be exercised (Revised Guidelines for Finance companies in Nigeria, 2014).

Numerous benefits have been documented to be associated with the use of finance leases by firms such as; cash conservation, contracting ease, structuring flexibilities, low bankruptcy risks and immunity against diluted shareholdings in listed corporate firms (Owoeye, 2004; Malik, Saeed, Ahmed & Javed, 2012; Starodubsteva, 2017). In corporate entities, expositions have equally been made of the potential of finance lease use in mitigating agency costs. Being a contraction of debt as a tangible asset, the risk of asset substitution possible with other types of debt is reduced (Zhou, 2014). Finance lease could also prevent underinvestment due to a 'debt overhang' where firms significantly levered, tend to be subjected to higher finance costs with the consequence of discouraging investment pursuits (Zhou, 2014).

Though it may be argued that there are mechanisms such as debt covenants, convertible debt securities and short term debt deployable besides lease use in counteracting agency problems (Robicheaux, Fu & Ligon, 2008), these have the tendency to restrict investments, alter shareholding structure and dilute control. Contracting debt on short term for asset acquisition raises the risk of default due to a mismatch between maturity of obligations and generation of returns from use of the asset. These downsides collectively buttress the case for finance lease use especially by listed corporate firms in Nigeria.

However, despite these motivating reasons for finance lease use by listed corporate firms in Nigeria, Micro, Small and Medium scale Enterprises (MSMEs) majorly account for lease patronage as at 2018 (ELAN, 2018). This is no different from the situation in 2015 as reported in the Lease News Publication by the Equipment Leasing Association of Nigeria (ELAN, 2016) emphasizing the non-predominance of finance lease use by listed corporate firms. A study by Musa-Mubi (2017) corroborated this lack of prominence having examined listed

non-financial firms in Nigeria and identifying 14 firms out of 128 with finance lease observations between 2007 and 2015. Research findings further established levels of leverage (debt) as a causative factor significantly and negatively influencing the contracting of finance leases. Consequently, the study concluded on a lease-debt substitutability in the Nigerian context.

Post 2015 (the terminating period of the aforementioned study) and specifically in 2016, Nigeria experienced an economic recession last observed 25 years earlier (Business Day, 2017). Economic recession as defined by the National Bureau of Economic Research (NBER, 2003) represents a decline in economic activity levels for more than a few months and evident in terms of contraction in real Gross Domestic Product (GDP) growth, unemployment, decline in income, decelerated production and fall in wholesale-retail sales. The implications of a recession are far reaching as it affects firms at the micro-level of an economy.

Davis (2019) suggests that revenues, growth and credit ratings tend to be negatively affected during a recession. This consequently impairs availability and access to finance by firms, from internal as well as external sources. For instance, losses, besides hindering retention of earnings, lead to a decline in dividend payment that could in turn affect share valuation. Low revenues, in addition to impairing growth in firms, breed grounds for defaults on financial obligations. Poor interest coverage, information asymmetries and increased risk, result in a downgrade in credit ratings and restrict access to conventional forms of debt finance (Davis, 2019). In collective terms, these consequences cannot be reconciled with the desirable objective of reversing a recession and which is dependent on the stimulation of productive activities by (amongst others), enabling capital asset investment.

Based on assertions that significantly levered firms would be incapable of securing additional financing (Malik, Saeed, Ahmed & Javed, 2012), and that leases have lower financing costs due to the priority of lessor claims in bankruptcy situations especially obtainable in a recession (Smith & Wakeman, 1985), a thesis is proposed that finance leases (as an alternative funding mechanism) should be complementary to debt on account of the recent economic recession in Nigeria. This paper is therefore, a study of the relationship between leverage (debt) and finance leases considering possible moderating effect that the economic recession may have had. To enhance insight into the nature of this relationship, growth and information asymmetry are modelled as explanatory variables in addition to leverage. The outcome is intended to inform affirmation or revision of the prior conclusion by Musa-Mubi (2017) of lease-debt substitutability in listed non-financial firms in Nigeria. Expectations also hold that findings would drive policies towards enhancing the structural and functional capacities of the lease industry in Nigeria.

2 Literature review
2.1 Finance Lease
Section 44 of the Equipment Leasing Act of Nigeria (2015) defines a finance lease as a contractual agreement for asset use requiring the payment of an amount over a defined period of time which, in addition to recovering the cost of asset acquisition by a lessor, provides for the realization of a return. The Revised Guidelines for Finance Companies in Nigeria (2014) correspondingly notes the option available to a lessee, to obtain title to the asset on payment of a nominal amount (below market value) at the expiration of either the primary tenor of the lease, or subsequent extended periods. The retention of title by the lessor, prior to an exercise of option by the lessee, makes finance leases to be classified as a form of 'secured borrowing' (Landry, Fortin & Callimaci, 2013). Yau (2017) highlights other key peculiarities of a finance lease to include; term of lease covering 75% or greater of the asset economic life, present value of lease payments being not less than 90% of asset cost and transfer of insurance,

maintenance and tax savings to a lessee. Under the repealed International Accounting Standard (IAS) 17, Section 8 (IASB, 2010), a finance lease was defined by the transfer of risks and rewards of ownership to a lessee and which required the recognition of an asset and a liability on its statement of financial position. This was premised on the logic of presumed ownership resulting in rewards such as economic benefits from use, and risks in terms of obsolescence as well as disposal infeasibilities.

However, with the broadening of asset definition to include resources subject to firm control, and that of liabilities to imply financial obligations resulting from a transaction (as contained in the Conceptual Framework for Financial Reporting issued by the International Accounting Standards Board in 2010), the distinction between finance leases and other variants of a lease has been eliminated. The notable consequence of this, is the release of a new reporting standard, International Financial Reporting Standard 16 (effective 2019) which by Section 9, defines all leases as a transfer of 'right-of-use' to an asset mandating the recognition of such asset and its corresponding liability on the statement of financial position (IASB 2016). This is exclusive of leases of a short term nature (less than 12 months) otherwise referred to as services. The expectation from this development, is an increase in reported finance lease obligations on the financial statements of entities. For the purpose of the paper, the study aligns itself with the definition of finance leases as given by IFRS 16 (IASB, 2016), Equipment Leasing Act (2015) and Revised Guidelines for Finance Companies in Nigeria (2014). The reporting standard definition (IFRS 16) accounts for the economic realities inferred from the definitions of the latter. Finance lease is examined as a dependent variable in the study and measured as the ratio of value of finance lease obligations to total assets reported on the statement of financial position of sample firms.

2.2 Leverage

Leverage implies the degree of debt that a firm employs in financing its operations. Malik, Saeed, Ahmed and Javed (2012) opine that management of debt is of importance in sustaining firm activities as well as attaining favorable credit ratings. Leverage being a synonym for debt, occurs in various forms in the capital structure of firms- as accruals, liquid or asset-based. Empirical research has sought to determine the nature of relationship between conventional debt and finance leases, an asset-based debt. However, findings are mixed as to the substitutability or complementarity of the lease-debt relationship. This has effectively sustained the 'leasing puzzle' as coined by Ang and Peterson (1984) with subsequent attempts being made to provide explanations in consideration of other observed factors.

Theoretical arguments for substitutability suggest that leases and debt are both have restricting effects on firms' debt capacity through the commitment of these entities to financial obligations over a period of time (Mendes, 2015). Therefore, the more of conventional debt a firm contracts, the lower its disposition to use leases. Filareto-Deghaye and Severin (2007) note the assertion for substitutability in the literature, to be on the basis of 'perfect substitution' between conventional debt and leases. However, there have been contests to this perfect substitution between leases and debt given differences in levels of security and bankruptcy costs associated with both forms of finance (Krishnan & Moyer, 1994). Studies that concluded on a negative relationship (substitutability) between leases and debt include; Myers, Dill and Bautista (1976), Franks and Hodges (1978), Adedeji and Stapleton (1996); Deloof and Verschueren (1999), Lasfer (2005), Mnzava (2008), Slotty (2009), Kang and Long (2001), Cosci, Guida and Meliciani (2013), Singh (2013), Mendes (2015), Bialek-Jaworska and Nehrebecka (2016) and Musa-Mubi (2017).

The complementarity angle to the relationship between leases and debt, is built on the theory that the more impaired a firm is in terms of debt capacity, the lower its credit ratings and

the greater the impetus to contract lease finance as a last resort alternative (Finucane, 1988). Contracting ease abounds due to lower risk and bankruptcy costs to the lessor (Krishnan & Moyer, 1994). Mendes (2015) further notes lease and debt market inefficiencies as a basis for complementarities in their use by firms. Studies that have established a positive relationship (complementarity) between leases and debt include; Ang and Peterson (1984), Finucane (1988), Lasfer and Levis (1998), Filareto-Deghaye and Severin (2007), Malik, Saeed, Ahmed and Javed (2012), Landry, Fortin and Callimaci (2013), Cotei and Farhat (2015), Ambrose, Emmerling, Huang and Yildirim (2018), Jaszczuk, Bialek-Jaworska, Opolski, Sylwestrzak and Trzpiola (2018). Based on the preponderance of arguments and findings of empirical works for either substitutability or complementarity, inference can be made of the existence of an association between leverage (debt) and leases. Therefore, the paper hypothesizes that;

H1 Leverage has a significant effect on finance lease use by listed non-financial firms in Nigeria

In the context of the paper, leverage is examined as an independent variable and defined in terms of non-current debt reported on the statement of financial position of sample firms. Measurement adopted for the study, is the ratio of non-current debt value (excluding finance lease obligations) to total assets.

2.3 Growth

Growth can be conceptualized as a change in the scale of an observed phenomenon. In the context of the paper, growth is defined as a change in the value of revenue generated by the firm. The examination of growth as a variable in relation to finance lease use is based on the fact that revenues generated by a firm determine to an extent, the level of internal finance that will be available for re-investment and expansion in level of operations. In line with the propositions of the pecking order theory, which regards retained earnings (internal funds) as preferable over external sources of finance, the greater the level of earnings, the lower the tendency of firms to subscribe to debt financing inclusive of leases as found by Erickson and Trevino (1994). Empirical studies that further corroborate the negative association between growth and finance lease use include; Malik, Saeed, Ahmed and Javed (2012) Singh (2013) and Mungami (2013).

In a differing perspective, where growth is defined in terms of available investment opportunities and internal funds are exhausted or adversely affected, firms would display a tendency to use of leases as this would not only aid cash conservation but mitigate agency costs (asset substitution and underinvestment) associated with conventional debt financing (Myers, 1977). Studies that have established a positive relationship between growth and finance lease use include; Krishnan and Moyer (1994), Erickson and Trevino (1994), Lasfer and Levis (1998), Lasfer (2005), Mnzava (2008), Slotty (2009), Callimaci, Fortin and Landry (2011) and Bialek-Jaworska and Nehrebecka (2016). However, Brage and Eckerstom (2009) and Musa-Mubi (2017) arrived at insignificant findings. On the basis of theoretical and empirical linkages, the following hypothesis is formulated;

H2 Growth has a significant effect on finance lease use by listed non-financial firms in Nigeria.

The paper defines growth as the rate of change in annual sales (turnover) of sample firms. It is measured as the ratio of difference between current year (t) and prior year (t-1) turnover, to value of prior year turnover (t-1).

2.4 Information Asymmetry

Non-availability or insufficiency of information results in uncertainties as to the prospects of a firm. Financiers thus tend to compensate for attendant risks via addition of premiums on the cost of finance. Myers and Majluf (1984) attribute this increase in costs to mitigation of potential adverse selection and moral hazard problems. Callimaci, Fortin and Landry (2011) note that information asymmetries tend to be higher with small firms than their larger counterparts. This could arise from absence of information production and distribution efficiencies in small firms. Graham, Lemon and Schalheim (1998) further opine that large firms tend to be more diversified with stable cash-flows that allow them take on riskier forms of debt. Large firms also tend to have higher revenue streams which minimizes the inclination to procure lease finance as funding can be provided internally. With size used as a proxy for information asymmetry, studies such as Sharpe and Nguyen (1995), Adams and Hardwick (1998), Kang and Long (2001), Malik, Saeed, Ahmed and Javed (2012), Mungami (2013), Schallheim, Wells and Whitby (2013), Cosci, Guida and Meliciani (2013), Mendes (2015) provide empirical evidence to corroborate the assertion that large firms have low information asymmetry and thus, use less of leases. Li (2014) with a differing proxy also established this positive relationship between information asymmetry and finance leases. Findings of Callimaci, Fortin and Landry (2011), Cotei and Farhat (2015), Jaszczuk, Bialek-Jaworska, Opolski, Sylwestrzak and Trzpiola (2018) however, provide an exception in that large firms (low information asymmetry) were found to use more of leases- possibly to exploit its documented benefits. In the context of Neuberger and Rathke-Doppner (2012), information asymmetry was also established be negatively related to finance leases though, based on the finding that sample firms with high information asymmetry experienced constraints in securing finance from both credit and lease markets. The paper hypothesizes thus;

H3 Information asymmetry has a significant effect on finance lease use by listed non-financial firms in Nigeria

In line with extant literature, the paper examines information asymmetry in terms of firm size. It is theorized that the larger a firm, the lower its level of information asymmetry and vice versa. Firm size is measured as the logarithm of sample firms' turnover.

.2.5 Economic Recession

Economic recession is predominantly defined as a decline in Gross Domestic Product (GDP) growth such that at least two quarters of a year record values in the negative (Davis, 2019). This definition has however, been adjudged to be limiting and exclusive of other key macroeconomic indicators that collectively account for a general downturn in the economy. (Adaranijo, Bakare & Ajiteru, 2018). A revised definition by the National Bureau of Economic Research (NBER, 2003) posits an economic recession as a significant reduction in economic activities persisting for more than a few months and evident in terms of worsening levels of real GDP, real income, industrial production, wholesale-retail sales and employment. Lasisi and Shodiya (2017) note the mono-cultural nature of the Nigerian economy (dependent on oil production) and prices as a precipitating factor for the 2016 recession. Economic analysis as reported in Business Day (2017) further attribute the recession to inadequacy of investments, unemployment, currency depreciation and abysmal productivity in the non-oil sector. Manufacturing, construction and trade registered -4.3%, -6% and -0.2%.in terms of growth respectively whereas in real estate and services, contraction of 6.9% and 0.8% were recorded (Oxford Business Group, 2017). This study deems it imperative to examine the moderating effect of economic recession on finance lease use by listed non-financial firms in Nigeria, given that the sample firms cut across the aforementioned industries affected by the recession. This is also in consideration of recession impact on operational feasibilities and going concern status of businesses, the diversification plans by Govern-

ment as embodied in the Economic Recovery and Growth Plan (ERGP) to stimulate the economy towards the path of recovery (Ministry of Budget & National Planning, 2017) and the role that leases can play in aiding infrastructural investment and economic productivity.

The paper theorizes that during an economic recession, revenues tend to fall with negative effects on internal sources of finance that a firm can utilize in capital asset investment. This could affect growth of firms and further impair capacity to rely on internal financing. With the increase in information asymmetry due to uncertainties that portend during a recession, firms may further be limited in external sources of finance accessible especially conventional debt as a result of high premiums required on cost of capital. This consequently would propel the use of lease finance by firms, as a last resort finance alternative. Finance lease use is proposed to be affected by the economic recession through its impact on growth, information asymmetry and leverage. The following hypotheses are therefore formulated:

H4 Economic recession significantly moderates the effect of leverage on finance lease use by listed non-financial firms in Nigeria

H5 Economic recession significantly moderates the effect of growth on finance lease use by listed non-financial firms in Nigeria

H6 Economic recession significantly moderates the effect of information asymmetry on finance lease use by listed non-financial firms in Nigeria

Economic recession is defined as the identified year of recession within the period 2010-2017 in Nigeria. It is measured as a dummy variable- '1' assigned to the year of recession and '0', otherwise.

2.6 Theoretical Framework
The study is anchored on the pecking order theory of Donaldson (1961) modified by Myers and Majluf (1984). The theory posits that corporate entities comply with a preference scale in sources of finance that is largely driven by the consequences of information asymmetry- a situation whereby insiders (management) are better informed as to value and prospects of a firm than external stakeholders. Equity tends to be most expensive followed by debt and lastly, retained earnings. However, with an economic recession, revenues are adversely affected impairing growth and reliance on internal financing. Economic recession also increases information asymmetry thereby, limiting firms' ability to contract conventional debt and equity, due to high cost of capital. These aggregate effects of a recession on growth, information asymmetry and debt use, should compel firms to utilize lease finance. The pecking order theory therefore, serves as a basis for the derivation of the model used in the study with the principal objective being, examination of the relationship between conventional debt (leverage) and leases considering possible moderating effect of the 2016 economic recession in Nigeria.

3 Methodology
The paper adopts a correlation-explanatory research design which enables the determination of association between variables and provision of explanation as to the causes or implications. The research can be contextualized within the positivist paradigm as it is based on empiricism- the objective investigation of a phenomenon as it manifests, independent of judgments and subjective interpretations. The population of the study comprises all listed non-financial firms in Nigeria as at 31st December, 2018, which amounts to 109. A filter was applied to arrive at a population having finance lease obligations disclosed in the audited financial statements between the period 2010 and 2017. The adjusted population consequently totals 20 firms and represents the sample adopted for the study. Listed financial firms were

excluded due to peculiarities of duality as lessors and lessees. The objective of the paper would be optimally achieved by the examination of firms strictly as lessees and is in line with extant studies on finance lease use. Study scope is selected post-2009 in order to exclusively assess the moderating effect of economic recession in Nigeria. The pre-2010 period that recorded the global financial crises is thus, not included in the analysis. Definitions and measurements of the study variables are presented (see Table 1).

Table 1
Variable Definition and Measurement

Variable	Type	Definition	Measurement	Sources
Finance Leases	Dependent	Portion of total assets funded by the use of finance lease	Ratio of finance lease obligations to total assets	Modified construct of measure used in Lasfer and Levis (1998), Kang and Long (2001)
Leverage	Independent	Portion of total assets financed by non-current debt excluding finance lease obligations	Ratio of non-current debt excluding finance lease obligations to total assets	Modified construct of measure used in Filareto-Deghaye and Severin (2007)
Growth	Independent	Rate of change in annual sales of firms	Ratio of difference between current year (t) and prior year (t-1) turnover, to value of prior year turnover (t-1)	Slotty (2009), Bialek-Jaworska and Nehrebecka (2016)
Information asymmetry	Independent	Firm Size	Log of Turnover	Adams and Hardwick (1998), Callimaci, Fortin and Landry (2011), Mungami (2013)
Economic Recession	Moderator	Year of economic recession in Nigeria within the period 2010-2017	Dummy variable of 1 and 0. 1, for year of recession, 0, otherwise.	Innovation of Study

Source: Author's Construction, 2019

Two models were constructed to test formulated hypotheses and achieve stated objectives. The first model is independent of the moderation and equates the dependent variable to the summation of a constant, independent variables (inclusive of the moderator) and an error term. Model 1 is stated as follows;

$$FINL_{it} = \beta_{0it} + \beta_1 LEV_{it} + \beta_2 GROWTH_{it} + \beta_3 INFASYM_{it} + \beta_4 ECRECESS_{it} + \varepsilon_{it} \ldots\ldots (1)$$

The second model includes the interaction of the economic recession phenomenon with the independent variables; leverage, growth and information asymmetry. Model 2 is stated below;

$$FINL_{it} = \beta_{0it} + \beta_1 LEV_{it} + \beta_2 GROWTH_{it} + \beta_3 INFASYM_{it} + \beta_4 ECRECESS_{it} + \beta_5 LEVECR_{it} + \beta_6 GROWTHECR_{it} + \beta_7 INFASYMECR_{it} + \varepsilon_{it}$$
$$\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where; FINL= Finance Leases. LEV= Leverage, GROWTH= Growth, INFASYM= Information Asymmetry, ECRECESS= Economic Recession, LEVECR= Interaction of Leverage and Economic Recession, GROWTHECR= Interaction of Growth and Economic Recession, INFASYMECR= Interaction of Information Asymmetry and Economic Recession, β_0= Constant, β_{1-7}= Coefficients for Estimation, ε= Error term, i= Cross-section and t= Time.

Technique of data analysis used was Generalised Least Square (GLS) Regression for Model 1 and Fixed Effects Regression for Model 2 with the aid of statistical software, STATA. This was informed by the conduct of robustness tests such as multicollinearity, heteroscedasticity and hausman specification in order to enhance validity of results used in the analysis.

4   Results
4.1 Descriptive Statistics

This section presents an analysis of the descriptive statistics of the study variables. Table 2 is a highlight of the mean, standard deviation, minimum and maximum values for each variable. The results of the Shapiro-Wilk test for normality are equally provided (see Table 2).

Table 2
Descriptive Statistics

Var.	Obs.	Mean	Std. Dev.	Min.	Max.	S-W (z)	pr>z
Finl	107	0.0340	0.0678	0	0.3917	7.966	0.0000
Lev	107	0.1818	0.1842	0	1.3463	7.438	0.0000
Growth	84	-0.0222	0.2508	-0.6222	0.9652	3.730	0.0001
Inf_Sz_Rev	107	2.82e+10	6.27e+10	4.16e+07	2.91e+11	8.561	0.0000
Infasym	107	6.7652	0.8081	4.6193	8.4638	3.813	0.0000
Ecrecess	107	0.3364	0.4747	0	1	0.558	0.2884
Levecr	107	0.0702	0.1861	0	1.3463	8.207	0.0000
Growthecr	107	-0.0052	0.1608	-0.6222	0.8364	6.705	0.0000
Infasymecr	107	2.2446	3.2067	0	8.4638	5.915	0.0000

Source: STATA Output, 2019

In Table 2, the dependent variable, finance lease (Finl) has a minimum value of 0, implying that some firms in the sample recorded no observation of finance lease obligations for some years within the study period. The maximum value indicates the highest observed portion of total assets financed by leases which is 39%. On average, firms use leases to finance up to 3% of total assets. Leverage (Lev) defined as non-current debt excluding finance leases (scaled by total assets) has minimum, mean and maximum values of 0, 0.18 and 1.34 respectively. There are sample firms with non-current debt values greater than that of total assets. Growth has minimum, maximum and mean values of –0.62, 0.96 and -0.02 (-62%, 96% and -2%). Revenue (Inf_sz_rev), a proxy for firm size and by extension, information asymmetry ranges between approximately, ₦41.6 million (minimum) and ₦291 billion (maximum). On average, revenue of the firms amounts to approximately, ₦28.2 billion. The computed mean and maximum revenue values are attributable to the presence of conglomerate, franchise and oil and gas firms in the sample and for which such amounts are usual. Correspondingly, the logged values (Infasym) in minimum, maximum and mean terms are 4.62, 8.46 and 6.77 respectively. Economic recession (Ecrecess), a dummy variable, has minimum and maximum values of 0 and 1. Shapiro-Wilk test results (S-W (z) and pr>z) indicate non-normality of data distribution for the dependent variable, finance leases (S-W (z), 7.9666; pr>z, 0.000). Comparison of the mean (0.034) and standard deviation (0.068) of the dependent variable provides a point of inference as to low dispersion of data from the mean to cause any gross abnormality that would impair validity of results. Regression as a technique of analysis, is robust to violations of the normality assumption for a large number of observations (Schmidt & Finan, 2018).

4.2 Correlation Matrix

Table 3 presents the correlation matrix of the study variables inclusive of the interacted terms.

Table 3
Correlation Matrix

	Finl	Lev	Growth	Infasym	Ecrecess	Levecr	Grwecr	Infasymecr
Finl	1.0000							
Lev	0.5306**	1.0000						
Growth	-0.1420	-0.2945**	1.0000					
Infasym	-0.2403*	-0.0828	0.2151*	1.0000				
Ecrecess	0.1379	0.1044	0.0194	-0.0831	1.0000			
Levecr	0.5476**	0.7799**	-0.2567*	-0.1121	0.5322**	1.0000		
Growthecr	-0.2622**	-0.3707**	0.7222**	0.1506	-0.0455	-0.3863**	1.0000	
Infasymecr	0.1024	0.0858	0.0482	0.0154	0.9876**	0.5086**	-0.0079	1.0000

**- significant at 1%; *- significant at 5%
Source: STATA Output, 2019

From Table 3, it can be seen that none of the correlation coefficients of the main variables including the moderator (Ecrecess) are up to 0.80 as required by Gujarati (2003). However, examination of the correlation coefficients of the interacted terms yields a value of 0.9876 (Infasymecr with Ecrecess). This implies the likelihood of multicollinearity arising from moderation. Multicollinearity tests in terms of Variance Inflation Factor (VIF) and Tolerance Values (1/VIF) confirm this as the variables, 'Ecrecess' and 'Infasymecr' have VIF values of 70.97 and 68.86 while tolerance values are 0.0140 and 0.0145 respectively. The results are presented in Table 4.

Table 4
Variance Inflation Factor and Tolerance Values

	Model 1			Model 2		
Variable	**VIF**	**1/VIF**		**VIF**	**1/VIF**	
Growth	1.14	0.8736		2.20	0.4551	
Lev	1.11	0.9008		5.04	0.1983	
Infasym	1.06	0.9467		1.96	0.5114	
Ecrecess	1.02	0.9800		70.97	0.0141	
Infasymecr				68.86	0.0145	
Levecr				7.04	0.1420	
Grwecr				2.43	0.4110	
Mean VIF	1.08			22.64		

Source: STATA Output, 2019

In relation to the problem of multicollinearity, this can be ignored as the variables conform to two of three instances identified by Allison (2012) where it is acceptable- use of a dummy variable (Ecrecess) and multiplication of two variables (Infasymecr).

4.3 Regression Results and Test of Hypotheses

Table 5 presents the Generalised Least Square (GLS) regression results of the first Model. The initial Ordinary Least Square (OLS) regression tested significant for heteroscedasticity (Breusch-Pagan/Cook-Weisberg chi2 (1), 28.05; p-value, 0.0000). A run of fixed and random effects regression was done with the conduct of Hausman Specification test in order to arrive at the optimum regression result used in the analysis. The random effects (GLS) regression result is thus, interpreted based on the outcome of the specification test being insignificant (chi2 (4), 1.56; p-value, 0.8157). The decision is further corroborated by significance of the Lagrangian Multiplier test result (chibar2 (01), 78.56; p-value, 0.0000).

Table 5
Model 1 Regression Results

Variable	Co-efficient	Std. Errors	Z	P>(z)
-Cons	0.1350326	0.0972907	1.39	0.165
Lev	0.1453343	0.0229746	6.33	0.000
Growth	0.0010293	0.0127832	0.08	0.936
Infasym	-0.0197216	0.0141041	-1.40	0.162
Ecrecess	0.0104825	0.0059387	1.77	0.078

R^2 (Within) - 0.4865
Wald Chi2 (4) - 67.51
Prob>Chi2- 0.0000
Source: STATA Output, 2019

The multiple coefficient of determination (R^2) indicates the percentage of variation in the dependent variable that is explained by the collective of independent variables. Table 5 informs that 48.65% of variation in finance lease use by listed non-financial firms in Nigeria is accounted for by leverage, growth, information asymmetry and the economic recession whereas 51.35% is attributable to other factors not captured in the model. The Wald chi2 statistic of 67.51 with a p-value of 0.0000 (significant at 1%) confirms appropriateness of selection and permutation of the predictor variables and by extension, the fitness of the model used in estimation.

Table 6
Model 2 Regression Results

Variable	Co-efficient	Robust S.E	T	P (t)
_Cons	-0.201825	0.4420082	-0.05	0.964
Lev	-0.011396	0.0427811	-0.27	0.793
Growth	-0.0110713	0.0144703	-0.77	0.454
Infasym	0.0072126	0.0645947	0.11	0.912
Ecrecess	-0.0054883	0.0530987	-0.10	0.919
Levecr	0.162109	0.0374564	4.33	0.000
Growthecr	0.0176285	0.0099598	1.77	0.093
Infasymecr	-0.0010637	0.0072071	-0.15	0.884

R^2 (Within) - 0.5984
F (7, 19) - 8.35
Prob>F- 0.0001
Source: STATA Output, 2019

Table 6 presents the Robust Fixed Effects regression results of the second Model. The OLS result tested significant for heteroscedasticity (Breusch-Pagan/Cook-Weisberg chi2 (1), 18.41; p-value, 0.0000). Panel effects was accounted for by the running of fixed and random effects regression. The Hausman Specification test subsequently conducted, influenced selection of the fixed effects result based on chi2 (7) value of 141.86 and p-value of 0.0000. Modified Wald test for group-wise heteroscedasticity in the fixed effects regression led to report of robust standard errors based on a chi2 (20) value of 9744.41 and p-value of 0.0000.

5 Discussion and Conclusion
5.1 Discussion
Analysis of the variable coefficients and p-values in Model 1 (see Table 5), shows that leverage and economic recession have a positive and statistically significant effect on finance lease use. With a coefficient of 0.1453343 and a p-value of 0.0000 (significant at 1%), an increase in the proportion of non-current debt will lead to a corresponding increase in finance leases. This provides evidence in support of the hypothesis (H1) that leverage has a significant effect on finance lease use by listed non-financial firms in Nigeria. The implication of

the finding is that as firms become more levered, there is a limitation in efficiency of conventional debt-contracting which brings to prominence, the feasibility and attractiveness of lease finance to these corporate firms. Leverage and finance leases can thus, be adjudged to exhibit complementary relationships and is line with prior findings of Malik, Saeed, Ahmed and Javed (2012), Landry, Fortin and Callimaci (2013), Cotei and Farhat (2015), Ambrose, Emmerling, Huang and Yildirim (2018), Jaszczuk, Bialek-Jaworska, Opolski, Sylwestrzak and Trzpiola (2018).

The results do not provide evidence in support of the hypothesis (H2) that growth has a significant effect on finance lease use by listed non-financial firms in Nigeria. The co-efficient of 0.0010293 however, indicates a positive relationship between growth and finance lease use though insignificant with a p-value of 0.936. This finding is in line with Brage and Eckerstom (2009) and Musa-Mubi (2017). The observed positive relationship could be due to firms with increasing revenues, exploiting avenues for cash conservation- one of which is leases. The hypothesis (H3) that information asymmetry has a significant effect on finance lease use by listed non-financial firms in Nigeria fails to be supported with statistical evidence given a coefficient of -0.0197216 with p-value of 0.162 (insignificant). The negative relationship can however be interpreted as implying that smaller firms have higher information asymmetries and an increased tendency to use finance leases due to exorbitant compensating premiums on conventional debt finance. Sharpe and Nguyen (1995), Adams and Hardwick (1998), Kang and Long (2001), Malik, Saeed, Ahmed and Javed (2012), Mungami (2013), Schallheim, Wells and Whitby (2013), Cosci, Guida and Meliciani (2013) and Mendes (2015) established this nature of relationship.

In Model 2 (see Table 6), the R^2 of 59.84% is the percentage of finance leases in listed non-financial firms in Nigeria, explained by leverage, growth, information asymmetry, economic recession and the interacted terms (leverage*economic recession, growth*economic recession, information asymmetry*economic recession) of these explanatory variables (leverage, growth, information asymmetry) with the moderator variable (economic recession). 40.16% of the variation is due to factors external to the model. The F-statistic of 8.35 with a p-value of 0.0001 (significant at 1%) indicates the fitness of the model used in estimation.

The results of Model 2 serve as the basis for test of hypotheses formulated in respect of moderation effects. Analysis of the interaction between leverage and economic recession indicates a positive effect on finance lease with a coefficient of 0.162109 significant at 1% (p-value, 0.000). This provides evidence in support of the hypothesis (H4) that economic recession significantly moderates the effect of leverage on finance lease use in listed non-financial firms in Nigeria. The moderation effect is further supported by a change from the negative, insignificant effect leverage independently has on finance lease (refer to Table 6-coefficient, -0.011396; p-value, 0.793) and strengthening of the positive, significant effect established by the results of Model 1 (refer to Table 5) in form of an increase in coefficient value by 0.016775. In the event of a recession, firms are likely to have adversely affected revenue streams, violate debt covenants and present with uncertainties which collectively, could impair contracting of conventional debt finance. The more levered a firm is in a recession, the greater the tendency to utilize lease finance.

Interacted terms of growth and economic recession results in a positive and significant effect on finance leases given a coefficient of 0.0176285 and p-value of 0.093 (significant at 10%). A recession negatively impacts on revenue and limits internal source of finance for firms, thus, likely resulting in a use of leases. Evidence by this finding is provided in support of the hypothesis (H5) that economic recession significantly moderates the effect of growth on finance lease use in listed non-financial firms in Nigeria. Moderation effects can equally

be inferred by a change from the negative, insignificant effect that growth autonomously has on finance leases in Model 2 results (refer to Table 6- coefficient, -0.011071; p-value, 0.454) as well as improvement of the positive relationship established in Model 1 results (refer to Table 5), in terms of coefficient value (increase by 0.016599) and significance of effect.

Statistical evidence from Table 6 does not support the hypothesis (H6) that economic recession significantly moderates the effect of information asymmetry on finance lease use in listed non-financial firms in Nigeria. Interpretation of the negative coefficient (-0.0010637) suggests that the smaller a firm, the higher its information asymmetry although, insignificant with a p-value of 0.884. Without moderation, this relationship obtains as can be deduced from Table 5 (coefficient, -0.0197216; p-value, 0.162). In Table 6, information asymmetry independent of economic recession suggests a positive relationship (coefficient, 0.0072126) but expectedly, insignificant (p-value, 0.912). A possible explanation for the insignificant effect of economic recession as a moderating variable, on the relationship between information asymmetry and finance lease use could be that despite established correlations between size and information asymmetry in literature, in the Nigerian context, information asymmetry arises from a combination of factors in addition to size of a firm.

5.2 Conclusion

The findings of the study provide basis for a conclusion as to the conditional complementary relationship between leases and debt in the context of listed non-financial firms in Nigeria. The economic recession can be deduced to have affected the internal financing capacities and external contracting feasibilities of these firms. This has propelled utilization of leases as a complement to conventional debt. The paper recommends that in order to meet increasing demand for lease finance particularly in the aftermath of a recession, the capacity of leasing businesses should be enhanced by facilitating access to an array of finance sources such as insurance and pension funds. The resulting investments in general and specialized assets would ensure varying capital asset needs of diverse corporate firms can be met thus, expanding the market base of leasing businesses. Listed non-financial firms in Nigeria are also recommended to sustain leases of assets due to the attendant benefits of cash conservation favorable for growth objectives, and low financing costs in comparison to conventional debt.

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