



GLOBAL BUSINESS MANAGEMENT REVIEW

<http://e-journal.uum.edu.my/index.php/gbmr>

How to cite this article:

Ibrahim, M., Abdulkarim, H., Muktar, J., Gurama, Z. & Peter, Z. (2021). The impact of cost of capital on financial performance: Evidence from listed non-financial firms in Nigeria. *Global Business Management Review*, 13(2), 18-34. <https://doi.org/10.32890/gbmr2021.13.2.2>

THE IMPACT OF COST OF CAPITAL ON FINANCIAL PERFORMANCE: EVIDENCE FROM LISTED NON-FINANCIAL FIRMS IN NIGERIA

¹Mohammed Ibrahim*, ²Habib Abdulkarim, ³Jamila Muktar, ⁴Zakariya'u
Gurama, ⁵Zachariah Peter

^{1,2,3,4}Department of Accounting, Faculty of Arts and Social Sciences, Gombe State
University, Gombe, Nigeria

⁵Department of Accounting, Federal University Wukari, Taraba State, Nigeria

Corresponding author: mifili77@gsu.edu.ng

Received: 30/09/2021

Revised: 15/10/2021

Accepted: 25/10/2021

Published: 30/12/2021

ABSTRACT

This study examines whether Cost of Capital (COC) impact on the financial performance of listed non-financial firms in Nigeria for the period 2015-2019. Using two-step system Generalised Method of Moments (GMM), the study found a significant and negative impact of COC on financial performance of listed non-financial firms in Nigeria. This is because profitable firms have the opportunity to finance new investments with retained earnings rather than through a new debt and/or equity issuance. Also, raising the debt level of a firm may result in an increase in distress costs, and as such reduces benefits from the tax shield which consequently result in decline in the value of the firm. Thus, the finding of this study is in line with the pecking order theory of capital structure. The findings, which add to the existing knowledge with regard to the impact of COC on financial performance, should be interesting to the providers of finance. This is because the study helps them to make the decision whether or not to invest in these firms. Since they want their money to be invested where there will be maximum return. However, this result only hold for emerging economies like Nigeria where analyst cash flow forecast is difficult to predict. This is due to the underdeveloped nature of the capital market.

Keywords: cost of capital, Generalized Method of Moment, financial performance, weighted average cost of capital.

INTRODUCTION

Financing decision is an important success factor that determines the growth, profitability and going concern of companies. It determines the best possible mix of debt and equity in the financial structure to maximise shareholders' wealth (Lucky, 2017). In addition, COC has two aspects for the company. The first is the external aspect, which is the link between the company's shareholders, whose concern is the cost of Equity Capital (COEC)), and the debt investors, whose concern is the cost of Debt Capital (CODC)), in considering the potential development of the company. The second is the internal aspect, which focuses on the management that uses the COC to calculate the discount factor in project investment decisions (Swanson & Habibi, 2016). COCs play a very important role in the financing decisions of firms, so both scholars and practitioners try to learn a lot about them as it leads to a better understanding of business operations (Rad, 2014, Murtala, Ibrahim, Lawal & Abdullahi, 2018). The capital structure of a firm is mainly composed of two funds: equity and debt. Equity is the source of funds provided by investors as a substitute for returns (such as dividends). Debt, on the other hand, is the other sources of funding (such as bonds and loans) for which companies must pay interest to their lenders (such as bondholders or banks). As a result, both equity and debt holders receive future returns on the funds they provide. These constitute the COC that should be paid by firms (Ezat, 2019).

According to Ivascu and Barbuta-Misu (2017), the performance of a company is measured by the good results that are achieved due to the actions taken. It is undeniable that making profits, maintaining a viable market and upward movement of the company's assets both in actual and stock prices are excellent performance. Uninterrupted performance must be the goal of every company because it is only through performance that they have the opportunity to create value for shareholders and other stakeholders. In addition, Ibrahim and Hamid (2019) pointed out that financial performance measures the company's earnings, profitability, and value growth as evidenced by the increase in stock price and the achievement or attainment of financial goals. Since COC vary depending on the sources of financing and the degree of risk associated with them, financial managers try to choose a capital structure pattern that minimises COC and maximises the return of the company (Rahman, Sarker & Uddin, 2019). Therefore, the investment of a firm is considered important only when the expected return on capital is higher than the COC. This is because a company should earn as much profit as possible to convince its shareholders, which leads to higher enterprise value (Nadya, Semuel & Devie, 2019). Therefore, it is necessary to recognise COC as an important variable that affects firm performance (Alrjoub & Ahmad, 2017).

However, the valuation of the Nigerian capital market, which is a way of raising long-term resources to finance long-term ventures, is underdeveloped compared to its foreign counterparts (Luckey & Akani, 2018). Therefore, the primary responsibility of efficiently raising capital or mobilising funds from the surplus units of the economy and successfully channelling them to the deficit sector to meet its long-term capital needs has not been prudently discharged. For instance, the Nigerian capital market is very illiquid, there are few listed companies with low volume of transactions and low market capitalization, leading to increase in COC (Luckey & Akani, 2018). Despite the growing literature, the relationship between COC and financial performance remains a knowledge gap as most existing studies focus on foreign countries (Shahzad & Al-Swidi, 213; Ivascu & Barbutu-Misu, 2017; Lucky, 2017; Sumaryati & Tristiarini, 2017; Omwanza, 2018; Nadya *et al.*, 2019) and few have been conducted in Nigeria (Ibrahim & Ibrahim, 2015; Lucky, 2017; Lucky & Akani, 2018; Akintoyee, Adegbe, Askhia & Akintola, 2019; Sam, 2019). Therefore, this study investigated how COCs affect the financial performance of non-financial firms.

This study contributes to the academic literature in the following ways. First, it consider the use of WACC as a proxy for COC while previous researches in Nigeria used either COEC or CODC to measure COC (Ibrahim & Ibrahim, 2015; Lucky, 2017; Akintoyee *et al.*, 2019). However, studies that used WACC are those conducted by Sam (2019) and Ibrahim and Badara (2020). While Sam (2019) examines the impact of COC on optimal financing of firm growth in Nigeria, Ibrahim and Badara

(2020) examine how COC moderates the relationship between equity financing and firm value and the studies do not examine the impact of COC (WACC) on financial performance. Second, most studies use either accounting-based measures of financial performance such as ROA and return on investment (ROI) (Ibrahim & Ibrahim, 2015; Sam, 2019; Akintoyee *et al.*, 2019) or market-based measures of financial performance (Earnings Per Share (EPS)) (Lucky, 2017) independently. This study therefore, considered both accounting-based (ROA) and market-based (TQ) measures of financial performance. Third, Akintoyee *et al.* (2019) and Sam (2019) consider manufacturing firms, Ibrahim and Ibrahim (2015); Giwa (2019) and Ibrahim and Badara (2020) focus on Alternative Stock Exchange, construction firms and industrial goods firms, respectively. While Lucky (2017) considers only twenty (20) listed companies in Nigeria, none of the previous studies in Nigeria consider non-financial companies which this study considered.

Fourthly, this study considered the use of two-step system GMM as the technique for data analysis to control for endogeneity while previous studies used different techniques for analysis. For example, ordinary least squares (OLS) and multiple regression (Ibrahim & Ibrahim, 2015; Omwanza, 2018; Sam, 2019), partial least squares (PLS) analysis (Nadya *et al.*, 2019), fixed and random effects regression models (F& RE) (Lucky, 2017; Lucky & Akani, 2018; Akintoye *et al.*, 2019), univariate and bivariate regression (Li *et al.*, 2013), percentages, numbers, and graphs (Ivascu & Barbutu-Misu, 2017), and structural equation modeling (SEM) (Sumaryati & Tristiarini, 2017). The rest of this study is organized as follows. Section 2 reviewed the literature and developed the research hypotheses. Section 3 identified the data sources, described the sampling method, and defined the variables and their measurements used in the empirical research. Section 4 reports the main findings and robustness tests. Finally, Section 5 concludes the study.

LITERATURE AND HYPOTHESES DEVELOPMENT

Theoretical Review

The cost of capital is a history of the costs arising from the capital structure, i.e. the mix of debt and equity. Thus, optimal capital structure is synonymous with optimal COC. In economics, these two terms are inseparable as they have the same objective. A good combination of capital structure that minimizes COC (returns on debt and equity) and maximizes the value of the firm is the goal of every firm. A company's investment is considered valuable only when the predictable return on capital is higher than the cost of capital. The logic behind this is that a company should earn maximum profits to satisfy its shareholders, which leads to an increase in the value of the company. The appropriate level of cost of capital is one of the most critical issues that many financial experts try to identify (Abdul-Sattar, 2015; Mohamad & Saad, 2012). The term COC attracted much attention with the work of Modigliani and Miller (1958) on capital structure, referred to as Modigliani and Miller (1958) theory (M&M theory). The theory presented a consistent model that dealt with capital structure in a scientific layout where WACC is used as a discount rate to determine the value of the firm and shows that the COC for a firm are the weighted CODC and COEC.

The M&M theory states that firm value is independent of capital structure given certain assumptions such as perfect capital markets, equal risk classes, no taxes, full dividend payout, and stable CODC. However, Modigliani and Miller's (1963) theory was modified, when corporate taxes are introduced, the value of the firm increases with the leverage ratio (D/E) as a result of tax benefits associated with the use of debt. Thus, from this theory, there is a significant relationship between a firm's choice of capital structure and its market value (Murtala *et al.*, 2018). M&M theory is still relevant in the field of finance research today, but it has been criticized, supported and extended in recent years. For example, Durand (1963) states that the assumptions of the M&M theory are unrealistic, while Solomon (1963) argues that the CODC varies over time and that when the leverage exceeds the optimal level, the probability of non-payment of interest increases, thus increasing the CODC.

In contrast, Stiglitz (1969, 1974) validates the M&M theory model after relaxing the assumptions made. Moreover, under conditions of risk-free debt and no-cost bankruptcy, the M&M theory model was supported by authors such as Smith (1972), Krause and Litzenberger (1973) and Scott (1976, 1977), and it was found that an optimal level of capital exists under positive-cost bankruptcy. Similarly, Anh, Duong, and Yoon (2018) point out that an increase in a firm's debt level can lead to an increase in distress costs, reducing the benefits of the tax shield. When debt increases to a certain level, the cost of financial distress is equal to the value of the debt tax shield. Consequently, if a firm continues to incur additional debt, the cost of financial distress will exceed the benefit of the tax shield, and the value of the tax shield will decline. Another theory relevant to the COC study is the pecking order theory (POT). This theory was highlighted by Myers and Majluf (1984). The theory states that equity is less preferred as a means of raising capital and that firms prioritize their sources of finance according to the cost of finance. Moreover, equity as a means of financing is considered by firms as a last resort. Thus, internal funds are used first, when they are exhausted, debt is raised, and when it is no longer practical to raise debt, equity is raised. Thus, pecking order theory of capital structure best explained this study.

Empirical Review

An extensive literature review on the relationship between cost of capital and financial performance of firms both in Nigeria and other countries was carried out and the findings were mixed and contradictory. This could be attributed to many reasons including the type of variables used, sample size, period covered by the study, sectors used, different countries and methods used. Several scholars such as Ivascu and Barbutu-Misu (2017); Sumaryati and Tristiarini (2017); Omwanza (2018) and Akintoye *et al.* (2019) document a significant and positive impact of COC on firm's financial performance. These studies reasoned that corporate backers expect the required return on their investments (also referred to as COC), and in return, they expect the firms to deliver this expected return. Moreover, they based their argument on the modified M&M theory of 1963, which postulates that when a firm's debt increases, its financial performance also increases due to the tax deductibility of fixed interest costs.

In contrast, some scholars such as Abdul-Sattar (2015); Zheng, Rahman, Begum and Ashraf (2017) and Nadya *et al.* (2019) found negative and significant impact of COC on financial performance. This implies that the firm's value increases when the firm's COC decreases. The negative impact is due to the known preference order among financing sources. Firms prefer to finance new investments in a certain hierarchical order: internal funds first, debt issuance second, and new stock issuance last (Myers, 1984; Myers & Majluf, 1984). Moreover, only profitable firms have the ability to finance new investments from retained earnings and not through the issuance of new debt and/or equity. However, some scholars such as Apergis, Artikis, Eleftheriou and Sorros (2012), Al-Tamimi and Obeidat (2013), and Ibrahim and Ibrahim (2015) do not prove any significant impact of COC on financial performance. The results of these studies supported the 1958 M&M theory, which states that the decision between debt and equity costs does not have a significant impact on a firm's reputation and value when capital markets are perfect. Given the different results on the impact of COC on financial performance reported in previous studies, these contrasting effects suggest that a firm's COC may be associated with either lower or higher financial performance. This study therefore developed the following non-directional hypothesis to guide the study.

H1: COC of listed non-financial firms in Nigeria are related to their financial performance.

METHODOLOGY

Data and Sample Selection

The population of our study is all the ninety seven (97) listed non-financial firms on the Nigerian Stock Exchange (NSE) as at 31 December, 2019 as presented in Appendix 1. The sample of our study consists of thirty one (31) listed non-financial firms in Nigeria as shown in Table 1. The selection of sample size and time period in my study depend on the availability of the data required from various secondary sources. Also, the selection of the period is to exclude the effect of the Global Pandemic of Covid-19 that affected businesses world over. To assess how COC impact on financial performance of non-financial firms in Nigeria, data were collected from their annual report and accounts, as well as, NSE Daily Official Listing for the period 2015-2019.

Table 1

Sample Size of the Study

S/N	Company Name	Year Listed	S/N	Company Name	Year Listed
A.	Agriculture		17.	Unilever Nig. Plc.	1973
1.	Livestock Feeds Plc.	1978	18.	Vitafoan Nig. Plc.	1978
2.	Okomu Oil Palm Plc.	1991	E.	Healthcare	
3.	Presco Plc.	2002	19.	Fidson Healthcare Plc.	2008
B.	Conglomerates.		20.	May & Baker Nig Plc.	1994
4.	Transcorp of Nig. Plc.	2006	F.	Industrial Goods	
5.	U A C N Plc.	1974	21.	Berger Paints Plc.	1974
C.	Constr/Real Estate		22.	Chem. & All Prod Plc.	1978
6.	Julius Berg. Nig. Plc.	1991	23.	Dangote Cement Plc.	2010
7.	UAC Prop. D. Co Plc.	1998	24.	Larfage Africa Plc.	1979
D.	Consumer Goods		G.	Oil and Gas	
8.	Dangote SugaRef. Plc.	2007	25.	11-Mobil Plc.	1979
9.	Flour Mills Nig. Plc.	1979	26.	Conoil Plc.	1989
10.	Guinness Nig. Plc.	1965	27.	Eterna Plc.	1998
11.	Honey. Fl. Mill Plc.	2009	28.	Forte Oil Plc.	1978
12.	Intern. Brew. Plc.	1995	29.	MRS Oil Nig. Plc.	1978
13.	NASCON Al. I. Plc.	1992	30.	Total Nig. Plc.	1979
14.	Nestle Nig. Plc.	1979	H.	Services	
15.	Nig. Brew. Plc.	1973	31.	Nig. Avia. Handl C. Plc	2006
16.	P Z Cossons Nig. Plc.	1974			

Source: Compiled by the Authors from Appendix 1

Dependent Variable

The dependent variable of this study is financial performance as represented by ROA and TQ. ROA serves as an accounting-based measure of financial performance and is measured as profit after tax scaled by total assets (Pouraghajan, Tabari, Ramezani, Mansourinia, Emamgholipour & Pejman-Majd, 2012; Ibrahim & Ibrahim, 2015; Mehmood, 2019). TQ serves as a market-based measure of financial performance and is measured as market value of shares plus book value of liabilities divided by book value of total assets (Abdul-Sattar, 2015; Ullah, Ali & Mehmood, 2017; Mehmood, 2019).

Independent Variable

The independent variable of this study is COC represented by WACC. When firms start to determine COC, they need to develop a metric that allows them to capture both COEC and CODC. COC is the WACC and takes into account both COEC and CODC. Mohamad and Saad (2012) pointed out that total COC is also known as WACC and has been widely used to forecast and evaluate a firm's COC. In most cases, CODC must be used to reflect the tax benefit of interest expense. Therefore, following Pouraghajan *et al.* (2012); Rad (2014); Alrjoub and Ahmad (2017), we calculate WACC using the weights of market value of stock for K_e and book value of debt for

$K_d(1-t)$.

$$WACC = (\text{market value of equity} \times K_e) + (\text{book value of debt} \times K_d(1-t))$$

Market value of equity+book value of debt.

Where:

WACC = weighted average cost of capital.

Market value of equity = number of common shares issued multiplied by market price per share

K_e = Cost of equity

K_d = cost of debt

t = corporate tax rate

Estimation of COEC

COEC is the cost incurred by the firm to earn the returns expected by investors in the form of dividends or capital appreciation. In this study, the earnings to price (E/P) ratio is used as the main proxy for COEC as it is a widely used measure in the field of investment and has great support in the academic community (Ng & Rezaee, 2015; Eliwa, Hassan & Abraham, 2016; Mehmood, 2019). Following Eliwa *et al.* (2016), this study used an industry adjusted profit to price ratio (IndEP) to measure the COEC.

Estimation of CODC

CODC is the amount that a firm should pay as cost of debt. Therefore, this study followed Mehmood (2019); Xu, Xu & Yu (2019); Anh *et al.* (2020) and Niklander (2020) to measure CODC as the total interest expense for the year divided by the sum of current and non-current debt during the year.

Control Variables

The control variables in this study are firm size, firm age and firm leverage. With respect to firm size, Hunjra, Ijaz, Chani, Hassan and Mustafa (2014) provided evidence of a significant relationship between financial performance and firm size. They argued that larger firms enjoy economies of scale and can obtain loans at a lower interest rate due to their creditworthiness and lower probability of bankruptcy. Firm size is considered as the natural logarithm of total assets (Alrjoub & Ahmad, 2017; Kumpamool, 2018; Mehmood, 2019). As Malik (2011) and Pervan, Pervan and Curak (2017) found that firm age is significantly related to financial performance. However, the two studies have different signs (positive or negative). Firm age is considered as the date of listing to the year of observation (Ajay & Madhumathi, 2012; Hujnra *et al.*, 2014; Mehmood, 2019). Regarding the relationship

between leverage and financial performance, Almajali, Alamro and Al-Soub (2012) and Javed, Rao, Akram and Nazir (2015) found a significant relationship between leverage and financial performance. Leverage is measured as total debt divided by total capital (Dhaliwal, Heitzman & Li, 2006; Alrjoub & Ahmad, 2017).

Technique for Data Analysis

Financial performance is likely to be influenced by COC as well, since a company has to show comparatively above average performance on various indicators to be well received by investors. Thus, above average performance reduces a company's COC (Waddock & Graves, 1997). Shareholders use performance indicators to decide COEC (Ely, 1995) and hence it is a crucial factor in a firm as above average performance leads to a decrease in COEC (Francis, 2008). Dynamic panel estimation with pooled OLS is not efficient as the parameter value to be estimated is biased upwards due to the association between the prior value of the outcome variable and the fixed effects (Nickell, 1981). Moreover, in fixed effects estimation, the value would likely be downward biased (Baltagi, 2008). Under these circumstances, it is better to use the GMM model proposed by Arellano and Bond (1991), Arellano and Bover (1995), Blundell and Bond (2000) as it provides an estimate that is intermediate between the pooled OLS model and the fixed effects model (Bond, 2002) and helps to control the potential problem of endogeneity between variables (Doytch & Uctum, 2011). Therefore, this study applied the two-step system GMM and the finite sample correction for standard errors of Windmeijer (2005) to estimate the model.

This study observed some variables, referred to as instruments which are linked with the outcomes and the study assumed them to have no causal consequence on the outcome and the treatment, thus, if they have correlation with the outcome, it is because the treatment really had an effect. There are some requirements which the instrumental variables must fulfill viz: i) it should be correlated with the regressors, ii) it should be uncorrelated with the error term, and iii) it should not directly cause the dependent variable (Zheng *et al.*, 2017).

Model specification

The COC (WACC) is regressed on firms' financial performance variables (ROA and TQ) with three (3) control variables (firm size, firm age and firm leverage) to check the impact of COC on the dependent variable. Alrjoub and Ahmad (2017); Kumpamool (2018) and Mehmood (2019) also used firm size, firm age and firm leverage as predictors of financial performance. The following models which are modifications from Alrjoub and Ahmad (2017) were used for testing the hypothesis of this study:

$$ROA_{it} = \beta_0 + \beta_1 WACC_{it} + \beta_2 FSIZE_{it} + \beta_3 FAGE_{it} + \beta_4 FLEV_{it} + \varepsilon_{it} \dots \dots \dots (I)$$

$$TQ_{it} = \beta_0 + \beta_1 WACC_{it} + \beta_2 FSIZE_{it} + \beta_3 FAGE_{it} + \beta_4 FLEV_{it} + \varepsilon_{it} \dots \dots \dots (II)$$

Where:

<i>ROA</i>	=	Return on assets
<i>TQ</i>	=	Tobin's Q
<i>WACC</i>	=	Weighted average cost of capital
<i>FSIZE</i>	=	Size of the company
<i>FAGE</i>	=	Age of the company
<i>FLEV</i>	=	Leverage of the company
β_0	=	Parameter to be estimated

e_{it}	=	Error term
$\beta_1 - \beta_4$	=	Partial derivatives or the gradient of the independent and moderating variables.

EMPIRICAL RESULTS

Descriptive statistics

The mean, standard deviation, maximum values, as well as, minimum values of all the variable and total observations of this study are shown in Table 2. The values are for the time period spanning from 2015 to 2019 which comprised of a balanced panel data. The financial performance measures of this study are the ROA and TQ.

Table 2

Descriptive Statistics

Variables	Obs.	Mean	Std. Dev.	Min.	Max.
ROA	155	0.187	1.335	-0.549	16.488
TQ	155	0.803	0.534	0.25	3.73
WACC	155	0.144	0.652	-0.056	7.044
FSIZE	155	10.789	0.684	7.832	12.241
FAGE	155	33.710	13.222	9	58
FLEV	155	0.638	0.349	0.219	3.345

Source: STATA 14.0 Outputs

Table 2 shows the mean value for ROA of listed non-financial firms in Nigeria as 0.187 implying that the sampled non-financial firms in Nigeria earn about 19% return on their assets. It also shows minimum and maximum values of -0.549 and 16.488 respectively. The standard deviation of 1.335 which is 134% means that there is significant difference in ROA of the sampled firms during the period of the study as the standard deviation is over and above the mean value. Also, Tobin's Q shows a mean value of 80%, which implies that the non-financial firms have a very robust value for the study period and the value of standard deviation of 53% implies a low variation in TQ among the firms as it is below the mean value.

In addition, the WACC is on average 14% for the study period, indicating that the COC for the firms is quite low during the study period. There is wide variation in the WACC among the non-financial firms as shown by its standard deviation which is over and above the mean value. Table 2 also shows that FSIZE has a mean of 108%, which implies that, the size of the firms on average increases to 108% during the study period. The value of standard deviation of 68% which is below the mean value indicates low variation in FSIZE among the non-financial firms in Nigeria. The mean FAGE of the non-financial firms is approximately 34 years. The standard deviation of 13 years implies low variation in FAGE of the non-financial firms in Nigeria. Moreover, the mean value of FLEV indicates that financial debt is employed to finance about 64% of the total assets and that there is a low variation in FLEV as its standard deviation is smaller than the mean value.

Correlation results

Table 3 shows the correlation coefficient which indicates the degree of linear relationship among the variables of the study.

Table 3

Correlation Matrix

Var	ROA	TQ	WACC	FSIZE	FAGE	FLEV
ROA	1.000					
TQ	0.070	1.000				
WACC	-0.020	-0.032	1.000			
FSIZE	-0.388	-0.170	-0.074	1.000		
FAGE	-0.131	0.106	-0.021	0.003	1.000	
FLEV	0.128	0.6542	-0.003	-0.235	0.099	1.000

Source: STATA 14.0 Outputs

Table 3 shows the correlation coefficients on the link involving the dependent variables (ROA and TQ) and explanatory variables (WACC, FSIZE, FAGE and FLEV). The correlation values vary from -1 to 1. The indication of the link shows the course of the connection (positive or negative), the absolute values of the correlation shows the strength, with larger values indicating stronger relationships. The correlation coefficients on the key slanting are 1.000 for all the variables, which indicate perfect positive linear relationship that each variable has with itself. From Table 3, ROA has weak positive relationship with FLEV with correlation coefficient of 0.128, however, it has weak negative relationships with WACC, FSIZE and FAGE with the coefficient values of -0.020, -0.388 and -0.131 respectively. Furthermore, there is a weak positive association between TQ and FAGE with the correlation coefficient value of 0.106, however, it has weak and negative relationships with WACC and FLEV with the correlation coefficient values of -0.032 and -0.003 respectively.

Regression results

The regression results are reported on Table 4.

Table 4

Two-Step System GMM Regression Results

Variables	ROA	TQ
Constant	0.030 (0.24)	0.332 (1.60)
roa _{t-1}	-0.009*** (-26.54)	
tq _{t-1}		0.032*** (3.07)
Wacc	-0.037*** (-7.07)	-0.144*** (-8.38)
Fsize	-0.017 (-1.56)	-0.019 (-1.09)
Fage	-0.0002 (-0.36)	0.0003 (0.29)
Flev	0.386*** (41.10)	0.995*** (47.92)
F-value	3721.39***	2167.32***
Hansen test (p-value)	0.199	0.307

AR(2) (p-value)	0.112	0.641
No of Instruments	24	24
No of Groups	31	31
Observations	124	124

Source: STATA 14.0 Outputs

Notes: Dependent variables are ROA and TQ, while WACC is the independent variable. ***, ** and * indicate significance levels at the 1%, 5% and 10% respectively and the figures in parentheses represent the t-statistics. All the instruments used for the study are valid as shown by Hansen test. Also, the null hypothesis in the AR(2) test statistics is the nonexistence of serial correlation which test the first-differenced residuals in the system GMM estimation.

It is evidenced from Table 4 that the authentication tests of two-step system GMM estimator was performed for all the models and it indicate that the models are correctly specified. For instance, the validity of the overidentifying restrictions is valid for all the models. This is evidenced by the insignificant p-values of Hansen tests as (0.199) and (0.307) for ROA and TQ models respectively. Similarly, the insignificant AR(2) p-values of 0.112 and 0.641 for ROA and TQ models respectively confirm the absent of the second-order serial correlation in residuals. Additionally, the numbers of instruments 24 each for ROA and TQ models respectively are quite low as compared to the number of non-financial firms in Nigeria (31). The F-statistics of 3721.39 and 2167.32 for ROA and TQ models respectively and the p-values of 0.000 each indicated that the explanatory variables can explain the dependent variable without bias. Table 4 also showed that WACC impacts on both ROA and TQ of non-financial firms in Nigeria negatively and significantly at 1%, 5% and 10% levels of significance with the coefficients and t-values (ceff=-0.037, t=-7.07) and (ceff=-0.144, t=-8.38) for ROA and TQ respectively. The negative and significant impact of COC (WACC) on financial performance variables (ROA and TQ) indicate that shareholders are more fascinated towards investment that brings about increase in firm value. It also means that when the firm's COC is declining, its value increases.

Given the significant p-Values of the impact of COC on both ROA and Tobin's Q, the null hypothesis of the study is rejected. This means that COC has negative and significant impact on financial performance measured by both ROA and Tobin's Q. This result is consistent with the findings of Abdul-Sattar (2015), Zheng *et al.* (2017), Nadya *et al.* (2019) who found that COC impact on firms' financial performance negatively and significantly. The negative impact is due to the well-known preference order among the sources of funding. Firms prefer to finance new investments based on a specific hierarchical sequence; first, internal funds, then the issuing of debt and lastly the issuing of new shares (Myers, 1984; Myers & Majluf, 1984). Thus, the finding of this study is in line with the pecking order theory of capital structure.

Also, only profitable firms have the opportunity to finance new investments with retained earnings rather than through a new debt and/or equity issuance. Furthermore, the negative impact of COC on financial performance means that raising the debt level of a firm may result in an increase in distress costs, and as such reduces benefits from the tax shield. If the level of debt rises to a definite level, financial distress costs turn out to be the value of the debt tax shield. Consequently, the cost of financial distress will exceed the benefit of the debt tax shield if a firm continues to employ extra debt, and its value will start to decline (Anh *et al.*, 2018). Lastly, all the control variables except FLEV, have insignificant impact on both ROA and TQ.

CONCLUSION AND POLICY IMPLICATIONS

In this paper, we examine the impacts of COC on financial performance of 31 non-financial firms in Nigeria. Two-step system GMM methodological approach and the period from 2015 to 2019 were used for the study. The finding shows that COC impact on firms' financial performance negatively and significantly. This is because profitable firms have the opportunity to finance new investments with

retained earnings rather than through a new debt and/or equity issuance and raising the debt level of a firm may result in an increase in distress costs, and as such reduces benefits from the tax shield which consequently result in decline in the value of the firm as a result of employing extra debt making the cost of financial distress being higher than the benefit of the debt tax shield.

Furthermore, in order to strengthen the result of our study, we consider some control variables. Vis: firm size, firm age and firm leverage. Firm size is considered as the log of total assets, firm age is considered as the number of years of the firms since listing and firm leverage is taken as a total debt divided by total assets. These control variables amplified how WACC impact on the firms' financial performance. Our findings, which add to the existing knowledge with regard to the impact of COC on financial performance, should be interesting to the providers of finance as the study helps them to make the decision whether or not to invest in these firms. Since they want their money to be invested where there will be maximum return; otherwise they would not sustain their investment in the firm.

Despite considering all the usual procedures to make sure of the soundness and consistency of our research instruments, our study has the following limitations. First, this study uses IndE/P ratio to measure the COEC. However, debate in the literature about appropriate measure of COEC is still ongoing. Some measures such as Implied Cost of Capital (ICOE) derived from analysts' forecasts has gain much acceptance, but Easton and Monahan (2005) document an absent reliability in estimating the ICOE unless where there is low level of forecast errors and growth. However, to obtain accurate analysts' forecast in emerging economies such as Nigeria is not feasible and as such the use of ICOE as measure of COEC becomes difficult. Therefore, we resort to the use of IndE/P ratio to measure COEC. Second, the measurement of CODC may contain an error because our unit of study is not the debt issuers but rather the firm. Though our proxy for CODC which is fixed interest charges divided by total debt is familiar in the literature, however, the interest expense in the current year may replicate interest rates agreed upon in previous years, although the degree to which interest rates are renegotiated in due course may lessen this possibility.

ACKNOWLEDGMENT

This study has no grant from any funding organization in the public, commercial, or not-for-profit sectors.

REFERENCES

- Abdul-Sattar, M. S. (2015). Cost of Capital-the Effect to the Firm Value and Profitability: Empirical Evidences in Case of Personal Goods (Textile) Sector of KSE 100 Index', *Journal of Poverty, Investment and Development*, 17(1), 24-28.
- Ajay, R., & Madhumathi, R. (2012). Diversification Strategy and its Influence on the Capital Structure Decisions of Manufacturing Firms in India', *International Journal of Social Science and Humanity*, 2(5), 421-426.
- Akintoye, I. R., Adegbe, F., Askhia, O., & Akintola, A. (2019). Cost of Capital and Corporate Performance of Selected Quoted Nigerian Manufacturing Firms. *International Journal of Management Sciences and Business Research*, 8(6), 1-6.
- Almajali, A.Y., Alamro, S. A., & Al-Soub, Y.Z. (2012). Factors Affecting the Financial Performance of Jordanian Insurance Companies Listed at Amman Stock Exchange. *Journal of Management Research*, 4(2), 266-289.

- Alrjoub, A. M. S., & Ahmad, M. A. (2017). Inventory Management, Cost of Capital and Firm Performance: Evidence from Manufacturing Firms in Jordan. *Investment Management and Financial Innovations*, 14(3), 4-14.
- Al-Tamimi, K. A. M., & Obeidat, S. F. (2013). Impact of Cost of Capital, Financial Leverage, and the Growth Rate of Dividends on Rate of Return on Investment: An Empirical Study of Amman Stock Exchange. *International Journal of Academic Research in Economics and Management Sciences*, 24(4), 59-69.
- Anh, N. H., Duong, D. T. & Yoon, S. W. (2018). Capital Structure and Firm Financial Performance in Vietnam. *International Journal of Accounting and Finance*, 8(2), 122– 132.
- Apergis, N., Artikis, G., Eleftheriou, S., & Sorros, J. (2012). Accounting Information, the Cost of Capital and Excess Stock Returns: The Role of Earnings Quality-Evidence from Panel Data. *International Business Research*, 5(2), 123-136.
- Arellano, M., & Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations', *The Review of Economic Studies*, 58, 277-297.
- Arellano, M., & Bover, O. (1995). Another Look at the Instrumental Variable Estimation of Error-component Models. *Journal of Econometrics*, 68, 29-51.
- Baltagi, B. H. (2008). *Econometric Analysis of Panel Data*, John Wiley and Sons, Chichester.
- Blundell, R., and Bond, S. (2000). GMM estimation with persistent panel data: an application to production functions. *Econometric Reviews*, 19321-40.
- Dhaliwal, D., Heitzman, S., & Li, O. Z. (2006). Taxes, Leverage, and the Cost of Equity Capital. *Journal of Accounting Research*, 44(4), 691-723.
- Doytch, N., & Uctum, M. (2011). Does the Worldwide shift of FDI from Manufacturing to Services Accelerate Economic Growth? A GMM Estimation Study. *Journal of International Money and Finance*, 30(3), 410-427.
- Durand, D. (1963). The Cost of Capital in an Imperfect Market: A Reply to M-M. *American Economic Review*, 3.
- Easton, P. D., & Monahan, S. J. (2005). An Evaluation of Accounting-based Measures of Expected Returns. *The Accounting Review*, 80(2), 501-538.
- Eliwa, Y., Haslam, J., & Abraham, S. (2016). The Association between Earnings Quality and the Cost of Equity Capital: Evidence from the UK. *International Review of Financial Analysis*, 48, 125-139.
- Ezat, A. N. (2019). The Impact of Earnings Quality on the Association between Readability and Cost of Capital: Evidence from Egypt. *Journal of Accounting in Emerging Economies*, <https://doi.org/10.1108/JAEE-12-2018-0136>
- Francis, R. (2008). Market Valuation of Accrual Components. *Review of Accounting and Finance*, 7(2), 150-166.
- Giwa, Y. S. (2019). *Effect of Cost of Capital on Financial Performance of Listed Construction Companies in Nigeria*. Unpublish Masters in Business Administration (MBA) Thesis, Department of Accounting and Management, Faculty of Arts and Social Sciences, Nigerian Defence Academy, Kaduna, Nigeria.

- Hunjra, A. I., Ijaz, M. S., Chani, M. I., Hassan, S., & Mustafa, U. (2014). Impact of Dividend Policy, Earning Per Share, Return on Equity, Profit After Tax on Stock Prices. *International Journal of Economics and Empirical Research*, 2(3), 109-115.
- Ibrahim, M., & Ibrahim, A. (2015). The effect of SMEs' Cost of Capital on their Financial Performance in Nigeria. *Journal of Finance and Accounting*, 3(1), 8-11.
- Ibrahim, M., & Hamid, K. T. (2019). Corporate Social Responsibility and Financial Performance of Listed Non-financial Services Companies in Nigeria. *American Journal of Business and Society*, 4(2), 56-71.
- Ibrahim, A. S., & Badara, M. S. (2020). Moderating Effects of Cost of Capital on Equity Financing and Firm Value in Nigeria. *Academic Journal of Economic Studies*, 6(3), 81-84.
- Ivascu, E. V., & Barbuta-Misu, N. (2017). Influences of the Capital Structure and the Cost of Capital on Financial Performance: Case Study on ENGIE Group, 18th Edition of the Conference "Risk in Contemporary Economy" Galati, Romania.
- Javed, Z. H., Rao, H. H., Akram, B., & Nazir, M. F. (2015). Effect of Financial Leverage on Performance of the Firms: Empirical Evidence from Pakistan. *Journal of Economics and Business*, 65(1-2), 87-95.
- Kang, W., & Shin, J. (2016). Derivation of Corporate Debt Pricing Model and its Empirical Implications. *Asia-Pacific Journal of Financial Studies*, 45(3), 439-462.
- Kraus, A. & Litzenberger, R. H. (1973). A State Preference Model of Optimal Financial Leverage. *Journal of Finance*, 28, 911-22.
- Kumpamool, C. (2018). *Equity and Debt Market Timing, Cost of Capital and Value and Performance: Evidence from Listed Firms in Thailand*. Unpublished PhD Thesis, University of Hull, Thailand.
- Lucky, L. A. (2017). Cost of Capital and Corporate Earning of Nigeria Quoted Firms: A Multi-Dimensional Analysis of Quoted Firms in Nigeria. *Australian Finance & Banking Review*, 1(1), 41-65.
- Lucky, A. L., & Akani, H. W. (2018). Cost of Capital and Dividend Policy: A Panel Data Study of Nigerian Commercial Banks. *European Journal of Accounting, Finance and Investment*, 4(12), 80-98.
- Malik, H. (2011). Determinants of Insurance Companies' Profitability: An Analysis of Insurance Sector of Pakistan. *Academic Research International*, 1(3), 2223-2253.
- Mehmood, R. (2019). *Corporate Diversification, Cost of Capital, Financial Policies and Firms Performance: Evidence from Pakistan*. Unpublished PhD Thesis, University Institute of Management Sciences, Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi, Pakistan
- Modigliani, F., & Miller, M. H. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. *American Economic Review*, 48, 261-97.
- Modigliani, F., & Miller, M. H. (1963). Corporate Income Taxes and the Cost of Capital: A Correction. *American Economic Review*, 53, 433-43.
- Mohamad, N. E. A. B., & Saad, N. B. (2012). Cost of Capital- the Effect to Firm Value and Profitability Performance in Malaysia. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 2(4), 353-361.

- Murtala, S., Ibrahim, M., Lawal, S., & Abdullahi, B. B. (2018). Capital Structure and Return on Capital Employed of Construction Companies in Nigeria. *African Journal of Accounting, Auditing and Finance*, 6(1), 1–20.
- Myers, S. C. (1984). The Capital Structure Puzzle. *Journal of Finance*, 39, 575–592.
- Myers, S. C., & Majluf, N. (1984). Corporate Financing and Investment Decisions when Firms have Information that Investors do not Have. *Journal of Financial Economics*, 13(2), 187–221.
- Nadya, G. I., Samuel, H., & Devie, (2019). Intellectual Capital Disclosure, Information Asymmetry, Cost of Capital and Firm Value: Empirical Studies on Indonesian Manufacturers. *Petra International Journal of Business Studies*, 2(1), 27-35.
- Ng, A. C., & Rezaee, Z. (2015). Business Sustainability Performance and Cost of Equity Capital. *Journal of Corporate Finance*, 34, 128-149.
- Nickell, S. (1981). Biases in Dynamic Models with Fixed Effects. *Econometrica*, 49, 1417-26.
- Niklander, E. (2020). *The Payoff of Doing Good-the Impact of ESG Criteria on Firms' Cost of Debt Capital*. Unpublished M Sc. Thesis, School of Accounting and Finance, University of Vaasa, Finland.
- Omwanza, C. O. (2018). Effect of Cost of Capital on Financial Performance: A Case Study of Listed Commercial Banks at the Nairobi Securities Exchange Market. Retrieved from <http://google.com>.
- Pervan, M., Pervan, I., & Curak, M. (2017). The Influence of Age on Firm performance: Evidence from the Croatian Food Industry. *Journal of Eastern Europe Research in Business and Economics*, 17, 1-9.
- Pouraghajan, A., Tabari, N. A. Y., Ramezani, A., Mansourinia, E., Emamgholipour, M., & Pejman-Majd, P. (2012). Relationship between Cost of Capital and Accounting Criteria of Corporate Performance Evaluation: Evidence from Tehran Stock Exchange. *World Applied Sciences Journal*, 20(5), 666-673.
- Rad, S. A. (2014). *The Relationship between Corporate Governance Practices and Cost of Capital in Large Listed Companies of New Zealand and Singapore*. Unpublished PhD Thesis, Finance Department, University of Waikato, New Zealand. Retrieved on 15 June, 2020 from <http://researchcommons.waikato.ac.nz/>
- Rahman, A., Sarker, S. I., & Uddin, J. (2019). The Impact of Capital Structure on the Profitability of Publicly Traded Manufacturing Firms in Bangladesh. *Applied Economics and Finance*, 6(2), 1-5.
- Sam, A. D. (2019). Cost of Capital and Optimal Financing of Corporate Growth of Selected Manufacturing Firms Listed on the Floor of Nigerian Stock Exchange. *Asian Finance and Banking Review*, 3(1), 12-23.
- Scott Jr., J. H. (1976). A Theory of Optimal Capital Structure. *Bell Journal of Economics*, Spring, 33-54.
- Scott Jr., J. H. (1977). Bankruptcy, Secured Debt and Optimal Capital Structure. *Journal of Finance*, 32, 261-73.
- Shahzad, A., & Al-Swidi, A. K. (2013). Effect of macroeconomic variables on the FDI inflows: The moderating role of political stability: An evidence from Pakistan. *Asian Social Science*, 9(9), 270.

- Smith, V. L. (1972). Default Risk, Scale and Home-made Leverage Theorem. *American Economic Review*, 62.
- Solomon, E. (1963). Leverage and the Cost of Capital. *Journal of Finance*, 18, 273-79.
- Stiglitz, J. E. (1969). A Re-examination of M-M Theorem. *American Economic Review*, 59, 784- 93.
- Stiglitz, J. E. (1974). On the Irrelevance of Corporate Financial Policy. *American Economic Review*, 62, 851-66.
- Sumaryati, A., & Tristiari, N. (2017). The Influence of Cost of Equity on Financial Distress and Firm Value. *Advances in Economics, Business and Management Research (AEBMR)*, 46(1), 194-197.
- Swanson, Z., & Habibi, A. (2016). Accounting Statement Footnotes Contextual Association with Firm Financial Characteristics in the Oil and Gas Industry. *Journal of Accounting and Finance*, 16(8), 78-91.
- Ullah, W., Ali, S., & Mehmood, S. (2017). Impact of Excess Control, Ownership Structure and Corporate Governance on Firm Performance of Diversified Group Firms in Pakistan. *Business & Economic Review*, 9(2), 49-72.
- Waddock, S. A., & Graves, S. B. (1997). The Corporate Social Performance-Financial Performance Link. *Strategic Management Journal*, 18(4), 303-319.
- Windmeijer, F. (2005). A Finite Sample Correction for the Variance of Linear Efficient Two-step GMM Estimators. *Journal of Econometrics*, 126(1), 25-51.
- Xu, H., Xu, X., & Yu, J. (2019). The Impact of Mandatory CSR Disclosure on the Cost of Debt Financing: Evidence from China. *Emerging Markets Finance and Trade*, 1-15.
- Zheng, C., Rahman, M. M., Begum, M., & Ashraf, B. N. (2017). Capital Regulation, the Cost of Financial Intermediation and Bank Profitability: Evidence from Bangladesh. *Journal of Risk and Financial Management*, 10(2), 1-24.

APPENDIX I: POPULATION OF THE STUDY

S/N	Company Name	Year Listed	S/N	Company Name	Year Listed
A.	Agriculture		48.	NCR (Nig.) Plc.	1979
1.	Ellah Lakes Plc.	1993	49.	Tripple G. & C. Plc.	1991
2.	FTN Cocoa Proc. Plc.	2008	G.	Industrial Goods	
3.	Livestock Feeds Plc.	1978	50.	Austin Laz & Co. Plc.	2012
4.	Okomu Oil Palm Plc.	1991	51.	Berger Paints Plc.	1974
5.	Presco Plc.	2002	52.	Beta Glass Plc.	1986
B.	Conglomerates		53.	Chem. & All. Pr. Plc.	1978
6.	A.G. Leventis N. Plc.	1978	54.	Cem Co. of. N. Plc.	1993
7.	Chellerams Plc.	1977	55.	Cutix Plc.	2008
8.	John Holt Plc.	1974	56.	Dangote Cement Plc.	2010
9.	S C O A Nig. Plc.	1977	57.	Larfage Africa Plc.	1979
10.	Transcorp of Nig. Plc.	2006	58.	Notore Chem. In. Plc.	
11.	U A C N Plc.	1974	59.	Port. P. & P. Nig. Plc.	2009
C.	ConstructReal Estate		60.	Premier Paints Plc.	1995

12.	Arbico Plc.	1978	61.	Allum Ex. Indust. Plc.	1986
13.	Julius Berg. Nig. Plc.	1991	62.	B.O.C Gases Plc.	1979
14.	UAC P. D. Co. Plc.	1998	63.	Mult Min. & Exp. Plc.	2008
D.	Consumer Goods		64.	Thom. Wyatt Nig. Plc.	1978
15.	Cadbury Nig. Plc.	1976	I.	Oil and Gas	
16.	Champion Brew. Plc.	1983	65.	11-Mobil Plc.	1979
17.	Dangote F. Mills Plc.	2008	66.	Capital Oil Plc.	1990
18.	Dangote S. Ref. Plc.	2007	67.	Conoil Plc.	1989
19.	Enamelware Plc.	1979	68.	Eterna Plc.	1998
20.	Flour Mills Nig. Plc.	1979	69.	Forte Oil Plc.	1978
21.	Golden G. Brew. Plc.	1979	70.	Jap O & M. Serv. Plc.	2005
22.	Guinness Nig. Plc.	1965	71.	MRS Oil Nig. Plc.	1978
23.	Honey Fl. Mills Plc.	2009	72.	Oando Plc.	1992
24.	Intern. Brew. Plc.	1995	73.	Rak Unity Pe. Co. Plc.	1989
25.	Mcnichols Plc.	2009	74.	Seplat Pe. De. Co. Ltd	2014
26.	NASCON A. Ind. Plc.	1992	75.	Total Nig. Plc.	1979
27.	Nestle Nig. Plc.	1979	J.	Services	
28.	Nig. Brew. Plc.	1973	76.	Academy Press Plc.	1995
29.	North. N. F. Mills Plc.	1978	77.	Afromedia Plc.	2009
30.	P Z Cossons Nig. Plc.	1974	78.	Assoc. Bus Co. Plc.	2006
31.	Unilever Nig. Plc.	1973	79.	Capital Hotel Plc.	2008
32.	Union Dicon Salt Plc.	1993	80.	Cav. Off. Su. Grp. Plc.	2014
33.	Vitafoan Nig. Plc.	1978	81.	C & I Leasing Plc.	1997
E.	Healthcare		82.	DAAR Coms. Plc.	2008
34.	Ekocorp Plc.	1994	83.	Global Sp. E. Ser. Plc.	2017
35.	Fidson Healthcare Plc.	2008	84.	Ikeja Hotels Plc.	2007
36.	GlaxoSmith C. N. Plc	1977	85.	Interlinked Tech. Plc.	1993
37.	May & Baker Nig Plc.	1994	86.	Juli Plc.	1986
38.	Morison Ind. Plc.	1978	87.	Learn Africa Plc.	1996
39.	Neimet Int Pham. Plc.	1979	88.	Medview Airline Plc.	2015
40.	Phama-Deco Plc.	1979	89.	Nig. Av. Han. Co. Plc.	2006
41.	Union D & Clin. Plc.	2008	90.	R T Briscoe Plc.	1994
F.	ICT		91.	Red Star Express Plc.	2007
42.	Airtel Africa Plc	2019	92.	Studio Press Plc.	1979

43.	Chams Plc.	2008	93.	Tantalizers Plc.	2008
44.	Court. Bus. Sol. Plc.	2009	94.	Tourist C. of Nig. Plc.	2004
45.	CWG Plc.	2013	95.	Transcorp Hotels Plc.	2015
46.	E-Tranz. Inter. Plc.	2009	96.	Trans-nat. Expres Plc.	1993
47.	MTN Nig. Plc.	2019	97.	University Press Plc.	1979