CAPITAL STRUCTURE AND THE VALUE OF THE FIRM OF SELECTED DEPOSIT MONEY BANKS IN EAST AFRICAN COMMUNITY (EAC)

[1]BALINDA STEVEN & [2]KAREKEZI JEAN CLAUDE

[1]PhD Student, University of Eastern Africa, Baraton
[2]Adventist University of Central Africa

ABSTRACT

The study entitled capital structure and the value of the firm of selected Deposit Money Banks in East African Community (EAC) was guided by the following research question: What is the effect of capital structure on return on assets in selected deposit money banks in EAC? The study employed panel data analysis in order to examine the effect of capital structure on the value of the firm in selected Deposit Money Banks in EAC while Hausman test was adopted to determine the appropriate model between fixed effects and random effects. The study used data spanning from 2011-2020; a period of 10 years to analyze the firm value of indigenous deposit money banks in East African Community. The findings showed that capital structure influences return on assets at 15.2% as revealed by the results of Adjusted R-squared of 0.152. The results also showed that F-statistic was 0.032922<0.05; this implied that capital structure influences return on assets. The study concluded that capital structure affects return on assets in selected deposit money banks in EAC.

Keywords: Capital structure, debt ratio, leverage, tangibility, return on asset

1.0 INTRODUCTION

Capital structure represents the proportionate relationship between debt and equity instruments on the capital outlay of a firm. The capital structure decision is significant as its affects the costs of the capital and the market value of the firm. A firm that has no debt in its capital structure is referred to as unlevered firm, whereas a firm that has debt in its capital structure is referred as levered firm. Capital structure decision of a firm do influences it shareholders return and risk which in turn influences its market value.

Capital structure is quantifiable via the debt-to-asset ratio and the debt-to-equity ratio. An increase in total asset debt correlates with heightened financial risk for the company, potentially diminishing firm value (Ibthia, Muda & Rujiman, 2024). The decisions about firms' finance and capital structure occupy an important place in firms' management. This is because firms' decisions regarding the use of different forms of financing lead to different capital structures, which may have different influences on the firm value. There is an argument that the ownership structure of a firm would affect the extent to which capital structure would influence a firm's performance (Pandey & Sahu, 2019).

Decisions regarding a company's capital structure are essential for its long-term sustainability and competitive positioning, ultimately benefiting shareholders through wealth distribution. To maximize owner wealth, a company must effectively manage its capital structure by selecting an appropriate capital mix. Integrating both debt and equity financing into a company's capital structure aims to minimize the overall cost of capital (Haron, 2018).

In fact, Vu, Phan and Le (2018) and Elmagrhi, Ntim, Malagila, Fosu Tunyi (2018) contends that firms managed by owners would have the best capital mix and would eventually reap their benefits. This suggests that the choice of a specific capital structure would have a minimal effect on firms' performance unless specific characteristics of management prevail. Therefore, Migliori, Maturo and Paolone (2018) argue that firms managed by owners would make a better choice on capital structure than those managed by individuals who are not owners. The paradox is that Modigliani and Miller's (1958) theory, which is supported by Cheng (2010), maintains that capital structure is irrelevant to the financial performance of firms.

However, studies such as Maina and Ishmail (2014), Suardi and Noor (2015), Akomeah et al. (2018) and Nguyen (2019) contradict this position by demonstrating that capital structure influences the value of a firm. San and Hang (2011), on the other hand, argue that the benefits of the appropriate capital are linked to a firm's management structure. The results of other previous studies are inconsistent and inconclusive. Some authors, including Dinh & Cuong (2020), David, Oluoch & Joshua (2020), Evbayiro-Osagie & Enadeghe (2022), and Aliyu & Eliphus (2022), identified a significant and positive relationship between capital structure and firm performance.

In contrast, other researchers such as Kasasbah (2021), Ogunsola & Ogheneoparobo (2022), Michael & Babajide (2022), Tasema (2024), and Julius & Lucky (2020), along with Ibithia, Muda & Rujiman (2024), did not find similar results. Researchers identified a negative association. The two variables are not strongly linked, as shown by many studies (Marigu & Ojiegbe, 2020; Ihejirika, Ndugbu, Nbagwu & Ojiegbe, 2020; Eyong, Ebieri, Adanna & Oti, 2021; Fakunle, Omole & Adewumi, 2024; Sebil, 2024). The impact of the structure is minimal. Therefore, a study on capital structure and the value of the firm in deposit money banks in selected deposit money banks in East Africa Community is important. From this perspective, the following research question was asked: What is the effect of capital structure on return on assets in selected deposit money banks in East African Community?

2.0 THEORETICAL REVIEW

Modigliani and Miller Hypothesis (1958), is among the pioneer work in the theory of capital structure of a firm; the hypothesis is a behavioral justification of the net operating income approach. It is argues that without taxes, the cost of capital and market value of the firm remain constant throughout all levels of leverage. Modigliani and Miller (1958) offered two strong propositions to support their hypothesis. Modigliani and Miller (1958) explained that for firms in the same risk class, the total market value is independent of the capital structure and is given by capitalizing the expected net operating income by the rate appropriate to that risk class. If this proposition does not hold, then an investor could buy and sell stocks and bonds in a way to exchange one income stream for another stream, identical in all respects by selling at a lower price arbitrage. Base on the arbitrage process, they concluded that the cost of capital or market

value of the firm) is not affected by any degree of leverage. This implies that the capital structure or financing decision is irrelevant. The second proposition of the M-M hypothesis explained that firms in the same risk-class, the cost of equity is equal to the constant average cost of capital plus a premium for financial risk which is equal to debt-equity ratio times the spread between the constant average cost of capital and the cost of the debt.

2.1 The Pecking Order theory

This theory provides an analytical description of the sequence of firm's financing decisions where retained earnings have a preference over debt and debt is favored over equity. According to Tongkong (2012), under pecking order hypothesis, firms prefer internal financing to external alternatives such that if the firm issue securities, the firm favor debt over equity. The implication is that profitability would be expected to explain the firm leverage level such that more profit will connotes lesser use of debt instruments. This contradicts the trade-off theory submission that more profit attracts more leverage.

The Market Timing theory: this theory introduces the impact of timing on firm's financial decision-making process. It explained that the choice between the use of capital or equity is a function of manager's ability to time the equity market, as firms will prefer using equity so long the relative cost of equity is low, and if otherwise preference will be on the use of debt instruments. Under this approach, the stock market condition plays crucial role in explaining the firm's leverage condition, for instance, during bullish equity market, firms prefer equity issuance over debt financing (Heider, 2010).

2.2 Empirical Review

Mazanec (2023) analyzed the impact of the capital structure of 4,000 transport companies in Central Europe. According to him, the results demonstrate that a high debt ratio and a large proportion of non-current assets in total assets have a negative impact on company performance when compared with the current ratio and the share of cash and cash equivalents in total assets. Anoze, Muritala, and Yisau (2023) investigate the impact of capital structure on the performance of Nigerian oil and gas companies. They used descriptive statistics and panel regression analysis to examine the period 2011-2020. The results of the research demonstrate that, whereas longterm debt has a significant negative effect on return on assets, short-term debt has positive but insignificant impacts (Anozie, Muritala, Ininm, & Yisau, 2023). They recommended that managers of Nigerian companies use lower long-term debt since it harms their performance. Authors Ganiyu, Adelopo, Rodionova, and Samuel (2019) concluded the opposite during a study of 115 companies in Nigeria. Their findings demonstrate that shortterm debt financing, as compared with long-term debt financing, provided the majority of company financing in Nigeria (Ganiyu, Adelopo, Rodionova, & Samuel, 2019).

Using multiple repression analyses Success, Ibrahim, and Blessing (2022) examined the effect of leverage on the profitability of information and communication technology companies listed on the Nigeria Stock Exchange for the period 2012 to 2020. The results showed that there is no significant relationship between leverage (TDR) and profitability measured by ROA. The study recommended that ICT companies should watch carefully their continued use of leverage in their operations to ensure the continued survival of the company. The two studies differ as a

result of the inclusion of Tobin's Q, LTDA, LTDA, and DER that were not previously examined. Olaoye and Adesina (2022) used descriptive and inferential statistical tools to examine the impact of capital structure on financial performance. The results revealed that DER has an insignificant negative effect on ROA and a direct insignificant effect on NPM. Contrarily, DER has a direct significant effect on ROE of the sampled manufacturing companies. TDTA has a positive but insignificant effect on ROA, ROE, and NPM, while SDTA and LDTA have a negative effect.

Pucheta-Martinez & Gallego-Alvarez (2020) examined how board size, board independence, CEO duality, female directors, and board compensation affect firm performance in a sample of international The panel data sample consists of 34 countries, totaling 10,314 firm-year observations used in this study, and they are divided into six geographic zones: Africa, Asia, Nigeria, Latin America, North America, and Oceania. Africa, Asia, Nigeria, Latin America, North America, and Oceania. The results revealed that some board characteristics, such as board size, board independence, and having a female director, are positively associated with firm performance, whereas CEO duality, contrary to their expectations, also impacts positive firm performance. Moreover, board compensation is not associated with firm performance.

Bhattarai (2020) examined the effect of capital structure on the financial performance of insurance companies in Nepal. The study collected data from the annual reports available on the respective insurance companies' websites. We collected panel data from 14 insurance companies in Nepal from 2007/08 to 2015/16, resulting in a total of 126 observations. We used the pooled OLS model, random effect model, and fixed effect model for data analysis. The study has a return on assets as the dependent variable, whereas total debt ratio, equity to total assets, leverage, firm size, liquidity ratio, and asset tangibility are the independent variables. The result concluded that equity to total assets, leverage, and asset tangibility had effects on the financial performance in Nepalese insurance companies' cases

In a recent study, Wu (2019) examined the impact of debt financing and ownership concentration on Chinese firms' performance. Using both fixed effect and dynamic regression models, the author found that debt financing was positively related to firms' performance. Moreover, Wu (2019) concluded that the ownership structure influences firm performance.

Nguyen (2019) found similar results in a study that investigated the association between leverage and the performance of food and beverage firms in Vietnam. Nguyen (2019) documented an inverse relationship between the capital structure and performance of the firms. Similarly, Salam and Shourkashti (2019) and Sathyamoorthi et al. (2019) provided evidence to show an inverse relationship between capital structure and the performance of firms in Malaysia and Botswana, respectively.

Nenu, Vintilă and Gherghina (2018) found a similar result and concluded that firms' leverage is positively related to their market value. A contrary result was found in Ghana when Akomeah et al. (2018) applied a regression analysis on twenty (20) listed firms in Ghana and found that leverage had a negative relationship with the firms' performance.

Few of the studies in the East African countries documented a negative association between firms' capital structure and their performance. For instance, a study conducted by Kodongo et

al. (2015) in Kenya showed that leverage has a significantly inverse link with the value of listed firms in Kenya.

Maina and Ishmail (2014) investigated the impact of capital structure on the performance of firms listed on the Nairobi Stock Exchange (NSE). The evidence showed that the capital structure had a significantly negative relationship with the performance of firms. Similarly, Mwangi et al. (2014) provide evidence that firms' leverage has an inverse relationship with both return on equity and return on assets.

Similarly, Supa Tongkong (2012) used multiple linear panel regression models to examine the factors influencing capital structure decisions so as to maximize the value of a firm, and a dynamic panel regression model using one-step and two-step Arellano and Bond GMM estimation approach to determine the speed of adjustment towards target capital structure, and observed that a positive relationship exist between a firm's debt and its median industry leverage. They also observed that a positive relationship exists between firm size and growth opportunity; and firm leverage, though a negative relationship exists between profitability and leverage as stated in pecking order theory. They concluded that the adjustment rate for restructuring of capital composition for the study area is about 63 percent.

Another study carried out using Nigeria data, Ogbulu and Emeni (2012) examined the impact of capital structure on a firm's value; they observed that in an emerging economy like Nigeria, equity capital as a component of capital structure is irrelevant to the value of the firm.

Babalola (2012) examined the relationship between Return on Equity (ROE) and the capital structure of a sample of 10 Nigerian firms from year 2000 to 2009, and observed that a strong curvilinear relationship exists between ROE and the debt-to-asset ratio. Their findings which is consistent with the trade-off theory shows that at a reasonable parameter value, the financial distress cost burn by debt do, in fact provide a first-order counterbalance to the tax benefit of debt and that firm's performance is a quadratic function of debt ratio.

3.0 METHODOLOGY

The study employed panel data analysis in order to examine the effect of capital structure on the value of the firm in selected commercial banks in EAC. The study used data from 2011-2020. A period of 10 years is enough to analyze the firm value of indigenous deposit money banks in selected East Africa countries. The selected banks are domestic and indigenous banks that have been posting financial information and hence, Bank of Kigali and COGEBANK in Rwanda, KCB Bank and Equity bank in Kenya, Centenary Bank and DFCU in Uganda were used. Data were sourced from financial statements of the 6 selected banks in EAC.

3.1 Model Specification

The paper treats capital structure as a control variable under which tangibility, leverage and debt ratio are the indicators of capital structure. Value of the firm is seen as controlled variable and return on asset and return on equity are the indicators of value of the firm. The econometrics model used expresses the value of the firm as a function of capital structure.

The hypothesized independent variables include total liabilities to total assets ratio as a proxy for capital structure (leverage), fixed assets to total assets ratio as a proxy of tangibility (TL) of assets. The dependent variables used are return on assets (ROA) for Model 1 and 2, and return on equity (ROE) for Model 3 and 4 measured by net income to total assets and net income to total stock holder's equity, respectively. The fixed effects and random effects are tested using Hausmann test. Following are the econometric regression models estimated to test the value of the firm vis a vis capital structure.

Y= f(X)

FV= f(CS)

Firm Value= f (Capital structure)

Fixed Effects

$$ROA_{it} = \beta_{1i} + \beta_2 TL_{it} + \beta_3 LG^{it} + \beta_4 DER_{it} + \mu_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

Random Effects

$$ROA_{it} = \beta_1 + \beta_2 TL_{it} + \beta_3 LG_{it} + \beta_4 DER_{it} + \mu_{it} \dots\dots\dots\dots\dots\dots\dots\dots (2)$$

Where:

i = 1, 2 . . ., 6

t = 1, 2 . . ., 10

TL = Tangibility

LG= Leverage

DR= Debt ratio

ROA= Return on Asset

β_0 = Intercept, β_1 = Vector of coefficients of tangibility, β_2 = Vector coefficient of leverage, β_3 = Vector of coefficients of debt-to-equity ratio, μ_{it} = between entity error, ε_{it}= within entity error, i= entity and t= time

Variable Measurement and a Priori Expectation

Variable	Measurement	A priori expectation
Return on asset	Return on assets at time t, is measured by the percentage of profit after tax to total assets	+
Tangibility	The formula to determine tangible net worth is total assets - total liabilities - intangible assets = tangible net worth.	+
	Fixed assets to total assets (TL) ratio as a proxy of tangibility of assets	
Leverage	Total company debt divide by shareholder's equity	+
Debt ratio	Total debts/total assets	+

Source: Author's compilation (2025)

3.2 Method of Data Analysis

The actual panel data obtained is analyzed through OLS regression. Since the efficiency of the estimates can be improved and thus the collinearity of the explanatory factors can be reduced, a panel data is used. A panel data approach is according to Abor (2008) is more useful than either cross-section or time-series data alone. A multiple regression model is employed in this study as the study has more than one independent variable.

4.0 RESULTS AND DISCUSSION

The study discussed the results based on the models formulated earlier. Fixed effect models and random effect models were applied and later, the appropriate model was chosen.

4.1 Hausman Test for Capital Structure and Return on Assets

Hausman was used to test whether fixed effect is the best model or if random effect is the best. Based on the results, fixed effects were chosen over random effects.

Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.319130	3	0.9564

The Hausman test clearly accepts the alternative hypothesis, for the estimated $\chi2$ value for 3 df is highly significant; if the null hypothesis were true, the probability of obtaining a chi square value of as much as 0.319 or greater would be practically zero. As a result, the study rejected the fixed effect (FEM) in favor of random effect (REM).

4.2 Effect of Capital Structure on Return on Assets

Fixed effect regression model was used to estimate the intrinsic characteristics of panel data collected from 2011 to 2020 for six deposit money banks selected from Rwanda, Uganda and Kenya.

Effect of Capital Structure on Return on Assets

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.134277	0.037582	3.572939	0.0008
TL	-0.180330	0.398236	-0.452823	0.6526
LEV	-0.017091	0.005712	-2.992032	0.0043
DR	0.000485	0.006773	0.071576	0.9432
R-squared	0.267089	Mean dependent var		0.040300
Adjusted R-squared	0.152123	S.D. dependent var		0.049363
S.E. of regression	0.045454	Akaike info criterion		-3.206763
Sum squared resid	0.105368	Schwarz criterion		-2.892611
Log likelihood	105.2029	Hannan-Quinn criter.		-3.083881
F-statistic	2.323192	Durbin-Watson stat		2.364058
Prob(F-statistic)	0.032922			

Source: E-views Computation, 2025

The Adjusted-R-squared of 0.152 or about 15.2% suggests that this model is not a good fit. Durbin-Watson statistic also suggested that there was no autocorrelation detected among the sample. According to Durbin-Watson statistics, a value of 2 to 4, indicates no autocorrelation and a value of less than 2 indicates autocorrelation. Since Durbin-Watson statistics was 2.36, there was no autocorrelation. Based on the results of Adjusted R-squared, capital structure influences return on assets at 15.2%, therefore, another study can be carried out to check other variables that may influence 84.8% of the return on assets. In addition, as the F-statistic was $0.032922 < 0.05$; this implies that capital structure influences return on assets.

5. CONCLUSION AND RECOMMENDATIONS

Based on the study results and with reference to fixed effect which was found to be appropriate for the study; it is concluded that capital structure influences return on assets positively and the extent to which capital structure influences return on assets is small. Therefore, the study recommends that deposit money banks should keep using its assets very well in order to keep the business as a going concern. Deposit money banks should also increase their share capital so that there should not be mismatch with liabilities.

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