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Drivers of Bank's Debt Financing: The Panel Data Evidence from Large Commercial Banks in Tanzania

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Drivers of Bank's Debt Financing: The Panel Data Evidence from Large Commercial Banks in Tanzania

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Abstract

Debt financing is the major source of financing for commercial banks. In recent years, analysis of the banks' debt financing has gained great interest in the context of the global financial crisis. Despite the importance of debt financing on banks, the determinants of debt financing in the banking sector have remained largely unexplored compared to non-banking firms. This paper examined the potential drivers of banks' debt financing in Tanzania. The study used a balanced panel by extracting the data of all ten large Tanzanian commercial banks over the period of 10 years from 2013 to 2022. The study employed a fixed effect model along with a random effect model and pooled ordinary least squares regression. The findings revealed that debt financing was positively and significantly influenced by bank size, bank liquidity, and economic growth while profitability and collateral are negatively and significantly related to banks' debt financing. The findings indicate that the drivers of debt financing of banks in Tanzania are similar to those of non-banks institutions however, distinctive in nature. The practical implications of this paper assist bank managers to identify the potential drivers influencing banks' debt financing and opt for the best capital structure strategies.

Keywords: Commercial banks, Debt financing; Debt financing drivers, Dynamic panel data

Introduction

Financial decision-making is one of the most important and complex decisions in management because it involves evaluating the pros and cons of various financial choices and selecting the best financial option to achieve a firm objective. The best mix of a capital structure must typically be chosen by financial managers to enhance their firms' financial success. Together with equity, customer deposits, and central bank liquidity, debt financing is among the key sources of financing for commercial banks. In light of the recent global financial crisis, research on banks' debt financing has attracted a lot of attention (Rixtel et al., 2015).

Large-scale corporate finance research has been sparked by the global financial crisis to look into the connection between bank leverage and debt markets as well as the effect of debt financing on the banks' performance (Rixtel et al., 2015; Beltratti & Stulz, 2012; Demirguç-Kunt & Huizinga, 2010). Because interest payments are tax-deductible and debt financing is flexible and predictable, it is attractive to financial institutions such as banks (Naik, 2020). As a result, firms set the intended financial leverage ratio to lower financial distress and lower the danger of bankruptcy (Naik, 2020: Ebrahim et al., 2014). As a result, the

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topic of firms' debt financing decisions is hotly contested in the literature on financial management. For instance, the capital structure irrelevance theory (Modigliani & Miller, 1958) has generated several controversies, and as a result, several capital structure theories have been developed to offer a solution. The pecking-order theory, the agency cost, and the trade-off theory are a few of the most well-known theories (Jensen & Meckling, 1976; Myers & Majluf, 1984). Although several scholars attempted to provide empirical support for these views, the problem remained unresolved (Rajan & Zingales, 1995: Titman & Wessels, 1988). By looking at the factors that influence banks' debt financing in Tanzania, the current research adds to the body of knowledge on banks' decisions to use leverage. In particular, this paper applied the fixed effect model along with the random effect model and pooled ordinary least squares regression to investigate the bank's internal drivers of debt financing of large commercial banks. The main driving force behind this study is the fact that, in contrast to non-banking firms, banks are typically left out of empirical analyses of capital structure. In numerous aspects, the work will add to the field of debt financing literature.

The paper will initially contribute in various ways to the pertinent literature on debt financing. First, the paper will correct Tanzania's dearth of debt financing for banking-related research. The paper also identifies potential factors that could influence debt financing. Thirdly, the paper will discuss the significance of supporting data about Tanzanian banks' debt financing. It is anticipated that by examining the debt financing choices made by commercial banks in Tanzania, this article would have an impact on both public policy and academia. In Tanzania, the banking sector constitutes of 48 operating banks, 35 commercial banks, 5 village community banks (VICOBAs), 4 microfinance banks, 2 mortgage banks, and 2 development banks (BoT, 2021). Tanzanian commercial banks are grouped into main three peer categories namely, large banks, medium banks, and small banks. The country's ten largest commercial banks account for 76% of the country's total banking industry assets. They have a combined market share of over 75% of the country's total loans and advances. Some of these include NMB, Barclays, DTB, NBC, and Standard Chartered

Research Problem

The topic of debt financing and its drivers has generated debate in recent years and sparked a lot of research interest in the area of corporate finance. In this field, a number of empirical investigations and some theories have been created. The central issue of contention was brought about by two different arguments: the traditionalist approaches, such as Durand's (1952) claim that the best capital structure option maximizes the value of the firm while Modigliani and Miller's (1958) claim that it is irrelevant to the firm's value because

it has no bearing on the firm's value. Modigliani and Miller (1963) improved the model, nevertheless, by taking the effect of taxes into account the benefits of tax payments leading to savings in interest payments that result in an increase in firm's value. The discussion on the importance of debt financing of non-financial institutions and financial institutions is still inclusive in the literature. Unlike the case of non-bank institutions, however, very few studies on debt financing have examined the potential drivers that influence bank debt financing, and thus studies on the determinants of bank debt financing have remained unexplored. These factors have only been analyzed in a few studies focusing on non-banking companies (Naik, 2020). Thus, at this point in time, there is almost little empirical studies evidence available on the potential determinants of banks' debt financing, for example, De Jonghe and Oztekin (2015) examined the effect of banks' capital management on bank regulations and others include Diamond and Rajan (2000), Gropp and Heider (2010) and Sheikh and Qureshi (2017) have examined the drivers influencing debt financing decisions of firms, particularly in banks, however, these studies have revealed mixed results. The scant empirical evidence studies on the determinants of debt financing in banks, therefore, motivated this paper to examine the drivers of bank debt financing of commercial banks in Tanzania.

Research Objectives

The overall objective of this paper is to investigate the drivers of banks' debt financing of commercial banks in Tanzania in the case of large commercial banks. The specific objectives of the study were:

i)   To examine the effect of a bank's size on the debt financing of banks in Tanzania

ii)   To examine the effect of profitability on the debt financing of banks in Tanzania

iii)   To determine the effect of collateral on the debt financing of banks in Tanzania

iv)   To determine the effect of liquidity on the debt financing of banks in Tanzania

v)   To determine the effect of financial strength on the debt financing of banks in Tanzania

Literature Review

Theoretical Review

Financial decision is an important issue in the field of financial management. The capital structure decision is considered one of the most important decisions for a firm because it affects the firm's financial performance and shareholder value. The most famous and influential decision on leverage was the work developed by Modigliani & Miller (1963: 1958) offered the basis for the debate regarding decisions on capital structure and became a milestone in the theoretical literature in the field of financial management. Subsequently, several previous theories including trade-off theory, signalling theory, agency theory and

pecking theory have been developed by various researchers. Agency theory, i.e. agency costs, argues that when the equity's cost increases, it reduces the firm's value. It is argued that leverage can be used in solving the problem by tracking the increase in leverage (Jensen & Meckling, 1976). Myers (1977) suggested that the underinvestment problem occurs when a firm increases its debt level, the implication of this argument is that an inverse relationship exists between the growth opportunities of the firm and leverage. Trade-off theory asserts that a firm's optimal capital structure is achieved when the benefit of its leverage equals its marginal cost. According to the trade-off, the theoretical firm prefers to use debt financing to benefit from the benefit of tax shields on interest payments. Information asymmetry can also affect a firm's capital structure between outsiders and insiders (Ross, 1977). Myers (1984) in the pecking-order theory argues for the existence of a financial hierarchy. In this theory, the process of selecting different sources of funds follows a pecking order. First, firms prefer internal financing (i.e., retained earnings) to external financing (i.e., debt and equity), and if they need external financing, then debt financing is preferred over equity financing. In addition, the non-current (fixed) assets available in a particular firm predict whether the firm can be able to access debt financing. Pecking and trade-off theories supported this argument. The trade-off theory states that firms that hold more tangible assets are able to borrow more than those that hold fewer tangible fixed assets. Pecking order theory states that when a firm's tangible assets are used as collateral, there is low information asymmetry (Khan et al, 2020).

Empirical Review

Financing decisions often appear as more complex decisions for financial managers because a high level of debt to the firm can cause high-interest expenses however, a low level of debt increase corporate tax payment. Therefore, the optimal level of equity and debt must be maintained and managed. Hence, the optimum amount of capital structure of the firm mainly depends upon the factors influencing it. Previous empirical research on capital structure has attempted to verify and support the aforementioned discussed theories and identified internal drivers influencing the debt financing of firms. However, most of the empirical studies have focused on non-bank firms, and a few have focused on bank debt financing. Such as Gropp & Heider (2010) using the data of the European and the US banks examined the drivers of debt financing by using bank size, profitability, and collateral as explanatory variables confirmed that the standard drivers of debt financing in non-banking institutions also hold for banking institutions. Similar results were found by Octavia & Brown (2010) for banks in developing counties. Caglayan & Sak (2010) examined the determinants of banks' capital structure in Turkey by using bank size, profitability, market-

to-book value and tangibility and found a positive relationship between market-to-book value, bank size and leverage while tangibility and profitability were found negatively related to leverage. Sheikh & Qureshi (2017) used the data from Pakistan's conventional commercial and Islamic banks to examine the drivers of capital structure. The findings indicated that tangibility and profitability were negatively related to the capital structure however, a positive relationship was found between capital structure and bank size for both conventional commercial and Islamic banks. Laux & Rauter (2017) examined the drivers of leverage of commercial and saving banks in the US and found that capital structure was positively related to GDP growth and asset growth. Naik (2020) using the data from 26 Indian public banks examined the major drivers of debt financing by employing the pooled OLS regression. The findings indicated that tangibility, bank liquidity and bank size, were found be positively related to the debt of the banks while GDP and financial strength were found to be negatively related to the level of debt of the banks. Khan et al (2020) investigated the drivers of the capital structure of 11 banks in Saudi Arabia from 2010-2017 by employing pooled OLS regression and found that growth, bank size and earnings volatility had positive and significant effects on banks' leverage while tangibility and profitability had a negative effect on banks' leverage. Oliveira & Raposo (2021) examined the drivers of the capital structure of 21 European countries' banks from the period 2000 to 2016 and confirmed that the drivers of banks' leverage are more closely related to those that affect non-banks firms.

Conceptual Framework

The overall objective of this study was to investigate the significant determinants of banks' debt financing of commercial banks in Tanzania. The main theme of this paper was to understand the significant drivers of banks' debt financing of large commercial banks in Tanzania and to what extent these drivers influence the capital structure decisions of the banking firms. In this conceptual framework, the key explanatory variables were banks-specific factors which included bank size, bank profitability, bank collateral, bank liquidity and Bank financial strength and control variables were macro-economic factors which included, economic growth (GDP) and Inflation rate. Banks' debt financing was presented as book leverage value in Figure one below.
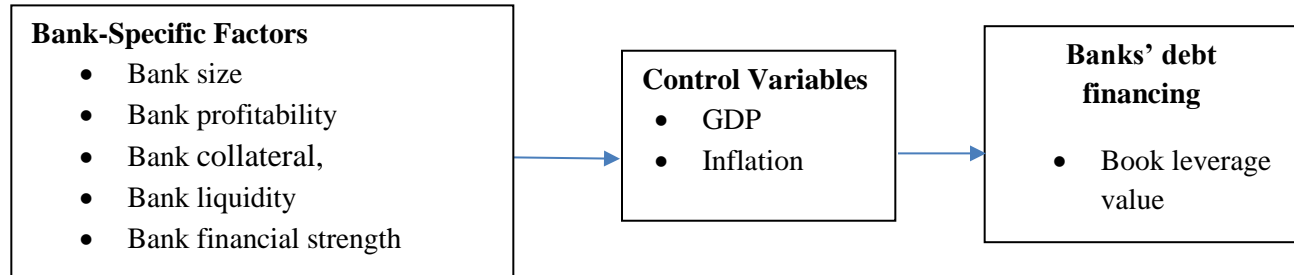
Figure 1: Conceptual Framework

Research hypotheses

Based on the empirical literature review discussions above, this paper developed five research hypotheses to examine the drivers of banks' debt financing in Tanzania. The paper is particularly interested to examine the effect of bank size, profitability, collateral, liquidity and financial strength on banks' debt financing in Tanzania. The research hypotheses are presented in Table 2 below.

Table 2: List of Research Hypotheses

No	Research Hypotheses
H_1	Bank size influences the debt financing of banks in Tanzania
H_2	Bank profitability influences the debt financing of banks in Tanzania
H_3	Bank collateral influences the debt financing of banks in Tanzania
H_4	Bank liquidity influences the debt financing of the banks in Tanzania
H_5	Bank financial strength influences the debt financing of banks in Tanzania

Research Methodology

Sample and Data

This paper investigates the drivers of banks' debt financing in Tanzania. A total of 10 large commercial banks are operating in the banking sector in Tanzania. The sample size of this study included the population of 10 large commercial banks which consisted of NMB, CRDB, NBC, Standard Chartered Bank, DTB, Exim Bank, Stanbic Bank, Citi Bank, TCB and Azania Bank. These banks dominate the sector in the country and account for more than 75% of the total assets of the whole banking sector. Data on internal bank drivers were obtained from the audited financial reports of individual banks and macroeconomic

drivers were obtained from the Bank of Tanzania database for the period 2013 to 2022. Accordingly, the study created a panel balanced of 10 cross sectional banks over 10 years consisting of 100 observations.

Study Variables Definitions

This paper used variables from known existing literature for comparison purposes with previous studies such as Sheikh & Qureshi (2017) and Gropp & Heider (2010).

Dependent variable: the book value of leverage was used as the dependent variable as a proxy for bank debt financing. It is suggested that most bank regulation is based on book values (Khan et al, 2020) as a reason for using book leverage. In this paper, the book value of total debt (both long-term and short-term debt) to total assets was used. This variable is widely used to measure a firm's financial leverage (Naik, 2020: Khan et al, 2020).

Explanatory variables: previous research on debt financing suggested that the drivers of the debt financing of banking institutions may differ from non-banking institutions because the purpose of leverage and the portfolio of assets differ from each other (Diamond & Rajan 2000: Rajan & Zingales, 1995: Flannery, 1994). Based on the literature discussed earlier. According to the characteristics and behaviour of banking firms in Tanzania, the following bank-specific factors were considered for this paper as potential drivers of bank debt financing.

Bank size: this study used the natural logarithm of total bank assets to measure bank size (Khan et al., 2020: Naik, 2020: Sheikh & Qureshi, 2017: Gropp & Heider, 2010). The trade-off theory argues that larger firms typically have a high level of leverage because they have greater borrowing power. It follows from this theory that there is a direct relationship between debt financing and firm size. Unlike the pecking-order theory, which argues for an inverse relationship between debt financing and firm size. This is because the theory assumes that large firms have enough internal resources, so they rely on this fund to finance their investments.

Profitability: In the article, the ratio of profit after tax to total assets was used to measure profitability (Khan et al, 2020: Caglayan & Sak, 2010: Sheikh & Qureshi (2017). The trade-off theory assumes that debt financing and a firm's profitability are positively related while the pecking order theory assumes a negative

relationship. The trade-off theory states that debt financing is preferred by more profitable firms in order to benefit from tax advantages (Gonzalez & Gonzalez, 2012). The theory states that accumulated retained earnings from generated large profits are used to finance companies rather than for external financing, i.e. less debt financing.

Collateral: the study used the availability of physical assets of the bank as a proxy for collateral and was measured by total fixed assets to total assets (Khan et al, 2020: Naik, 2020: Caglayan & Sak, 2010: Sheikh & Qureshi, 2017). The physical assets available to a bank predict that a particular bank will have access to more debt financing. The proposed statement is supported by trade-off theory and assumes a positive relationship between debt financing and collateral.

Liquidity: The total loans & advances to total assets ratio was used to measure bank liquidity (Lipson & Mortal, 2009: Naik, 2020). The trade-off theory postulates debt financing and firm liquidity have a positive relationship. Contrary to the pecking order theory argues the negative relationship between debt financing and liquidity.

Capital adequacy: this study used capital adequacy as an indicator of a bank's financial strength and is measured by the ratio of capital to assets (Naik, 2020). A bank's capital ratio can be increased by issuing more shares. A higher capital ratio implies more equity financing than debt financing. Therefore, there is an inverse relationship between debt financing and financial strength (Naik, 2020).

In addition to the bank-specific factors discussed above, several previous studies have applied macroeconomic factors as external determinants of debt financing (Bashir et al. 2020: Bashir et al., 2017). The most used external determinants in debt financing studies are inflation rate and GDP growth (Mokhova & Zinecker 2014). Thus, to control the influence of macroeconomic drivers on leverage decisions, this paper used inflation rate and GDP growth as control variables.

3.3   Description of variables
Table three presents the descriptions of the variables and the expected signs between the drivers and debt financing based on the assumptions of capital structure theories.

Table 3: Descriptions of variables and expected sign

		Name of variable	Symbol	Measurement	Sign
Dependent variable	Debt financing	Book leverage	BLV	Total debt/ total assets	N/A
Explanatory variable	Bank-specific drivers				+
		Bank size	SIZE	Natural log of total assets	
		Profitability	PROF	Net profit/Total assets	**-**
		Collateral	COLL	Total fixed assets/total assets	+
		Liquidity	LQ	Total loans and advances /total assets	+
		Financial strength	CAR	Total capital/total assets	**-**
	Control Variables	GDP growth	GDP	Real GDP growth rate	
		Inflation	IR	Annual inflation rate	

The Methods and Models' Specification

The data of this paper is a panel, therefore this paper used panel methods which are FEM along with REM and OLS regression to examine the effect of explanatory variables on debt financing. For simple cases where there is no bank and time effect then pooled OLS is relevant. The REM assumes that the dependent variables are uncorrelated and the variation across banks is random while the FEM assumes that the intercept for each firm differs however, limits the parameters of slope to be constant for all firms and time periods. The paper used panel unit root to test the data stationarity and Hausman's (1978) testing for REM and FEM selection for a better explanation of the model.

The panel data regression model is shown in the following form

$$.Y_{it} = \beta_0 + \beta_i X_{1,it} + \cdots + \beta_k X_{k,it} + \gamma_2 E_2 + \cdots + \gamma_n E_n + \mu_{it}$$

Where:

Y_{it} indicates the dependent variable of bank i and time t

$X_{k,it}$ indicates the explanatory variable: β_k indicates coefficient of the explanatory variable: u_{it} indicate error term, En indicates bank n. Since they are binary it has n-1 banks included in the model: γ_2 indicates the binary repressors coefficient

The panel data regression models applied in this paper are given in the following three equations pooled OLS (equation (3.2), FEM (equation 3.3) and REM (equation 3.4)

$$BLV_{it} = \beta_0 + \beta_1 Ln(SIZE)_{it}) + \beta_2 PROF_{it} + \beta_3 COLL_{it} + \beta_4 LQ_{it} + \beta_5 CAR_{it} + \beta_6 GDP_t + \beta_7 IR_t + \mu_{it} \qquad 3.2$$

$$BLV_{it} = \beta_0 + \beta_1 Ln(SIZE)_{it}) + \beta_2 PROF_{it} + \beta_3 COLL_{it} + \beta_4 LQ_{it} + \beta_5 CAR_{it} + \beta_6 GDP_t + \beta_7 IR_t + \mu_{it} \qquad 3.3$$

$$BLV_{it} = \beta_0 + \beta_1 Ln(SIZE)_{it}) + \beta_2 PROF_{it} + \beta_3 COLL_{it} + \beta_4 LQ_{it} + \beta_5 CAR_{it} + \beta_6 GDP_t + \beta_7 IR_t + \mu_{it} \qquad 3.4$$

The explanatory variables are natural logarithm of the bank size (SIZE), profitability (PROF), collateral (COLL), liquidity (LQ), financial strength (CAR), economic growth (GDP) and inflation (IR) for bank i in time t. The depended variable is book leverage value (BLV).

Findings and Results Discussions

Results of Panel unit test

Table 4 shows the summary results of the panel unit test, the paper used Levin et al, (2002) to test whether the data series are stationary. The results indicate that all the independent variables used in this study are stationary at 5% of significance level. The variables of the study have no unit root. Therefore, the dependent variable and all explanatory variables used in this study are stationary.

Table 4: The summary of the Panel unit root test

Variables	Null hypothesis	Probability
BLV_{it}	Common unit root	0.000**
$SIZE_{it}$	Common unit root	0.002**
$PROF_{it}$	Common unit root	0.000**
$COLL_{it}$	Common unit root	0.001**
LQ_{it}	Common unit root	0.000**
CAR_{it}	Common unit root	0.003**
GDP_t	Common unit root	0.001**
IR_t	Common unit root	0.004**

Source: Author's calculations: ** presents a 5% level of significance

Descriptive Statistics

Table 5 presents the summary of descriptive statistics of the variables. It can be seen from the results the borrowing value is 84.6% during the sample period. This motivates this paper to investigate the drivers of

banks' debt financing. The results indicate that the book leverage value ratio in Tanzanian banks was very high compared to the leverage ratio of previous studies in other countries such as (Naik, 2020). The higher ratio value of the book debt is highly contributed by customers' deposits taking nature of the business of commercial banks. The results are within the corporate finance standard theories which argue that banks maintain high leverage due to tax benefits for banking firms are larger than for non-banking firms and banking firms are pushed more to leverage due to the agency problems (Gropp & Heider (2010). The mean value of bank size is around 17.4% during the sample period with the standard deviation of 0,08% this indicates that the data are clustered closely around the mean. The mean value of profitability ratio is around 1.1%, the average profitability ratios of banks in Tanzania were shown an increasing trend during the study period. This overall increase in profitability ratios was driven by decrease in non-performing loans (NPL) ratios, an increase in net income, non-interest income, and improvement in operational efficiency and growth in loan portfolios. It is observed that from the results, the mean ratio of fixed assets to total assets which measure the banks' collateral is 1.2%. This indicated that banks in Tanzania maintained lower fixed assets in terms of tangible (physical) assets during the study period. The mean of banks' liquidity is 39.2%. The ratio is high indicating that the banks during the study period maintained adequate liquidity sufficient to meet their maturing obligations. The mean value of financial strength is 19.7%. The ratio indicates that banks in Tanzania maintained an adequate ratio this was explained by retained profits made by the banks and additional capital from shareholders during the period of study. The mean values of GDP and IR are 5.5% and 6.0% respectively. The GDP growth in the Tanzanian economy grew by an average value of 4.9% during the period of study while the average inflation rates remained low and stable.

Table 5: Descriptive statistics of variables

Variable	Obs.	Mean	Std. Dev.	Minimum	Maximum
BLV_{it}	100	0.846	0.004	0.842	0.851
$SIZE_{it}$	100	0.174	0.008	0.123	0.184
$PROF_{it}$	100	0.011	0.045	0.007	0.018
$COLL_{it}$	100	0.012	0.023	0.001	0.004
LQ_{it}	100	0.392	0.021	0.372	0.424
CAR_{it}	100	0.197	0.009	0.187	0.212
GDP_t	100	0.055	0.016	0.020	0.068
IR_t	100	0.060	0.038	0.034	0.160

Source: Author's calculations

Correlation Analysis of the variables

Table 6 presents the summary results of the correlation matrix of the variables used in this paper. The results indicate that, the multicollinearity is non-existence and less severe among the variables. It can be observed from the results that the book value leverage is negatively related to profitability and collateral, financial strength and inflation and positively related to size, liquidity and economic growth.

Table 6: Correlation Matrix figures

Variable	BLV	SIZE	PROF	COLL	LQ	CAR	GDP_t	IR_t
BLV	1.000							
SIZE	0.326**	1.000						
PROF	-0,284*	0.386*	1.000					
COLL	-0.148**	-0.382*	0.238**	1.000				
LQ	0.238**	0.328*	-0.28**	0.184**	1.000			
CAR	--0.284**	-0.242*	0.146**	0.168**	-0.124**	1.000		
GDP	0.268**	-0.384*	.0.128**	0.242**	0.186**	0.168*	1.000	
IR	-0.263**	-0.254*	-0.226*	-0.132*	-0.122*	-0.136*	0.268*	1.000

Notes: ** represents statistically significant at the 5% level* represents significance at the 1% level

Regression Analysis

The study used FEM along with pooled OLS regression and REM to examine the effect of bank-specific drivers and external control variables on banks' debt financing. The summary of empirical regression results of all regression models are presented in Table 4 below. It is observed from the results that the relationship between banks' debt financing and all the determinants in all three models are consistent. The results from the Hausman (1978) test indicated that FEM is an appropriate model for this paper (i.e. Chi $\chi^2 = $ *16.88 and p-value=0.0238).* The findings show that bank size has a positive and significant effect on debt financing in FEM, however insignificant with both pooled OLS model and REM. The positive relationship between banks' debt financing and bank size implies that large banks prefer debt financing the findings support the trade-off theory. The findings of the study are similar to Naik (2020) and Khan et al (2020) who found a positive relationship between bank size and debt financing. Profitability has a negative and significant

relationship with banks' debt financing. The findings of the study failed to support the pecking order theory or trade-off theory.

Table 6: Regression analysis results

Variable	Pooled OLS (M 1)	FEM (M 2)	REM (M 3)
SIZE	0.7548	1.2442	1.3222
	(0.5882) **	(0.0002) **	(0.6732) **
PROF	-0.6872	-0.8654	-0.8567
	(0.0042) **	(0.0032) **	(0.0042) **
COLL	-0.8864	-0.8846	-0.8786
	(0.7682) **	(0.0021) **	(0.4642) **
LQ	0.8752	1.3422	1.2642
	(0.0022) **	(0.0001) **	(0.0003) **
CAR	-0.6854	-0.7682	-0.6453
	(0.4563) **	(0.3462) **	(0.6482) **
GDP	-0.7642	0.8754	0.6754
	(0.0042) *	(0.0012) *	(0.0032) *
IR	-0.7682	-0.8754	-0.6874
	(0.4362) *	(0.2832) *	(0.2342) *
Cons	-1.2842	-1.3424	-0.8674
	(0.0031) **	(0,0004) **	(0.0052) **
Adjusted R^2	0.724	0.684	0.698
Prob. (F-stat)	0.000	0.000	0.000
Hausman test probability		0.0238	
Hausman test Chi χ^2		16.88	
Obs.	100	100	100
No. of groups		11	11

Notes: The table reports regression coefficients and t-statistics for all three models. The discussed results in the study's empirical findings are FEM substantiated by the Hausman test. Thus, the reported robust standard errors for FEM and the regression coefficients and p-values corrected for heteroscedasticity reported in bracket: * indicates statistically significance at 1% level and ** indicates significance at 5% level respectively

The reason for this is that the level of the profitability of banks in Tanzania is very low, the average value of profit level is around 1.1%, and therefore their retained profits might not explain decisions on capital structure. Therefore, internal funds are insufficient due to the low level of profitability the banks are forced to seek external funding for their investment purposes. The findings are consistent with those (Khan et al, 2020: Sheikh & Qureshi, 2017: Gropp & Heider, 2010). The collateral which was measured by the ratio of total physical fixed assets to bank's total assets has a negative and significant relationship with banks' debt financing in FEM but is insignificant using REM and pooled OLS model which is contrary to the trade-off theory argues that firm can use the physical assets as collateral to increase borrowing. However, this

argument is not applicable to financial institutions especially banks due to the reasons that the banks in Tanzania are maintained by fewer physical assets. Under section 44(1) of the bank of Tanzania Act, 2006, commercial banks in Tanzania are required to maintain the minimum cash balances with the bank of Tanzania as reserves against the deposit and other liabilities of banks. In addition, one of the roles of the bank of Tanzania is a lender of last resort therefore this could be the reason of minimizing the requirement of physical assets collaterals. The findings are consistent with the studies of Khan et al (2020) and Sheikh & Qureshi (2017). In all three models, banks' liquidity results were found to have a positive and significant relationship with the banks' debt financing, the findings strongly support the trade-off theory. The findings are in line with that obtained by Naik (2020) which implies that debt financing is opted to provide a high level of short-term loan facilities to other sectors. The banks' financial strength which is measured by capital adequacy found to have a negative and insignificant relationship with banks' debt financing as it was expected with this study. The results on control variables, GDP growth was found to have a positive and significant relationship with banks' debt financing in all three models while inflation has a negative effect on banks' debt financing.

Conclusions and Recommendations

There has been a considerable increase in the number of empirical studies in the corporate finance field over the last decade focused on the drivers of debt financing in non-banking institutions but can be applied to banking institutions too. The significance of optimal capital structure in recent years has been widely extended to the banks due to the persistent existence of financial crises facing financial institutions including banks and the implementation of Basel III guidelines. This motivates researchers both professional and academic to investigate the drivers influencing leverage decisions in the banks. This paper examines the most significant drivers that influence the debt financing of commercial banks in Tanzania by using the data of 10 large commercial banks for the period from 2013 to 2022. The balanced data of 10 large commercial banks over 10 years was formed and a fixed effect model (FEM) along random effect model (REM) and the pooled OLS regression were employed for analysis. The main findings of this paper are summarized as bank size and bank liquidity found to have a positive and significant relationship with banks' debt financing.

The Profitability and collateral were found to have a negative and significant relationship with banks' debt financing. However financial strength was found to have negative but insignificant relationship with banks'

debt financing. The results on control variables, GDP growth was found to have a positive and significant relationship with banks' debt financing while inflation has a negative effect on banks' debt financing. The findings of this paper mainly support the postulates of the trade-off theory. Therefore, the conclusion which is made by this paper is that the standard drivers of debt financing discussed in non-banking firms in the previous studies of capital structure literature also hold in commercial banks in Tanzania. The most important is that the debt financing of banks in Tanzania are influenced by similar drivers that have been identified and applied by non-banking firms although the choice of capital structure mix will be different according to the nature of banking industry. Hence, the findings have not only filled the knowledge gap in the literature by offering empirical study evidence for the Tanzania context but also assists regulators and banks management to understand banks' debt financing and its influencing factor.

The findings presented in this paper represents important implications from a policy perspective as follows; The practical implication of this paper assist the bank managers to identify the significance drivers influencing banks' debt financing and opt the best capital structure strategies. The findings also help banks' regulators to formulate and implement an effective and efficient regulatory framework regarding banks' debt financing for banking firms. While the findings of this paper have an important practical implication from academic and policy point of view in banking institutions. However, it is limited only to large commercial banks in Tanzania with only 5 bank-specific drivers. Therefore, future research may be extended to include other group of banks such as medium banks and small banks, also may include other drivers of debt financing such as growth potential, Earnings volatility and tax paid.

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