

The Relationship between Capital Structure and Commercial Bank Performance: A Panel Data Analysis

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Abstract

The study was aimed at identifying the relationship between capital structure and bank performance. The bank performance was indicated by Return on Asset as the dependent variable and was regressed against the components of capital structure using multiple regression models. The results depict negative relationship between capital structure and bank performance as they indicate negative coefficients. The value of R square and adjusted R square was low, and the study recommends to be extended to more variables as it can help to improve the fitness of the model.

Keywords: capital structure, bank performance, multiple regressions

I. Introduction

Capital structure is among the most important aspects of the entity's financing decisions in the corporate atmosphere. Brounen & Eichholtz, (2001) depict that making a decision on the appropriate capital structure of an entity is among the most confusing aspects in the modern corporate finance. The capital structure of an entity is the mixture of debt and equity (Watson and Head (2007), this is usually known as the entity's long term financing mix. The Capital structure decision is crucial for any entity due to the fact that the stewards (managers) have a responsibility to make sure that the return to shareholders is maximized and because decisions of this nature have tremendous consequences on the ability of the entity to compete.

The decision on the ratio of total debt to equity is considered as a strategic one for managers i.e. future oriented and has a long term effect (Watson and Head, 2007). Capital structure decision directly affects entity's profits; this makes it the important decision in corporate finance, so it must not be taken lightly.

Modigliani and Miller (1958) provide the theory which explained about capital structure and value of the firm under perfect capital market condition assumption. It was assumed that under conditions where there are no bankruptcy cost, frictionless capital markets and without taxes, firm's value is independent of its capital structure. However when corporate income tax and the cost of capital exist, the market value of the firm is positively related to the amount of long term debt used in its capital structure (Modigliani and Miller, 1963).

Despite these theories, managers in the modern world are faced with a challenge of determining how to combine debt and equity in order to achieve the optimum capital structure that would minimize cost of capital and maximize return to shareholders.

Azhagaiah and Gavoury,(2011) portray that the best alternative is a debt and equity mix. Owners would not be sure as to which source of financing to use if interest was not tax deductible. However, if interest was tax deductible, then managers would maximize the firm's value by using debt financing only. But this is not possible due to the fact that debt finance increases the potential bankruptcy costs and agency costs i.e. costs which arise due to the relationships between shareholders and managers, and those between debt-holders and shareholders.

Barclays and Smith (2005) narrated that the choice of financing is a reflection of an effort by corporate managers to make sure that there is a balance between tax shield of higher debt and the potential high cost of financial distress caused by under investment. The use of more debt is likely to destroy firm's value, because it results in financial distress and under investment however, the use of less debt may also destroy firm's value due to overinvestment which may affect profits.

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The pecking order hypothesis portrays that only when equity is overvalued in the market, the entity will be willing to sell it (Chittenden et al., 1996). This is due to the fact that managers make decisions to serve the interests of existing shareholders, so they may be reluctant to issue undervalued shares. So it can be seen that new stocks are only issued at a higher price than that imposed by the real market value of the firm, hence potential investors may view the issuance of equity by an entity as a sign of overpricing. Abor (2005) depicts that, if debt cannot be avoided then the firm will prefer to choose secured debt instead of risky debt and common stocks will be issued as a last resort.

Though the choice of a capital structure that will minimize cost of capital and increase returns is one of the most important decisions in the entity, managers do not have a clear guideline that they can use as reference when taking decision in connection with optimal capital structure.

Although banks are different from other corporate entities, they are still faced with the similar challenge of choosing the optimal capital structure that would minimize the cost of capital and increase profits as in non-financial entities. However, various contrasting views have been given on the relationship between capital structure and profitability. Some studies have found a negative relationship between leverage and profitability. Studies by (Rajan and Zingales, 1995; Titman & Wessels, 1988) found a significant negative relationship between profitability and leverage in banks. Despite the empirical evidence from the above studies, some other research works came to a different conclusion. Taub (1975) through regression analysis found a significant positive relationship between debt and profitability. Also a research by (Abor, 2005) discovered a strong positive relationship between total debt and profitability. So from the results of the studies above it shows that the discussion on the relationship between capital structure and profitability is inconclusive.

So this study evaluates the relationship between capital structure and profitability of commercial banks in Tanzania using data from 30 banks in the period (2000-2011). The study has established the impact of leverage on profitability of these banks.

2. Overview of the Banking Sector In Tanzania

The Tanzanian economy has been socialist oriented since independence in 1961, during this era; most of the companies including financial institutions were nationalized. As the economy became weak as a result of the Tanzanian-Uganda war and the oil crisis in the late 1970's, Tanzania needed financial assistance from the World Bank (WB) and International Monetary Fund (IMF) so as to revive the weak economy. This assistance came with conditions to change the economic system from purely socialism and introduce the elements of the capitalist economic system. This brought changes in Tanzania as the economy became liberalized and some entities started to be privately owned.

The liberalization of the Tanzania financial sector commenced in 1991 as substantial changes were experienced in this crucial sector of the economy. It was during the 1990's that the financial sector especially privately owned banks started mushrooming. The financial stability report of BOT (2010) indicated that in the year 2010, the banking sector in Tanzania was comprised of 41 commercial banks, 19 of these banks were foreign owned and they accounted for about 48% of the banking industry's total assets, the remaining 22 were locally owned and accounted for 52% of the industry's total assets.

The financial sector in Tanzania is dominated by the commercial banks which accounts for 75% of the total assets of the whole financial sector. The remaining 25% belongs to the other financial institutions, whereby the pension funds accounted for 21% of the total assets, the insurance sector accounted for 2% of the total assets, the microfinance institutions and mutual funds equally accounted for the remaining 2% of the total assets.

Financial Sector Assets Composition 2010



Source: Bank of Tanzania (BOT) 2010

There has been a tremendous growth in the assets of the financial sector in the last decade from TZS 1,637 in 2001 to TZS 10,040 billion in 2009 (BOT, 2010). This substantial growth was as a result of private sector deposits in the banking system. Fin-Scope Survey (2009) indicated that regardless of the tremendous growth in the assets of the financial sector, the extent of the utilization of banking services is still low as only 12.4% of the adult population use banks and other formal financial institutions. This is very low and may hinder banks to perform well due to the small customer base. So in the light of these issues, this paper has evaluated the financial performance of commercial banks in Tanzania.

3. Literature Review

This part has covered the three (3) crucial aspects of literature namely, the conceptual framework, theoretical literature review and empirical literature review. The conceptual framework for this study has been presented as follows;

The Theoretical Literature review

Various theories have been proposed about the relationship between capital structure and profitability.

Okafor and Harmon(2005)portray that the capital structure of a firm refers to the relativities among the components of the financing mix. Capital structure could be assessed either from the broad perspective of only the elements in the financing mix or from the narrower perspective of only the elements of long-term financing. In relationship to the latter, the capital structure would be referred as the ratio of long-term debts of anentity to equity financing. Financial structure of a firm has an impact on its profit performance.

Sarkar and Zapatero (2003) depict that profitable firms tend to generate high earnings; hence they are expected to use less debt in the capital structure compared with equity than those with lower earnings. This is because these high earnings will increase equity hence after several years, the proportion of equity will be larger compared to that of debt in the capital structure.

Myers (1984) narrates that there is a negative relationship between leverage and profitability. Firms usually prefer internal sources of financing, if the internal funds are not sufficient to cater for financial requirements of the firm, the firm prefers debt financing to equity financing. Thus, the higher profitability of the enterprise implies the internal financing of investment and less reliance on debt financing, this is called the pecking order theory.

In conditions wherethe capital market is imperfect and interest expenses are tax deductible, the value of the firm will increase with higher financial leverage (Modigliani and Miller, 1963). Profitable entities should have more debts in the capital structure hence creating a need for tax management in entity's profit. But the problem is that, increasing debt in the capital structure may raise the potential bankruptcy costs. So, the optimal capital structure refers to a level of leverage that balances bankruptcy costs and benefits of debt finance.

Williamson (1988) depict that debt is a disciplinary tool devised to ensure that managers give preference to wealth creation for the shareholders. This means that in companies that have high cash flow and profitability, increasing of debts can be used as a tool of reducing the scope for managers to ensure efficient allocation of resources.

Firms which are profitable prefer debt financing as compared to equity (Raheman, Zulfiqar and Mustafa, 2007).The first reason is that more debt in a firm's capital structure increases the tax savings hence lowering the tax liabilities, sosome firms having more profits opt for more debts rather than equity. The second reason is that a firm with low profitability has higher probability for bankruptcy; hence using more debt may make it prone to bankruptcy.However, if a firm has more profits then the chances of bankruptcy are minimal. The last reason is that the agency cost is a cost in form of interest rate because creditors always check the position of the company and monitor the management. So, if a firm has a good image that it can get loan at a lower cost because creditors are not worried about bankruptcy and their agency cost is very low, it can acquire more debt.

Debt payment decreases cash flows available for managers and hencewill decrease the oppotunities for profitable investments (Stulz, 1990). So the companies with little debt in the capital structure have more oppotunities for investment and have more liquidity compared to other firms in the industry, hence higher profitability.

Ross (1977) portrays that managers are knowledgeable about thedistribution of firms' returns, but investors don't have this knowledge. Ifmanagers decide toincrease debt into capital structure, investors may interpret this as a signalof increased future cash flows and the firm'scommitment towards its contractualobligation. So, this will show a higher level of confidence that themanagement has towards the firm's prospect in the near future.However,if managers decide to raise capital by issuing new equity, this is a signthat management has no confidence towards future prospects of

the firm. Therefore, it concludes that investors take higher amounts of debt as a sign of higher quality and that profitability and leverage are thus positively correlated.

Empirical Literature Review

Several studies have been conducted worldwide investigating the relationship between capital structure and profitability in banks.

Velnampy and Niresh (2012) conducted a study assessing the Relationship between capital structure and profitability of ten (10) listed Srilankan banks for the period (2002 to 2009). The results showed that there is a negative association between capital structure and profitability. Furthermore, the results also suggest that 89% of total assets in the banking sector of Sri Lanka are represented by debt, confirming the fact that banks are highly geared institutions. The findings of this study support the findings from the previously conducted studies.

Titman and Wessels (1988) evaluated the relationship between capital structure and profitability and found out that firms with high profit levels usually maintain relatively lower debt levels since they can realize such funds from internal sources. Also (Kester, 1986; Rajan and Zingalas, 1995) found a significantly negative correlation between profitability and leverage.

A study by (Awunyo and Badi, 2012) evaluating capital structure and performance of listed Banks in Ghana in the period (2000-2010) discovered that banks listed on the Ghana Stock Exchange are highly geared. This can be attributed to their over dependency on short term debt as a result of relatively high Bank of Ghana Lending rate and low level of bond market activities and there is a negative relationship between gearing and the banks performance.

Eriotis et al (2002) investigated the association between debt to equity ratio and entity's profitability. They also discovered that those entities that prefer to finance their investment activities using equity capital are more profitable than firms who finance by using borrowed capital.

Berger et al (2008) conducted an analysis of capital structure and profitability in 666 listed commercial banks in USA in the period (1992-2006). It was observed that despite the abnormal volume of profits cumulated within this period, the banks were seeking for increasing more and more their percentage of own capital by issuing new stocks. This means that the higher is the profitability of banks the higher will be their capability to increase the own capital by accumulation. Hence there is a negative relationship between the bank profitability level and their indebtedness level. The findings for this study were also supported by the findings of a study by (Kleff and Weber, 2008).

Drobetz and Fix (2003) examined the leverage predictions of the tradeoff and pecking order models using data from Switzerland firms. It was observed that more profitable Swiss firms use less leverage. Firms with more investment opportunities use less leverage, which supports the pecking order model. Leverage is very closely related to the tangibility of assets and the volatility of a firm's earnings.

Leverage has a negative effect on bank profits in Palestine (Abaddi and Ab-Rudi, 2012). The study established a model to measure the effect of capital structure on the bank efficiency measured by ROE, ROA, Total deposit to assets, total loans to assets and total loans to deposits were used to measure capital structure.

A study by (Pratomo and Ismail, 2006) investigating the performance and capital structure of 15 Malaysian Islamic banks in the period (1997-2004) found out that the higher leverage or a lower equity capital ratio is associated with higher profit efficiency. Their findings were consistent with the agency hypothesis which proposes that, a high leverage tends to have an optimal capital structure and therefore it leads to producing a good performance. Siddiqui and Shoaib (2011) came up with the same results after analyzing capital structure and performance in Pakistani banks.

A study by (Saeed, 2013) which assessed the impact of capital structure on the performance of banks in Pakistani for the period (2007-2011) found a positive relationship between determinants of capital structure and performance of banking industry. The Performance was measured by return on assets (ROA), return on equity (ROE) and earnings per share (EPS). Determinants of capital structure included long term debt to capital ratio, short term debt to capital ratio and total debt to capital ratio.

4. Methodology of the Study

The study employed data from bank scope and covered 20 banks in Tanzania. Bank scope is the reliable source of the financial information's worldwide and its source is assumed to be cleaned and valid data for public consumption. The study covered a period of 2005-2011 and Quantitative analysis of data was used as it well suited for secondary data (Leavy, 2004). Moreover casual research design was used because the study seeks to identify the relationships between the dependent and the independent variables.

The financial ratios were computed through excel and they were put through SPSS to get the results. The ratios used were total equity to total asset, total equity to total loans, total liabilities to total equity, total equity to customer funding's. The control variables were log of total asset, log of total deposit and bank size.

Specification of the variables

The dependent variable is ROE (return on equity), this is best measure of performance of the profitability as the comparison seek to identify the impact of leverage on the bank performance (Berger, 1997). Return on equity measure the return on the shareholders fund hence best predictor of the effect the capital structure on the bank performance.

The independent variables are equity to loans, equity to total asset, liabilities to equity and equity to customer funding's.

Equity to loan measure measures the proportional of equity on loan, as loan is a greatest source of revenue to the bank, this will indicate the promotional of equity that has been ejected as a loan

Liabilities to total equity indicates the financial leverage of the banks, the proportional of debt and equity

Control variables are log bank size, log of total asset and total deposit as they have great influence on the performance of the banks.

Regression model Regression Model

$$y_1 = \alpha_0 + \beta_1 \times_1 + \beta_2 \times_2 + \beta_3 \times_3 + \beta_4 \times_4 + \beta_5 \times_5 + \beta_6 \times_6 + \mu \dots\dots\dots(i)$$

$$y_2 = \alpha_0 + \beta_1 \times_1 + \beta_2 \times_2 + \beta_3 \times_3 + \beta_4 \times_4 + \beta_5 \times_5 + \beta_6 \times_6 + + \mu \dots\dots\dots(ii)$$

Where

- y₁ = Return an Equity (ROE)
- y₂ = Return on Asset
- α₀ = Intercept
- β₁ = Coefficient of Equity / Total Assets
- ×₁ = Equity / Total Asset
- ×₂ = Equity / Total Loans
- ×₃ = Equity to liabilities
- ×₄ = Equity to customer deposit and show team funding's
- ×₅ = In average Asset
- ×₆ = in deposit

5. Empirical Results

The study was contended to validate the relationship between bank profit level and capital structure. The descriptive statistics have showed the banks to be highly profitable with mean of 16% which is consistency to earlier study of Dickson and Marobhe (2012) who indicated the banks in Tanzania to be highly profitable and adequately capitalized. Equity to liabilities , equity to total assets, equity to total deposits and equity to net loans have showed the mean of 14.5%, 12.1%,16% and 29.3% respectively

Table 1: Descriptive Statistics

	Mean	Std. Deviation	N
ROE	15.81568	16.144939	133
Equity / Tot Assets	12.09092	6.165167	133
Equity / Net Loans	29.27922	16.869519	133
Equity / Liabilities	14.49860	10.162207	133
Equity / Custfu	15.91786	11.089703	133
ln average asset	25.24259252622019	1.519656658973835	133
in deposit	25.56162647530869	1.579072213538387	133
Size	.53	.501	133

On the other aspect the correlation coefficients have indicated the negative relationship between profit level as measured to both return on asset and return on equity which is in tandem to pecking order theory and the other empirical literature such as Titman and wessels (1998),Holmes, Hall (2004), Grahamu (2000) , Amidu (2007) and Kettler (1986). The study concluded that there is a negative relationship between total debts to equity with the profit level; they argued that higher debt tends to lower the level of earning. Their arguments entails that the banks with lower debt tends to use their internal sources to expand and increase profit and conclusively they argued that banks with lower proportional of debt and equity tends to use more of internal source to generate profit and reduce payments of interest cost.

Moreover the negative sign between equity to net loans indicated that banks are not carefully in issuing of loans and hence banks with more size of equity to net loans lower performance hence the banks need to be more cautious in issuance of loans, although the results was not statistically significance.

Table 2: Correlation Matrix

	Asset/Equity	Liabilities/Equity	Equity/Customer and short term deposit	Equity/Net loan
ROE	-0.155	-0.152	-0.57	-0.052

Despite the above arguments however there are some contradictory literatures that are against with the results narrated above, Petersen and Rajan (1994), Champion (1999) and Abor (2005) confined the positive relationship between the profit level and capital structure.

On the other hand the control variables such Ln of deposit, Ln of total asset and bank size have the positive relationship with the bank performance and also they have a positive relationship with the capital structure, which entails that the increase of these factors increase firm debt level. It makes sense as the firm expansion require banks to use debt for the entire expansion which is associated with the increase in branch expansion (Berger, 1995). Lager banks tends to have higher leverage associated with the rapid growth opportunity

Table 3: Correlation Matrix of Control variables

	Ln Total asset	Ln deposit	Bank size
ROE	0.115	0.184	0.120

Regression results has showed the variables of debt to equity and equity to customer deposit and shortem deposit to be statistically significance at 5% level hence they are good predicator of the profitability, However the value of R square and adjusted R square has been too low less than 50% of about 17% and 13% respectively. This shows that the value of profit level is explained by the other variables for about 83% and 87% respectively. Dickson (2012) indicated that the value of profit as measured by return on asset has determined by asset quality, liquidity level and capital adequacy having R square and adjusted R square of more than 60%. With these it shows that profitability level is being determined by the number of factors instead of capital structure alone.

Table 5: Model Summary

Model Summary^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.410 ^a	.168	.122	15.129441	1.8790
a. Predictors: (Constant), size, Equity / Tot Assets, ln average asset, in deposit, Equity / Net Loans, Equity / Custfu, Equity / Liabilities					
b. Dependent Variable: ROE					

The value of F test is being used to test the significance of the model which has portrayed the F value of 4.616 which is significance, the coefficients have been equity to total asset , equity to liabilities, equity to short term debt and customer deposit of about 0.274,0.024,-1.993 and -1.1554 respectively. In this case the equity to total liabilities has higher significant effect on the performance level followed by equity to short term and customer deposit.

Table 6: Regression Analysis

Model		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-18.360	27.707		-.663	.509
	Equity / Tot Assets	.716	1.315	.274	.545	.587
	Equity / Net Loans	.023	.123	.024	.185	.853
	Equity / Liabilities	-1.578	.858	-1.993	-4.839	.000
	Equity / Custfu	-1.681	.431	-1.154	-3.903	.000
	ln average asset	1.305	1.236	.123	1.056	.293
	in deposit size	.157	1.297	.015	.121	.904
		2.509	3.186	.078	.788	.432

a. Dependent Variable: ROE

Table 7: ANOVA Analysis

ANOVA ^a						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	9794.495	7	827.785	4.616	.000 ^b
	Residual	21612.499	125	228.900		
	Total	31406.994	132			

a. Dependent Variable: ROE

b. Predictors: (Constant), size, Equity / Tot Assets, ln average asset, in deposit, Equity / Net Loans, Equity / Custfu, Equity / Liabilities

Econometric tests

Gujarati (2011) has pointed that secondary data must be subjected to econometrics test as they are subjected to multicollinearity problem and serial correlation. Multicollinearity is a situation where the independent variables are highly correlated and serial correlation is a situation where the error term is not equal to zero violating the classical assumption of linear regression. Using variance inflation factor (VIF), has confirmed the data to have no multicollinearity as the value of VIF is greater than 5 and meanwhile the Durbin Watson test of serial correlation has indicated the value of 1.8790 which is approaching to 2, indicating the non-availability of serial correlation.

6. Conclusion

The study concluded that the relationship between the capital structure and performance of the banks to be negative, the results were significant at 5% level. In this aspect it concludes the debt level to affect the performance of the banks negatively, although it contradicts with the other studies, but being supported with the varieties of empirical studies including the pecking order theory. The control variables such as the Ln of total asset, Ln of deposit and bank size have shown the positive trend, and tend to increase the performance of the bank although the results was not statistically significance. Due to the facts that the relationship between capital structure and performance of the banks is unclear, the paper advocate the study to be further extended to identify the determinant banks performance in general instead of capital structure alone. With this knowledge gap the banks need to balance the level of debt and equity so as to enhance and foster the performance level. Tanzania banking industry has improved significantly which has heightened the level of competition among the banks, therefore the banks need to balance optimal capital structure so as to be able to avoid the risk of solvency and to withstand the degree of competition

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