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The nexus between capital structure and bank's specific factors a case of listed banks in Tanzania

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Abstract

This study aims to examine the influence of bank-specific factors namely taxation, asset tangibility, profitability, and bank size on listed banks capital structure in Tanzania from 2016 to 2020. The study used an explanatory research design to determine the cause and effect relationship between the response variable and the four explanatory variables of Tanzanian listed banks. The study's population included all of the DSE's listed banks, with the researcher sampling seven of them. The test of multiple linear regression was carried out and findings revealed the capital structure of listed banks in Tanzania are affected by asset tangibility and tax as these two explanatory variables were significant at 5% level. However, the study reveals that profitability and bank size has no statistically significant impact on the capital structure of listed banks in Tanzania. This study is limited to seven listed banks at the Dar es Salaam Stock of Exchange (DSE) over a five-year period (2016 to 2020). The researcher makes several recommendations based on this premise. First, additional research should be conducted on other banks that are not listed at DSE. Second, other explanatory variables such as liquidity position, bank age, and sales growth potentials, to name a few, can be used. Third, the scope of the study can be expanded in terms of sampled units and time period covered. Lastly, listed banks should give consideration to tax and asset tangibility when in determining their optimal capital structure.

Keywords: Tanzania, capital structure, listed banks, pecking order theory, trade-off theory

1. Introduction

The capital structure is the mix of debt and equity. The optimal debt-equity mix for a firm is one that maximizes the firm's value while minimizing the overall cost of capital (Sheikh & Qureshi, 2017) ^[30]. Capital structure has been regarded as the most contentious topic in corporate finance since the inception of irrelevance Theory. The capital structure of a firm demonstrates how it has organized its capital and how it can obtain funds to finance its assets. It should be noted that when a company decides on its financial assistance methods, whether debt or equity or a combination of the two, it must consider several factors in its capital structure. Capital structure is critical in the entire process of running a business, as it aims to reduce the cost of capital while also increasing the firm's market value (Khaw, 2019; Musallam, 2020; Shahzad & Nazir, 2020) ^[16, 23, 21].

Financing is one of the most important decisions in a company's operations. Capital is used to finance company assets, which generate revenue and profits. It is important to note that financing decisions involve two factors. The first is based on capital structure theories, which state that using debt funding will result in a higher return for stakeholders while also increasing risks, and the second is that an optimal capital structure should be determined when the financing decision is made (Khan & Jain, 2014) ^[15].

The capital structure of a company is made up of three sources of funds: internal funds, debt, and new equity. The capital raised from outside sources of funds, such as debt or equity, influences the earnings per share of the company (EPS).

As a result, financial managers must devise an optimal capital structure that will enable the company to remain relevant in the market in which it operates, because higher debt in the capital structure implies that the company is vulnerable to bankruptcy risk in the long run. (Bolarinwa, Segun Thompson & Adegboye, 2020; Gitman, 2008) ^[6, 11].

Although banks are distinct from other corporate entities, they face the same challenge as non-financial entities in determining the optimal capital structure that will reduce capital costs while increasing profits. The capital structure decision is critical in organizations because it has a direct impact on any business's profitability. A study that was conducted to assess the financial performance of listed banks in Tanzania found that capital adequacy was a key variable that influenced bank performance. According to the study, the focus should be on maintaining adequate capital because it is a viable measure of a bank's financial soundness. Thus, capital serves several important functions in bank operations, including risk and fragility mitigation, public trust maintenance, deposit mobilization, and efficiency enhancement (Hafidh, 2022; Magoma *et al.*, 2022; Pastory *et al.*, 2013) ^[13, 20, 25].

It is worth noting that the banking industry is a snapshot of any given country's economy, and a poorly performing banking industry has a direct negative impact on that country's economy. So, considering the important role played by the banks in the economy of nations it becomes imperative for bank managers to strategically know the best mix of debt

and equity to attain the capital structure at an optimal level. Thus, a study was conducted to assess the bank-specific factors that influence the capital structure of Tanzania's listed banks from 2016 to 2020.

2. Literature Review

2.1 A status of the banking industry in Tanzania

By June 2021, there were a total of 46 banks (34 commercial banks, 5 community banks, 5 Microfinance banks, and 2 Development Finance banks). Only six banks are listed at the Dar es Salaam Stock of Exchange (DSE), as shown in Table 1. It is worth noting that the country's 34 commercial banks have 901 branches (Bank of Tanzania, 2021).

The banking sector's performance indicators met regulatory standards. At the end of June 2021, the core capital and total capital to total risk weighted assets and off-balance-sheet exposures ratios were 17.1 percent and 17.9 percent, respectively, compared to regulatory requirements of 10 percent and 12 percent. Non-performing loans (NPLs) as a percentage of gross loans were 9.3 percent at the end of June 2021, down from 10.8 percent at the end of June 2020. Tanzania's central bank, in collaboration with banks, took steps to limit the share of NPLs to no more than 5%. Thus, Tanzania's banking sector remained sound and stable in fiscal year 2020/21, with adequate capital, liquidity, profitability, and improved asset quality (Bank of Tanzania, 2021).

Table 1: Licensed banks

| Type of bank | Number | Ownership structure | | Stock exchange listing | |
|---------------------------|--------|---------------------|---------|------------------------|------------|
| | | Domestic | Foreign | Listed | Not listed |
| Commercial banks | 34 | 10 | 24 | 4 | 30 |
| Community banks | 5 | 5 | 0 | 1 | 4 |
| Microfinance banks | 5 | 3 | 2 | 1 | 4 |
| Development Finance Banks | 2 | 2 | 0 | 0 | 2 |
| Total | 46 | 20 | 26 | 6 | 40 |

Source: (Bank of Tanzania, 2021)

2.2 Theoretical review

The trade-off theory (TOT) developed by Kraus and Litzenberger in the year 1973 contended that firms set their optimal level of leverage ratio by weighting the tax savings benefits of debt financing against the financial distress costs that arise from bankruptcy risks. This implies that the target capital structure is the one which maximizes the firm's value by increasing the benefits out of tax deductibility of the debt finance. (Abdulla, 2016; Kraus & Litzenberger, 1973) ^[1, 18].

Pecking-order theory (POT) came as an alternative to the trade-off theory. POT came to light based on the asymmetric information problems. Pecking-order theory points out that there is no need for a target level of capital structure. This theory established a hierarchy in choosing the finance source based on the information asymmetry and the difference in information costs between the insiders and outsiders. This hierarchy is based on choosing the safest and the cheapest source of finance to the riskiest and most expensive source that is by starting with the retained earnings as the best source of funds, then safe debt and risky debt and finally equity source as the last resort when seeking finance for the firm. Contrary to TOT, the POT states that firm's capital structure decision is driven by the latter willingness to reduce information asymmetry. (Abdulla, 2016; Guizani & Ajmi,

2021) ^[1].

2.3 Empirical review

2.3.1 Response Variable

For this particular study capital structure ratio (Total debt ratio) is considered as the response variable as used in other previous studies such as (Chaklader and Chawla, 2016; Purohit and Khanna, 2012) ^[18, 26]. The proxy for capital structure ratio is defined as total liabilities to total asset

2.4 Explanatory variables

Tax

According to Trade-off Theory, there is a clear positive relationship between tax and debt level in the company's capital structure. This is because greater leverage allows businesses to avoid tax liability (Bolarinwa, Segun Thompson & Adegboye, 2020) ^[6] This implies that a higher degree of taxation implies a higher level of debt in the company's capital structure, implying a positive relationship between tax and total debt level. In the context of this study, tax was defined as the log of a bank's total taxation in a fiscal year (Bolarinwa & Adegboye, 2020) ^[6]. This study adopted the following hypothesis. This study adopted the following hypothesis

H1: Tax positively influences the Total debt

Asset tangibility

The proportion of fixed assets to total assets is referred to as bank tangibility. Theory supports the contention that companies with more tangible assets can obtain loans because the tangible fixed assets can be used as collateral, implying that the lenders are secured in the sense that if the company defaults, these assets can be liquidated to cover the company's financial obligations. According to trade-off theory, an organization's tangible assets have a direct influence on its capital structure. A significant portion of fixed assets enable the company to easily access external financing, resulting in high leverage (Chaklader, 2021; Sbeti & Moosa, 2012) [9, 28]. According to (Vo, 2017), tangibility was found to be directly related to long-term debt, while short-term debt was found to be inversely related to capital structure. In a study that was conducted in Ethiopia for eight banks from 2000-2011 the results of a fixed effect model revealed that the relationship between asset tangibility and leverage was negative and statistically significant (Shibru *et al.*, 2015) [31].

H2: Asset tangibility positively influences the Total Debt

Bank Profit

Profitability is defined as a company's ability to use its resources effectively and efficiently in order to generate revenues that exceed its expenses (Baker *et al.*, 2019). Companies that records higher profits should have higher leverage and debt ratios because they face fewer bankruptcy risks, and creditors are more likely to fund companies with these characteristics (Alipour *et al.*, 2013) [2]. Thus, profitability and capital structure have a positive relationship. According to other studies, more profitable companies have lower debt ratios. This is because a more profitable company does not require external financing and often prefers to use internal financing. This implies that highly profitable businesses will finance their investments with retained

earnings rather than debt (Lemmon & Zender, 2010) [19]. Thus, in this particular case there is a negative relationship that exists between profitability of companies and the debt ratios.

In a study that examined the relationship between capital structure and financial performance of 10 listed licensed commercial banks in Sri Lanka from 2007 to 2016 using Panel data analysis revealed that total debt to total asset ratio was significantly negatively related profitability (Sivalingam & Kengatharan, 2018) [32]. In another study that was conducted on 28 commercial banks from 2009 to 2016 to investigate the relationship between capital structure and profitability revealed that bank's capital structure negatively associated to profitability. (Niluthpaul & Roushanara, 2021) [24]. This study adopted the following hypothesis.

H3: Bank profitability negatively influences the Total debt

Bank size

It is arguable that the size of a company has a predicted positive impact on debt level. This implies that larger companies are less likely to go bankrupt, attracting more debt as these firms have more stable cash flows than their counterparts. Thus, the probability of defaults for large firms is minimal compare to smaller firms. Hence, the financial distress risk is lower for larger companies. Another fact is based on the argument that larger companies are more diverse in their endeavours, so their failure rate is lower than smaller companies. As a result, this clearly indicates that there is a positive relationship between company size and debt availability (Alipour *et al.*, 2013; Bolarinwa & Adegboye, 2020; Khaw, 2019) [2, 16, 6]. In a study that was conducted in India using a sample of 1110 to 1163 firms for a five year period from 1998 to 2002, the study revealed that there is a negative relationship between the company size and its debt ratios (Rajagopal, 2011) [27].

This study adopted the following hypothesis

H4: Bank Size positively influences the Total debt

Table 2: Measurement of variables used in this study

| Variables | Acronym | Definition | Formula | Authors | Expected sign as per TOT | Expected sign as per POT |
|------------------------------|---------|---|----------------------------------|---|--------------------------|--------------------------|
| Response Variable | | | | | | |
| Total Debt ratio | TDR | TD | Total liabilities / Total assets | TL/TA x 100 | | |
| Explanatory Variables | | | | | | |
| Tax | TX | The logarithm of the total taxation a firm pay in a fiscal year | Log (Taxation) | (Bolarinwa, & Adegboye, 2020) [6] | + | ? |
| Asset Tangibility | BT | Dividing Tangible fixed assets with total assets | Fixed Asset /Total Asset x100 | (Alipour <i>et al.</i> , 2013; Chaklader, 2021; Vo, 2017) [2, 9] | + | + |
| Profitability | ROA | Dividing net income with total assets | Net Income /Total Asset x 100 | (Alipour <i>et al.</i> , 2013) | + | - |
| Bank size | BS | Natural logarithm of Total assets | Log (Total assets) | (Alipour <i>et al.</i> , 2013; Bolarinwa, 2020; Khaw, 2019; Rajagopal, 2011) [2, 16, 6, 27] | + | - |

Source: Adopted from (Khemiri and Noubbigh, 2018) [17]

3. Methodology

The study employed explanatory research design because this design is used in a study that aims to establish the cause and effect relationship, and thus this study employs explanatory research design to establish the effect of tax, asset tangibility, profitability, and bank size on capital structure of listed banks in Tanzania. The data for this study came from the audited

financial statements of listed banks on the Dar es Salaam Stock of Exchange (DSE) for a five year period that is from 2016 and 2020. The data was gathered from DSE due to its availability, accessibility, and dependability. Because the sample size was small, the researcher sampled all of the DSE's listed banks. The amount of saturated samples obtained was seven listed banks for a five year period (35 data

points). According to Bushra & Mirza (2015) [7], a quantitative study should include more than 30 observations to be viable. This study had 35 observations. The Durbin-Watson (Autocorrelation) and Variance Inflation factor (Multicollinearity) tests were used. Finally, multiple regression and correlation analysis were extensively used to examine the relationship between the independent variables (asset tangibility, tax, profitability, and bank size) and the dependent variable (Total Debt).

Multiple Regression Model

The study conducted a multiple linear regression analysis so as to determine the relationship between the response variable (Total debt) and the explanatory variables namely taxation, tangibility, profitability and bank size. The general model that guides this particular study is specified as follows;

$$TD_{it} = \beta_0 + \beta_1ROA + \beta_2BS + \beta_3TX + AT + \varepsilon_{it} \dots \dots \dots Eqn 1$$

Whereby;

- ROA stands for Profitability of listed banks in Tanzania
- BS stands for Bank size of listed banks in Tanzania
- TX stands for current Tax charged to listed banks in Tanzania
- AT stands for Asset Tangibility of listed banks in Tanzania
- β_0 stands for the constant term
- $\beta_1, \beta_2, \beta_3, \beta_4$ stands for Coefficients of the determinants of total debt
- ε_{it} is error term.

4. Findings and Discussion

4.1 Descriptive Statistics

As an example, the minimum and maximum value of bank size is 4.47 and 6.86, respectively, while the mean value and standard deviation of bank size are 5.59 and 0.85, respectively. This is clearly shown in Table 3.

Table 3: Descriptive Statistics

| | Min | Max | Mean | Std. Deviation |
|-------------------|------|-------|-------|----------------|
| Total Debt | 7.26 | 91.80 | 77.36 | 19.46 |
| Taxation | 1.00 | 4.96 | 2.99 | 1.44 |
| Asset Tangibility | 1.57 | 11.47 | 4.49 | 2.10 |
| Profitability | .1 | 17.9 | 3.06 | 4.23 |
| Bank size | 4.47 | 6.86 | 5.59 | .85 |
| N= 35 | | | | |

Source: SPSS estimations (2022)

4.2 Correlation Matrix

Correlation matrix in Table 4 shows that total debt has positive correlation with taxation (r= 57.6%) and bank size

(r= 52.7%). Total debt had a negative correlation to tangibility (r= -30.7%) and profitability (r=-68.6%).

Table 4: Correlation Matrix

| | Taxation | Asset Tangibility | Profitability | Bank size |
|-------------------|----------|-------------------|---------------|-----------|
| Total Debt | .576** | -.307 | -.686** | .527** |

Source: SPSS estimations (2022)

4.3 Multicollinearity test

A multicollinearity test was performed to determine whether or not there was inter-correlation between the independent variables. It should be noted that the existence of multicollinearity is not accepted, as multi-collinear data is labelled unreliable (Mazengo & Mwaifyusi, 2021) [22]. The Variance Inflation Factor (VIF) as shown in Table 5 is greater than 1.07 and less than 10 for all four explanatory variables. According to Epaphra (2020) [10], he demonstrated that, multicollinearity problem is present if VIF is greater than 10. As a result, the explanatory variables in this study do not exhibit multicollinearity. Other scholars including (Alkhazaleh, 2017; Malede, 2014; Magoma *et al.*, 2022) [3, 21, 20] have used the same approach

4.4 Autocorrelation test

The autocorrelation test was performed to determine whether or not there is autocorrelation between variables. According to Kamboj & Gupta (2020) [14], the Durbin-Watson test is one of the most effective for detecting autocorrelation. Normally, Durbin-Watson provides values ranging from 0 to 4, with values near 0 representing positive autocorrelation and values near 4 representing negative autocorrelation. When the values are between 1.5 and 2.5, there is no autocorrelation. The Durbin-Watson coefficient is 1.534 in Table 5, indicating that there is no autocorrelation. As a result, the accuracy of the regression model used in this study is indicated.

4.5 Regression Analysis

Table 5 portrays the regression output for our model. The coefficient of determination (Adjusted R²) is seen to be 0.659 (65.9%) implying that 65.9% of all explanatory variables explains the variation of the response variable (Total Debt) and the remaining 34.1% are the explanatory variables not used in this particular study. The F-value of this study was 17.442 with the p-value of 0.000 implying that the overall model used in this study is statistically significant. Thus, total debt is predicted by the model below

$$TD_{it} = 85.082 + 5.287TX - 2.629AT - 2.455ROA - 0.626BS + \varepsilon_{it}$$

Table 5: Regression Analysis table

| Independent variable | Coef | Coef values | t-statistics | p-values | Hypothesis | Hypothesis testing |
|-------------------------|-------------------|-------------|--------------|----------|----------------|--------------------|
| Constant | β_0 | 85.082 | 3.563 | .063 | | |
| Taxation | β_1 | 5.287 | 1.932 | .010 | H ₁ | Accept |
| Asset tangibility | β_2 | -2.629 | -2.736 | .000 | H ₂ | Accept |
| Profitability | β_3 | -2.455 | -4.945 | .910 | H ₃ | Reject |
| Bank size | β_4 | -.626 | -.114 | .063 | H ₄ | Reject |
| Additional statistics | | | | | | |
| R | .836 ^a | | | | | |
| R ² | .699 | | | | | |
| Adjusted R ² | .659 | | | | | |
| F-value | 17.442 | | | | | |
| Prob (F) | .000 ^b | | | | | |

| | | | | | | |
|---|-------|--|--|--|--|--|
| Durbin-Watson | 1.534 | | | | | |
| VIF | >1.07 | | | | | |
| a. Response Variable: Total Debt | | | | | | |
| b. Predictors: (Constant), Tax, Asset Tangibility, Profitability, Bank size | | | | | | |

Source: SPSS estimations (2022)

4.6 Discussions

Taxation and Total debt

The results of the study reveals that taxation and the total debt have a positive association of listed banks in Tanzania as depicted from Table 3 above. The first hypothesis was formulated to evaluate the relationship between the bank's taxation measured as the log (tax paid in the current year) and the total debt. Theory suggests that there is a positive association between taxes and total debt this is due to the fact that higher leverage enables companies to avoid tax liability. Statistical test results were supportive to this hypothesis as a two-tailed test of Pearson correlation in (Table 4 and 5) above was significant and positive ($r=57.6\%$, $p\text{-value}=0.010$). These findings were in line to a study conducted by (Bolarinwa, Segun Thompson & Adegboye, 2020) [6]. According to the trade-off theory, these findings support the expected sign (See Table 6).

Asset Tangibility and Total Debt

Companies with more assets can obtain loans as the tangible fixed assets can be used as collateral and the lenders can be assured to recover their loans once the company defaults. The statistical results reveals that ($r=-30.4\%$, $p\text{-value}=0.000$). Thus the correlation was negative and significant at 5% level of significance. The likely cause of this negative relationship between tangibility and total debt is that Tanzania's listed banks had close relationships with creditors, which can substitute for collateral, which was contrary to what the trade-off theory and pecking order theory advocated (See Table 6). These results were contrary to (Vo, 2017) [33] and in line to a study conducted by (Shibru *et al.*, 2015) [31].

Profitability and Total Debt

Theory points out that companies that record huge profits should have more leverage and debt ratios this is due to the fact that these companies have less bankruptcy risks as compared to less profitable firms. In this regard there is a positive relationship that exists between total debts and banks profitability. Other studies contend that more profitable firms might not opt to seek external sources of financing as they often prefer internal financing. In this regard a negative relationship exists between profitability and total debt. Statistical results reveals that there is a negative insignificant relationship that exists between listed banks' capital structure and their profitability ($r=-68.6\%$, $p\text{-value}=0.910$). These findings were consistent with other studies (Lemmon & Zender, 2010; Niluthpaul & Roushanara, 2021) [19, 24], but contradicted a study by (Sivalingam & Kengatharan, 2018) [32] that discovered that a negative and significant relationship between profit and total debt of 28 commercial banks in Sri Lanka. Finally, these findings contradicted a study conducted by (Alipour *et al.*, 2013) [2], which concluded that profitability and capital structure have a positive relationship. According to the pecking order theory, these findings support the expected sign (See Table 6).

Bank Size and Total Debt

The fourth hypothesis was formulated to evaluate the

relationship between listed bank size measured as the log (total assets) and the total debt ratios. Theory points out that a company size has a predicted positive impact on the debt level due to the fact that large-sized companies are less likely to become bankrupt and in turn attract more debt as they are more diversified in their undertakings. This makes the chances for larger companies to default slimmer than smaller firms. Statistical results reveals that ($r=52.7\%$, $p\text{-value}=0.063$). Thus the correlation is positive and insignificant. These findings were contrary to a study that was performed by (Rajagopal, 2011) [27]. According to the trade-off theory, these findings support the expected sign (See Table 6).

Table 6: Pecking order theory Vs Trade-off theory

| Variables | Pecking order theory | Trade-off theory | Our findings |
|-------------------|----------------------|------------------|--------------|
| Taxation | ? | + | + |
| Asset Tangibility | + | + | - |
| Profitability | - | + | - |
| Size | - | + | + |

Source: Adopted from (Khemiri and Noubbigh, 2018) [17] and author's calculations

5. Conclusion and recommendation

Listed banks in Tanzania were studied over a five-year period from 2016 to 2020 to investigate the bank-specific factors that influence their capital structure. Profitability and bank size were insignificant at 5%, but asset tangibility and tax were significant. Thus, this study reveals that asset tangibility and taxation have an impact on the capital structure of seven Tanzanian listed banks from 2016 to 2020. This study is limited to seven listed banks at the Dar es Salaam Stock of Exchange (DSE) over a five-year period (2016 to 2020).

The research adds to our understanding in a variety of ways. First, the study clearly demonstrates the relationship that exists between bank internal factors such as taxation, asset tangibility, profitability, and bank size in achieving an optimal capital structure of Tanzanian listed banks from 2016 to 2020. It is important for these factors to be analyzed as they may influence bank's ability to achieve an optimal capital structure needed to achieve a competitive edge in a highly competitive banking industry. Second, with the exception of asset tangibility, Pecking Order Theory (POT) and Trade-off Theory (TOT) were tested against these variables and the results proved significant based on what these theories postulate

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