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How Firm Characteristics Affect Firm Capital Structure Decision – The Case of Tanzania

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Abstract
This study investigates on how firm characteristics affect firm capital structure decision of non financial firms listed in the Dar es Salaam stock exchange in Tanzania for the year 2005 to 2016. The study uses secondary data collected from Tanzania stock market, the annual financial reports of sampled non financial listed firms due to data availability. The data analysis employs different statistical tools including descriptive statistics, regression analysis and correlation analysis. The results show that firm profitability, size, liquidity and industry type, are significant at 5% level of confidence, having inversely relationship with both dependent variables (firm short term, and total leverage); this means, the more profitable the firms, the low the leverage they employ. Also, the more liquidity the firms, the low the leverage, and also, due to the study area's economy, many firms use short term loans mainly bank loans; so the smaller the firm the higher the leverage. That means, big firms use bank loans in a nutshell; whereby, tangibility of assets, firm growth and economic condition of the country have found insignificant, that means they have no impact on capital structure decision for non financial listed firms in DSE. In a nutshell, firms use economic conditions as a factor for capital structure decision; whether interest rates and inflation rates are low or high, they use bank loans.
Keywords: Leverage, Capital Structure, Firm Characteristics, Tanzania **DOI**: 10.7176/JAAS/48-2018-1

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1.0 Introduction

Capital structure decision is one of most crucial decisions the organization makes that may result to good ending or bad ending which have no reversal due to firms' investments use huge amount of fund. So it is the decision which needs to be planned carefully and after analyzing many factors surrounding the firm. In deciding which capital structure mix decision to undergo, some financial managers proven failure where others succeed. Many researchers have written concerning the problem but still some firms are in the same problem.

Apart from that, there are stable firms that needs to introduce new positive Net Present Value projects so that to benefit from new investments. These need to finance their projects or investments but the case is what will be the funding sources for the project; whether internal or external sources.

This research tests the correlation between dependent variable which is leverage ratio, the variable which represents entirely the items composed in the area under study's capital structure requirements which are total debt ratio and short term debt ratio at book value to reflect the banks' collateral needs. Also firm's characteristics are firm's size, liquidity, tangibility, growth, and profitability; having two control variables - industry type, and country economic condition. The test is for 27 listed firms in the Dar es Salaam Stock Exchange (DSE) for the period 2005 to 2016.

The importance of this study is, apart from the prior studies be done for developed and emerging economies, also, there is no study on Tanzania context concerning the effects of firm characteristics on firm capital structure decision, though according to World Bank report (2017), Tanzania is the fifth in the world fastest growing economy countries, and one of the fastest growing economy in the sub Sahara Africa countries with the average GDP growth of 7% for more than ten years (Mwambuli, E. 2017a). However, many firms in Tanzania finance their investments using short term finance (Bank loans) due to inactiveness of the capital market and its participants (Mwambuli, E. 2017a). For this case when testing the capital structure, it needs to

consider short term and total leverage in defining capital structure; which have not been done before.

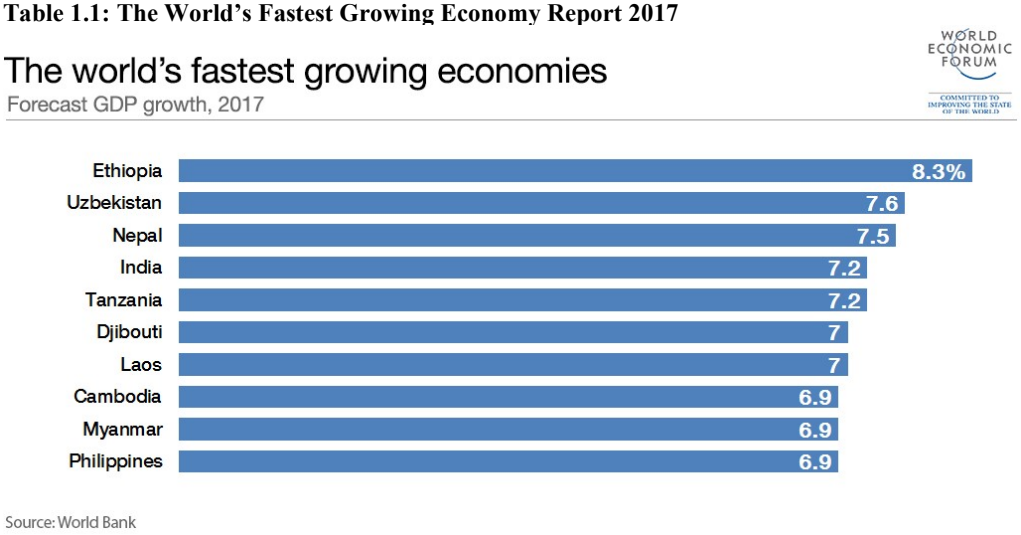
Also, this study will provide knowledge on firms financing in Tanzania (a developing economy) using specific characteristics of the area under study. This is due to the fact that, there is no study on Tanzania context have done on the effects of firm characteristics on firm capital structure decision, regardless its economic growth status.

However, prior researches were done mainly in the developed and emerging economy with some few of them done in developing economy like Tanzania, but having the generalization shortcomings. Due to material differences in the developed economy and developing economy, one cannot generalize the findings from developed economy for the developing economy (Hove 1986 &1990).

Therefore, unlike many studies as discussed in literature which includes only one measure of capital structure decision, the current research uses short term debt ratio and total debt ratio as proxies for leverage as dependent variable. We did not ignore short term debt because of its applicability in undeveloped capital markets in Tanzania and other developing economies (Mwambuli, E. (2016a).

Next section is the literature review (theoretical and empirical) and third section is research methodology, description of data collection, the fourth section is discussion of results and findings, and last, is the conclusion part.

Table 1.1: The World's Fastest Growing Economy Report 2017



2. Literature Review and Development of Hypothesis

2.1 Theoretical Review

The discussion of the theoretical review on how firm characteristics affect firm's capital structure decision, considers a review of the Modigliani and Miller theory, Pecking order theory, Trade off theory and agency theory.

Modigliani and Miller (MM) are the main theorists examines the effects of capital structure on the value of the firm, and came up with the irrelevance of capital structure to the value of the firm (1958). Their assumptions among others were perfect market platform where there could be free information, no tax, no transaction costs, etc. but in 1963 they came up with the harmonized theory in proposition II where they recognizes taxation as one of determinants of capital structure. Using these assumptions, they (MM) advice that, investors should use as much debt as possible so that to benefit from the debt tax shield. This MM theory does not specifically provide the extent of the optimal capital structure and caused the following theorists came up with the capital structure theories like Pecking Order Theory, Trade off Theory and Agency Costs Theory. The three capital structure theories describe different areas in different situations though they are not specifically the solution of what is the optimal capital structure.

Jensen and Meckling (1976) produce Agency Cost Theory (ACT) addressing the situation where firm owners have given the authority to managers to run the firm on behalf of owners. From there, managers' obligation is the maximization of firm owners' value. But managers have their own interests which differ from that of firm owners. The two interests may cause frictions and asymmetric information between the two (managers and owners). This is now the agency problem which makes owners to strive to minimize the managers fund transfers outside the firm. Owners use auditors and sometimes independent directors to oversee the firm running situation and report to owners. Owners in trying to stay safe in regard to firm value, they use high cost that makes them not be comfortable with managers' acts. The theory identifies two types of costs,

agency cost of equity – which result from the conflict of interests between managers and owners, and agency cost of debts – that results from the conflict of interests between owners and lenders.

Another theory is Trade off theory (TOT) which admits that, managers have to employ debt capital whose costs trade off against its benefits. In recognizing the cost of debt, TOT terms the interest tax shield of debt and cost of financial distress as the two balancing measures, that there should be a trade-off between the two. The theory advice the value maximizing firm in deciding on capital structure, to consider the trade off or cost benefit results of the financing side.

Also, Myer 1984 and Myer & Majluf 1984 came up with the pecking order theory (POT) which starts with the main assumption of asymmetric information prevalence. According to POT, firm managers have more information on the progress of the firm compared to any person among the stakeholders, potential investors inclusive. So, managers know the status of the firm concerning risk status, potential viability, growth expectations, etc. due to this, when they want to appeal to general public for the financing of the firm or their projects, it makes potential investors think negatively concerning the firm and sometimes they think the shares are devalued so the managers have decided to sell them in high price, and so, asks for the lowest price and may result to undervalue the firm's shares.

In regard to this notion, POT advices that, firms have to finance their projects using the internal funds (retained earnings), where the fund has not solved the finance problem, managers have to issue bonds or get bank loans. If still not enough, they have to use share issue as the last resort. According to POT, those firms having high profitability prefer to finance projects using internal means and those have low profits, will seek for debt finance and at last, issue shares. The reasons are, internal funds are cheapest finance compared to all means. Debt finance apart from bankruptcy cost, it is more beneficial as the debt add value of the firm and help also to gain the interest tax shield of debt. Also being the managers' obligation it will be treated as official expenses and so reduce the risk of managers having more free cash flow in their disposal.

2.2 Empirical Literature Review

This section applies capital structure theories to develop hypotheses that tests how firm characteristics affect capital structure decision of 8 listed non financial firms in Tanzania stock exchange market from 2005 to 2016. Firm characteristics used in this study are tangibility of assets, firm size, firm profitability, firm liquidity, and firm growth, and two controlling variables; economic condition and industry type as per the following empirical discussion.

2.2.1 Effect of tangibility of assets on firm leverage

Tangibility of assets is one of the determinants of firm capital structure decision. How do tangibility of assets affect the capital structure decision is an argument which is twofold aspect.

Studies on this topic done by Benkraiem, R & Gurau, C (2011), Akdal, Sinan, (2011), Sun, F. Shaw W. T. & Chin, S. K. (2013), Frank, M. Z. and Goyal, V. K., (2007), Kuhnhauseny, F. and Stieberz, H. W. (2014), and Drobetz, W., Pensa, P and Wanzenried, G (2007) suggest that, tangibility of assets held by the firm have positive effects to firm's capital structure decision. This means, firms having more noncurrent assets have big chance of getting more and cheap loan compared to those firms having few or no tangible fixed assets, due to majority of lenders prefer to lend to firms with collaterals than those does not have or have low value collaterals. However, Nguyen T. C. (2015) and I. M. Pandey (2001), in the same study argue that, tangibility of fixed assets held by the firm have negative effects on the capital structure decision due to the fact that, in developing economy, many firms finance their projects using local bank loans; which mainly is short term and no need of tangible assets. In our opinion, due to the area under study being using more short term bank loan than capital markets, there is a negative relationship between firm tangibility and firm leverage, which supports Pecking Order Theory.

H1: Tangibility of assets has negative relationship with firms' leverage

2.2.2 Effect of firm size on firm's leverage

Firm size is one of firm characteristics that affect firm capital structure decision. The empirical studies by Nguyen T. C. (2015), Annalien de Vries, (2010), Akdal, Sinan, (2011), and Kuhnhauseny, F. and Stieberz, H. W. (2014) assert that, due to large firms being trusted by lenders for having low calculated risk, they get cheap loan and in large amount compared to small firms; so, there is positive relationship between firm size and firm leverage. However, studies by Benkraiem, R. & Gurau, C., (2011), and Paseda, O. (2016) argue that, large firm's stability and experience makes them be more profitable so that minimize the need for external financing; that make the negative relationship between firm size and firm leverage. In our opinion, due to the fact that, large firms' trust to lenders are high compared to small firms, the large firm may get cheap and large debt finance than small firms, that supports Trade Off Theory.

H2: Firm size has positive relationship with firms' leverage

2.2.3 Effect of firm's profitability on firm's leverage

Firm profitability has impact on the firm capital structure decision. Modigliani and Miller (1963) assert that, high profitability firms prefer employing debt capital to benefit from interest tax shield. This is supported by Um

(2001) who finds that, high profitable firms (SMEs) prefer having higher debt ratio so that to benefit from tax shields. This is align with agency theory that, high profitable firms having excess free cash flow prefer to use high debt ratio to control managers from extravagant (Jensen, 1986).

However, pecking order theory argues that, more profitable firms have to finance their projects using internal sources. Jordan et al. (1998) assert that, SMEs whether have ability to get debt finance or not, they prefer to finance their projects using internal funds. So, firms use debts financing when proved that the internal source is not enough for the requirements; as asserts by Benkraiem, R. & Gurau, C, (2011), Paseda, O. (2016), Nguyen T. C. (2015), Annalien de Vries, (2010), Akdal, Sinan, (2011), Sun, F., Shaw W. T. & Chin, S. K. (2013), Frank, M. Z. and Goyal, V. K., (2007), I. M. Pandey, (2001), Attaullah Shah and Safiullah Khan, (2007), Huang, S. G. and Song, F. M. (2002), Eriotis, N., Vasiliou, D. Ventoura-Neokosmidi, Z. (2007), Fortel, D., Barros II, L. A. & Nakamura, W. T. (2013), Kuhnhauseny, F. and Stieberz, H. W. (2014), and Drobetz, W., Pensa, P and Wanzenried, G, (2007), that there is negative relationship between profitability of the firm and firm leverage.

H3: Firm's profitability has negative relationship with firm's leverage

2.2.4 Effect of firm's liquidity on firm's leverage

High liquidity firms do not prefer external capital financing, while low liquidity firms prefer financing their projects using external capital sources that maintains the negative relationship between liquidity of the firm with the firms' capital structure, as says Nguyen T. C., (2015), Annalien de Vries, (2010), Akdal, Sinan, (2011), Kuhnhauseny, F. and Stieberz, H. W. (2014), and Eriotis, N., Dimitrios Vasiliou, D., Ventoura-Neokosmidi, Z. (2007). For this case they support the pecking order theory that, due to external financing being more expensive compared to internal financing, investors have to use internal sources as the first priority because it is cheap, and if happen a deficiency, that deficiency be financed using external sources. However, agency theory assert that, liquidity firms having excess free cash flow prefer to use high debt ratio to control managers from extravagant (Jensen, 1986). In our opinion liquidity firms prefer to finance their projects using internal fund, as per Pecking Order Theory.

H4: Firm's liquidity has negative relationship on Firm's leverage

2.2.5 Effect of firm's growth on firm's leverage

Firm's growth has effects on the firm's capital structure decision. Empirical studies by Benkraiem, R & Gurau, C, (2011), Annalien de Vries, (2010), I. M. Pandey, (2001), Huang, S. G. and Song, F. M. (2002), Kuhnhauseny, F. and Stieberz, H. W. (2014), and Fortel, D., Barros II, L. A. & Nakamura, W. T. (2013) report the positive relationship between firm's growth and firm's leverage decision due to firms with high growth prefer to use more debt financing to facilitate the growth than do the firm with low growth, that supports agency cost theory.

However, studies by Nguyen T. C. (2015), Akdal, Sinan, (2011), Attaullah Shah and Safiullah Khan, (2007), Drobetz, W., Pensa, P and Wanzenried, G, (2007), and Eriotis, N., Vasiliou, D. Ventoura-Neokosmidi, Z. (2007) assert that, firms having high growth employs low rate of debts in project financing due to being risky compared to low growth firms, that supports Trade Off Theory; and so the negative relationship between firm's growth and firm's leverage.

H5: Firm's growth has positive relationship with firm's leverage

2.2.6 Effect of country economic condition on firms' leverage

The country economic condition as the controlling variable in this study, may affect firm capital structure decisions in either boom or otherwise. Boom is the period when the economy experience more money circulation that results to high inflation rate, high interest rates etc, so, there is expensive finance and too risky. The empirical study by Annalien de Vries, (2010), reports the negative relationship between economic condition of the country and firm leverage decision. However, studies by Uyar, A., & Guzelyurt, M. K., (2015), Mufti, S. W. and Amjad, S. (2016), and Frank, M. Z. and Goyal, V. K., (2007) find positive relationship between economic condition of the country as defined in this research (inflation and Interest rates) and firms' leverage decision. The above studies prove that, economic condition of the country have effects on firm capital structure decision.

2.2.7 Effect of industry type on firms' leverage

Type of the industry as the controlling variable in this study, has effects on firm capital structure decision as described by Wellalage, H., Nirosha and Locke, Stuart, (2011), Frank, M. Z. and Goyal, V. K., (2007), Shah, A. and Khan, S. (2007), and Kuhnhauseny, F. and Stieberz, H. W. (2014). They assert that, there has been no specific optimal capital structure stipulated to be used by all firms due to different industries having different capital structure requirements. Some industries need 50% and above debt ratio (high debt) while others need bellow 50% debt ratio (lower debt). To include firm from both industries, we use dummy for control variable; one for firms falling in 50% and above industry, while zero for otherwise.

3. Research Methodology

3.1 Data Source

This study uses secondary data collected from DSE listed firms' published annual financial statements. Selection of sample considers data availability sector wise; Construction and allied, air aviation, manufacturing, Energy

and petroleum, and commercial and services.

3.2 Population and Sample

The study population consists of 27 firms listed in the Dar es Salaam Stock Exchange (DSE) in Tanzania; for the period 2005 to 2016. However, it is difficult to use the entire population due to our study scope being only for non financial listed firms having data published for twelve years concurrently. So, some firms due to their nature and behavior like pension firms, insurance firms, banks, other financial service firms (their leverage is regulated by central bank of Tanzania), and telecommunication firms are excluded, hence the use of sample study.

Table 3.1 shows the sample selection process. The sample consists of 8 non financial firms listed in the DSE having financial data published for twelve years concurrently from 2005 to 2016. According to Moser and Kalton (1971: 118), one must accept the limitations faced by the researcher due to shortage of resources and try to utilize the available sample to the best advantage.

Table 3.1 Summary of the sample selection procedures

Criteria	Number of firms
Total listed firms as 31st December 2016	27
Less : Financial firms	9
Total non-financial listed firms	18
Less : Mining firms	1
Total non-financial listed firms	17
Less : New listed/delisted firm during the research period	9
Total number of non-financial listed firms available (Sample)	**8**

Source: Researchers

3.3 Validity and Reliability of Data

Data for this research is collected from DSE submitted documents by sampled firms; that is, audited and published financial reports as required by the Tanzania Company Act. Cap. 2002, that information must reflect the reality and reliability with full disclosure.

3.4 Data Analysis Instrument

The study employs Descriptive Statistics, Correlations and Regression Analysis. The multiple regressions model in data analysis while Ordinary Least Square (OLS) is used in estimating the coefficient of independent variables as suggests the empirical studies by Sogorb-Mira and Lopez-Gracia (2003), Frank, M. Z. and Goyal, V. K., (2007), Chen (2004), Hovakimian (2004), Abor (2008) and Akinlo (2011). Due to the study being on panel data study that include cross sectional behaviour, we managed also to run White test for the heteroskedasticity matters, as shown in table 3.2 and table 3.3 below.

Table: 3.2 Cameron and Trivedi's decomposition of IM-test on Total leverage

Source	chi2	df	P
Heteroskedasticity	86.79	34	0.0000
Skewness	20.35	7	0.0049
Kurtosis	2.66	1	0.1027
Total	109.81	42	0.0000

Source: Researchers using Stata's White test Results

Table: 3.3 Cameron and Trivedi's decomposition of IM-test on Short term leverage

Source	chi2	df	P
Heteroskedasticity	49.43	34	0.0424
Skewness	10.89	7	0.1437
Kurtosis	0.19	1	0.6624
Total	60.51	42	0.032

Source: Researchers using Stata's White test Results

3.5 Variable Description

The selection of variables in this study follows Harris and Raviv's (1991) and Rajan and Zingales' (1995) analysis of capital structure determinants. The variables are:

(a) Leverage: This is the ratio of firm's debts to firm's total assets. However, there are three measures of leverage depending to the requirements: total debts to total assets ratio, long term debts to total assets ratio, and short term debts to total assets ratio. Due to the area under study (Tanzania) being characterized with more short term debts, our leverage consists of short term debts to total assets ratio, and total debts to total assets ratio. This

is due to the fact that, no firm in Tanzania have only long term debts in the debt financing, so long term debts ratio be excluded.

(b) Profitability (PROF): In this study, profitability is defined as the ratio of firm's profit before tax to firm's total assets (Frank, M. Z., & Goya, V. K., 2007), also table 3.4

(c) Asset Tangibility (TANG): This is defined as the ratio of firm's non-current asset to firm's total asset (Frank, M. Z., & Goya, V. K., 2007), also table 3.4

(d) Growth (GROW): In this study it is defined as change in log of assets (Frank, M. Z., & Goya, V. K., 2007), also table 3.4

(e) Size (SIZ): This is defined as natural log of firm's total assets. Using the natural logarithm for size, limits the heteroscedasticity problems (Benkraiem, R & Gurau, C, (2011), also table 3.4

(f) Liquidity (LIQ): It is defined as (current assets minus inventory) dived by current liability (Mwambuli, E. 2017a), also table 3.4

Table 3.4 Summary of Independent Variables

Independent Variable	Indicators	Measurement	References
Firm Characteristic	Firm Tangibility	Non Current Assets / Total Assets	*(e.g. Mwambuli, E. 2016a ; Vinasithamy , 2014; Bevan and Danbolt , 2002)*
Firm Characteristic	Firm Profitability	Profit before tax/Total Assets	*(e.g. Mwambuli, E. 2016a ; Vinasithamy , 2014 ; Bevan and Danbolt , 2002)*
Firm Characteristic	Firm Liquidity	(Current Assets-Inventory) /Current Liability	Frank, M. Z., & Goya, V. K., 2007
Firm Characteristic	Firm Growth	Change in Log of Assets	Frank, M. Z., & Goya, V. K., 2007
Firm Characteristic	Firm Size	Natural Log of Assets	*Mwambuli, E. (2016b), Smith et al., (2012), Dewalheyns and Van Hule (2012) and Ebaid (2009))*

Source: Researchers

3.6 Model Specification

This study employs panel data due to the relationship between dependent and independent variables used; for combined cross-section and time series data. The model to estimate the effect of firm characteristics on capital structure decision based on the literature review theories and empirical evidence (I. M. Pandey, 2001) can be written as follows in the regression equation:

$$L_{it} = \beta_0+\beta_1 TANG+\beta_2 PROF+\beta_3 LIQUI+\beta_4 SIZE+\beta_5 GROWT+ \beta_6 INDU + \beta_7 ECON +\varepsilon_{it}$$

Table 3.5 Definition of the model's key terms;

Terms	Definition of terms
L_{it}	Leverage of the firm 'i' at time 't', and it is decomposed into two proxies – Total Leverage Ratio and Short Term Leverage Ratio
β_0	The intercept of the equation
B	The change coefficient for independent variables
TANG	Tangibility of fixed assets
PROF	Profitability of the firm
LIQUI	Firm Liquidity
GROWT	Firm Growth
INDU	Industrial type
ECON	Economic condition of the country
ε	Error estimation
i	The number of the firms i.e. i = 1, 2, 3….N
t	The time period i.e. t = 1, 2, 3…T

Source: Researchers

Table 3.6 Summary of Control Variables

Factor	Control Variable	Measures
Dummy Variable	Economic Condition of the country	D_o = *"1", If the condition is in boom and "0" otherwise*
Dummy Variable	Industry Type	D_1 = "1", If the observation belongs to manufacturing and allied industry and "O" otherwise.
		D_2 = "1", If the observation belongs construction and allied industry and "O" otherwise.
		D_3 = "1", If the observation belongs to commercial and services industry and "O" otherwise.
		D_4 = "1", If the observation belongs to agricultural industry and "O" otherwise.
		D_5 = "1", If the observation belongs to energy and petroleum industry and "O" otherwise.

Source: Researchers

4.0 Discussion of Results and Findings

As shown in the Table 4.1 & 4.2 of multi-variable regression results on how firm characteristics affect capital structure decision for Tanzania listed non financial firms for the year 2005 to 2016, it can be seen that the power of the model is given by the high F-statistic of 44.43 for the total debt variable against all independent variables, and 41.06 for Short term Debt variable against all independent variables.

According to R^2 (table 4.2) within the independent variables, explain the 77.94 per cent of the size in the total debt ratio, and also, (table 4.1) 76.56 per cent of the size in the short term debt ratio. Having further corroborated the relationships between the significant explanatory variables and the dependent variables, and the results find all variables are significant at 5% level of confidence except tangibility of assets, firm growth and economic condition of the country that found insignificant on both total debt ratio and short term debt ratio while acid test being insignificant on only total debt ratio as follows:

4.1 Firm size, Table 4.1 & 4.2; regression coefficient of this variable is negative (-0.015) and statistically significant at 5%, in other words this result does not accept a hypothesis H_2: Firm size has a positive (+) relation with Firm leverage. The results support Pecking order theory and the empirical studies by, Benkraiem, R & Gurau, C., (2011), and Paseda, O, (2016) that, large firm's stability and experience makes them be more profitable so that minimize the need for debt financing; that make the negative relationship between firm size and firm leverage. But, the result is against Trade off theory that, since large firm has ability to earn more profit due to, large firms being trusted by lenders for having low calculated risk, they get cheap loan and in large amount compared to small firms that could attract more leverage. However, having more sources of fund is one thing but receiving the finance is another decision. The firm may be attracted by lenders due to having attractive history but if the firm is satisfied with their internal sources, it may not employ the debt financing. For this case, the result and H_2 remains true and supports the Pecking order theory to be used as the best financing decision tool for non financial firms in Tanzania and those countries having the same characteristics with that of Tanzania.

Table 4.1. The regression results of firm characteristics to Short term leverage

Source	SS	df	MS	Number of Observations =	96
				F(7, 88) =	41.06
Model	1.14231651	7	0.163188074	Prob>F =	0.0000
Residual	0.349774914	88	0.003974715	R-square =	0.7656
Total	1.49209143	95	0.015706226	Adj R-square =	0.7469
				Root MSE =	0.06305

STDR	Coef.	Std. Err.	t	P>l t l	[95% Conf.	Interval]
Profitability	-0.1053706	0.0399087	-2.64	0.010	-0.1846807	-0.0260604
Acid Test	-0.0533063	0.0082641	-6.45	0.000	-0.0697295	-0.0368831
Tangibility	0.0485709	0.0662299	0.73	0.465	-0.0830471	0.1801888
Size	-0.0145129	0.0021197	-6.85	0.000	-0.0187254	-0.0103003
Growth	0.0016696	0.0040647	0.41	0.682	-0.0064082	0.0097475
Industry	0.2527515	0.0277532	9.11	0.000	0.1975978	0.3079052
Economic	-0.0025342	0.0056758	-0.45	0.656	-0.0138136	0.0087452

Source: Researchers using Stata Results

Table 4.2: The Regression Results of the effect of firm characteristics to Total leverage

Source	SS	df	MS	Number of Observations =	96
Model	4.739791	7	0.677113	F(7, 88) =	44.43
Residual	1.3412237	88	0.0152418	Prob>F =	0.0000
Total	6.0810147	95	0.06401063	R-square =	0.7794
				Adj R-square =	0.7619
				Root MSE =	0.12346

TDR	Coef.	Std. Err.	t	P>l t l	[95% Conf.	Interval]
Profitability	-0.4090570	0.088124	-4.64	0.000	-0.5841937	-0.2339202
Acid Test	-0.0229731	0.016239	-1.41	0.161	-0.0552425	0.0092962
Tangibility	-0.1160743	0.130930	-0.89	0.378	-0.3762861	0.1441375
Size	-0.0153123	0.004550	-3.36	0.001	-0.0243564	-0.0062682
Growth	-0.0052925	0.008032	-0.66	0.512	-0.0212607	0.0106757
Industry	0.2899456	0.041913	6.92	0.000	0.2066538	0.3732374
Economic	-0.0066880	0.011167	-0.6	0.551	-0.0288814	0.0155053

Source: Researchers using Stata Results

4.2 Tangibility of assets, OLS regression results Table 4.1 & 4.2, show that the coefficient of firm tangibility variable is statistically insignificant. This contradicts with the Pecking order theory by Myers (1977, 1984) that, tangible assets can be used by firms to get debt finance as collateral. However, the correlation matrix reports the negative relationship between firm tangibility and firm leverage. This is explained that, regarding to Tanzania economy that characterized with inactive capital market, non financial firms finance their projects using internal sources and short term loans (Bank loans); that they do not need to use long term tangible assets for collateral. This supports the financial principles that, long term debts finance noncurrent assets and short term debts finance current assets.

4.3 Economic condition of the country: OLS regression results Table 4.1 & 4.2, show the coefficient of economic condition of the country is statistically insignificant. This contradicts with the Agency cost theory by Jensen and Meckling (1976) that, managers have to use low risk finance that will not impose the expensive agency costs and shift the burden of debt to owners. This is due to, it is generally known that during boom, finances are too expensive as there are high interest rates and inflation rates and so, there is high risk. However, the correlation matrix reports the negative relationship between economic condition of the country and firm capital structure decision. This is explained that, firms use short term debt finance in favorable economic conditions, e.g., if interest rates and inflation rates are low, they use bank loans. This result supports agency cost theory and empirical study by Annalien de Vries (2010).

4.4 Growth opportunities, Table 4.1 & 4.2, OLS regression results show that the coefficient of firm growth variable is statistically insignificant. This contradicts with the Trade off theory that, firms with high growth prefer to use more debt financing to facilitate the growth than do the firm with low growth. However, the correlation matrix reports the positive relationship between firm growth and firm's short term leverage that supports the hypothesis H_5: Firm growth has positive (+) relationship with firm leverage. This is explained that, the more the firms grow, the more levered the firms become. That means, due to the area under consideration (Tanzania) being using more bank loans that do not need much long term collateral, the lenders have to trust the firms in order to finance them. So when the firms grow, it creates the sign of being trusted by banks that help them get loans which increase the debt finance and so leveraged. This is supported by Benkraiem, R. & Gurau, C, (2011), Annalien de Vries, (2010), I. M. Pandey, (2001), Huang, S. G. and Song, F. M. (2002), Kuhnhauseny, F. and Stieberz, H. W. (2014), and Fortel, D., Barros II, L. A. & Nakamura, W. T. (2013). However, the correlation matrix reports the negative relationship between firm growth and firm's total leverage that reject the hypothesis H_5: Firm growth has positive (+) relationship with firm leverage; though it is insignificant. Therefore, the thoroughly scrutiny have to be done on growth measures to be used as proxy for growth.

4.5 Profitability, Table 4.1 & 4.2, Regression results show coefficients of this variable on total leverage and short term leverage are negative (-0.409) and (-0.105) respectively and statistically significant at 5%, which supports the hypothesis H_3: Profitability has a negative (-) relationship with capital structure. This result can be explained that, profitable firms prefer financing their projects using their internal funds as denotes Pecking order theory. Firms being profitable, means they have more reported earnings that can finance projects instead of using external finances. So, firms use debts financing when proved that the internal sources are not enough for the requirements; as asserts the empirical studies by Benkraiem, R. & Gurau, C, (2011), Paseda, O. (2016), Nguyen

T. C. (2015), Annalien de Vries, (2010), Akdal, Sinan, (2011), Sun, F., Shaw W. T. & Chin, S. K. (2013), Frank, M. Z. and Goyal, V. K., (2007), I. M. Pandey, (2001), Attaullah Shah and Safiullah Khan, (2007), Huang, S. G. and Song, F. M. (2002), Eriotis, N., Vasiliou, D., Ventoura-Neokosmidi, Z. (2007), Denis Fortel, D., Barros II, L. A. & Nakamura, W. T. (2013), Kuhnhauseny, F. and Stieberz, H. W. (2014), and Drobetz, W., Pensa, P and Wanzenried, G, (2007), and find the negative relationship between profitability of the firm and firm leverage. However, the firms being profitable do not mean they are more liquidity due to the fact that, the firms' financial statements may report huge profit but in their disposal, they are out of cash and cannot finance their new projects.

4.6 Liquidity (Acid test), Regression coefficients in Table 4.1 show the negative (-0.053) coefficient and statistically significant at 5% level of confidence on short term leverage, which supports a hypothesis H_4: Liquidity has a negative (-) relationship with firm leverage. This can be explained that, High liquidity firms do not prefer external capital financing, while low liquidity firms prefer financing their projects using external capital sources, that supports Pecking order theory. The second reason is that, firms' owners prefer management not to stay with extra free cash because they fear to transfer them outside the firm following the conflict of interest between managers and owners due to information asymmetry, so the use of free cash to finance the projects, that it supports Agency cost theory. The third reason is that, external funds are too expensive so it is better to use internal sources which are cheap. All these reasons result to the negative relationship between liquidity of the firm with the firms' leverage, which supports the empirical studies by Nguyen T. C. (2015), Annalien de Vries, (2010), Akdal, Sinan, (2011), Kuhnhauseny, F. and Stieberz, H. W. (2014), and Eriotis, N., Vasiliou, D., Ventoura-Neokosmidi, Z. (2007).

4.7 Industry type, Table 4.1 & 4.2 OLS regression results show the coefficient of Industrial type is positive (+0.253) and negative (-0.29) with short term and total leverage respectively and statistically significant at 5% level of confidence. This can be illustrated that, capital structure decision is determined by the type of the industry. This means, in the total leverage capital structure, 1% increase of firms operating in the high leverage industry, cause the 0.29 decrease on debt financing. While, 1% increase of firms operating in the high leverage industry cause the 0.253 increase on debt financing in the short term capital structure. This is due to the fact that, the area under study (Tanzania) is characterized with infant stock market where firms use most short term debts (Bank loans) to finance their investments. To support this result, Hewa Wellalage, Nirosha and Locke, Stuart, (2011), Frank, Murray Z. and Goyal, Vidhan K., (2007), Shah, A. and Khan, S. (2007), and Kuhnhauseny, F. and Stieberz, H. W. (2014) assert and added that, there has been no specific optimal capital structure stipulated to be used by all firms due to different industries having different capital structure requirements. Some industries need 50% and above debt ratio while others need bellow 50% debt ratio.

5.0 Conclusion

This study investigates on how firm characteristics affect firm capital structure decision of non financial firms listed in the DSE in Tanzania for the year 2005 to 2016 in different industries. Total leverage and short term leverage being proxies for capital structure as dependent variables, and firm characteristics are firm profitability, tangibility, liquidity, growth and size being independent variables; and also type of the industry and economic condition of the country being controlling variables.

Descriptive statistics shows the impact difference between total leverage and short term leverage as dependent variables to the firm characteristics as independent variables. Also, both proxies for dependent variables report the insignificance of growth, intangibility and economic condition of the country. Though the case of economic condition of the country is due to the short run issue whereby Tanzania economy is characterized by short term bank loans financed firms, with the national economic condition reported monthly. For this case, loans also can be taken in good economic condition seasons and so, the bad seasons have no impact in the short run. Another difference is when short term leverage reports the acid test significant while the total debt ratio reports it as insignificant; this is due to the characteristics of the area under study being using most short term leverage.

Among the four industries tested, only one (Aviation) industry reports the use of high long term leverage in different periods compared to short term leverage. Other industries use more short term leverage than long term leverage. This is due to the fact that, Tanzania is a developing economy characterized by the infant capital market and the use of bank loans to finance the firms undertakings; and these bank loans are always short term, so the proof of the results. Apart from the nature of air aviation and the capital requirements, the infancy of the capital market in Tanzania contribute to the results.

Correlation analysis shows the significant and highly negative correlation between firm leverage as proxy for firm capital structure and firms' profitability, liquidity, size and industry type, as proxies for firm characteristics.

Regardless of the findings, the current study was done on listed non financial firms only. The further study may be done on non listed. Finally, there are several other characteristics that this study was unable to address due to data constrains attachment.

Following are given recommendations due to the conducted study;

- Government of Tanzania have to take some serious measures in developing the stock market (DSE) that can attract the firms and making it easy to get capital to finance their operations. This is due to the fact that, firms use short term finance which is too expensive.
- The government through the central Bank of Tanzania, knowing that the major source of finance for firms is bank loan, has to issue the subsidized interest rates to attract the firms to finance their investments.
- The firms should employ more long-term leverage to make their firms stable in the long-run. Short-term debt financing should also be utilized though not for long term investments but to stabilize the firm working capital requirement.

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Indices

1. STATA ANALYSIS RESULTS ON SHORT TERM DEBT RATIO AGAINST FIRM CHARACTERISTIC

```
. *(10 variables, 96 observations pasted into data editor)

. xtset  year firm
       panel variable:  year (strongly balanced)
        time variable:  firm, 1 to 8
                delta:  1 unit

. reg  stdr profitability acidtest tangibility size growt industr economi
```

Source	SS	df	MS		
Model	1.14231651	7	.163188074	Number of obs	= 96
Residual	.349774914	88	.003974715	F(7, 88)	= 41.06
				Prob > F	= 0.0000
Total	1.49209143	95	.015706226	R-squared	= 0.7656
				Adj R-squared	= 0.7469
				Root MSE	= .06305

stdr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
profitabil~y	-.1053706	.0399087	-2.64	0.010	-.1846807	-.0260604
acidtest	-.0533063	.0082641	-6.45	0.000	-.0697295	-.0368831
tangibility	.0485709	.0662299	0.73	0.465	-.0830471	.1801888
size	-.0145129	.0021197	-6.85	0.000	-.0187254	-.0103003
growt	.0016696	.0040647	0.41	0.682	-.0064082	.0097475
industr	.2527515	.0277532	9.11	0.000	.1975978	.3079052
economi	-.0025342	.0056758	-0.45	0.656	-.0138136	.0087452
_cons	.5210452	.0568943	9.16	0.000	.4079797	.6341107

```
. estat imtest, white

White's test for Ho: homoskedasticity
         against Ha: unrestricted heteroskedasticity

         chi2(34)     =     49.43
         Prob > chi2  =    0.0424

Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	49.43	34	0.0424
Skewness	10.89	7	0.1437
Kurtosis	0.19	1	0.6624
Total	60.51	42	0.0320

2. STATA ANALYSIS RESULTS ON TOTAL DEBT RATIO AGAINST FIRM CHARACTERISTIC

```
. *(10 variables, 96 observations pasted into data editor)

. xtset  year  firm
       panel variable:  year (strongly balanced)
        time variable:  firm, 1 to 8
                delta:  1 unit

. reg  tdr  profitability  acidtest  tangibility  size  growt  industr  economi
```

Source	SS	df	MS		
Model	4.739791	7	.677113	Number of obs	= 96
Residual	1.34122387	88	.01524118	F(7, 88)	= 44.43
				Prob > F	= 0.0000
				R-squared	= 0.7794
				Adj R-squared	= 0.7619
Total	6.08101487	95	.064010683	Root MSE	= .12346

tdr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
profitabil~y	-.409057	.0881284	-4.64	0.000	-.5841937	-.2339202
acidtest	-.0229731	.0162379	-1.41	0.161	-.0552425	.0092962
tangibility	-.1160743	.130938	-0.89	0.378	-.3762861	.1441375
size	-.0153123	.004551	-3.36	0.001	-.0243564	-.0062682
growt	-.0052925	.0080352	-0.66	0.512	-.0212607	.0106757
industr	.2899456	.0419123	6.92	0.000	.2066538	.3732374
economi	-.006688	.0111677	-0.60	0.551	-.0288814	.0155053
_cons	.7978329	.1132603	7.04	0.000	.5727518	1.022914

```
. estat imtest, white

White's test for Ho: homoskedasticity
         against Ha: unrestricted heteroskedasticity

         chi2(34)     =     86.79
         Prob > chi2  =    0.0000

Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	86.79	34	0.0000
Skewness	20.35	7	0.0049
Kurtosis	2.66	1	0.1027
Total	109.81	42	0.0000