

# What Determine Corporate Capital Structure in Developing Economies? Evidence from East African Stock Markets

Erick Lusekelo Mwambuli

Ph.D. Researcher, School of Accountancy, Dongbei University of Finance and Economics (DUFE)

Address: No. 217 Jianshan Street, Sha he kou District, Post Code 116025, Dalian, Peoples Republic of China

Assistant Lecturer, Faculty of Accounting, Banking and Finance, Institute of Finance Management (IFM)

Address: No. 5 Shaaban Robert Street, P.O BOX 3918, Dar Es Salaam, Tanzania

## Abstract

The purpose of this study is to determine what factors are statistically significant influencing the corporate capital structure in East African stock markets. The study used panel dataset of 240 observations including 30 non-financial companies listed in East African stock markets such as Dar Es Salaam Stock Market (DSE), Nairobi Securities Exchange (NSE) and Uganda Securities Exchange (USE) for a period of 8 years (2006-2013). Using the Panel Corrected Standard Errors (PCSEs), the study formulated three (3) regression models for long term debt, short term debt and total debt as dependent variables for model 1, model 2 and model 3 respectively. The results shows that all independent variables used in the models (profitability, size of the firm, tangibility of firm assets, liquidity and non-debt tax shield) were statistically significant influencing corporate capital structure except non debt tax shield which proves to be statistically insignificant for short term debt. The study found that trade off theory and pecking order theory were applied in corporate capital structure decisions for the East Africa companies. Lastly the study recommends to financial managers to consider these determinants as yardstick in their capital structure decisions, regulatory authorities in East Africa stock Market such as East African securities regulatory authority (EASRA) to formulate policies relating to securities markets by taking into consideration these findings and also to researchers to conduct future researches after incorporating other variables like corporate governance structure, financial flexibility, credit rating etc. and to include other capital structure theories like agency theory which were not considered in this study.

**Keywords:** Capital Structure, Panel Data, Developing Economies, East African Stock Markets

## 1. Introduction

Capital Structure in finance term means the way in which a firm finances his assets across the blend of debt, equity or hybrid securities (Saad, 2010;Khalaf Taani,2013).Therefore, Capital Structure is a pure financing decision of a firm, therefore financial managers must take cautions on deciding the mix of debts and equity on the firm capital structure. Financing decisions result in a given capital structure and sub-optimal financing decisions can lead to a corporate failure (Mwangi et al, 2014),hence to understand how firms in developing countries finance their operations it's very important to know what are the factors (determinants) which influences their financing decisions or capital structure decisions.(Abor,2008).Capital Structure determinants is still a researchable topic on corporate finance despite extensive studies on this subject matter so far, since the first work about capital structure issued by Modigliani and Miller on 1958 (Now it's about 67 years ago), many scholars were interested with capital structure issues but up to date, scholars are not speaking the same language about determinants of capital structure and also the capital structure theory which is explaining firm behavior regarding capital structure decisions, hence capital structure is still a puzzle (Myers ,1984; Dwaikat,2014)

### 1.1 Background and Significance of the study

The purpose of this study is to explore the firm specific determinants of capital structures in East African Stock Markets Context, the study is very important because in many finance literatures about capital structure determinants, the researchers were considering developed economies (See Rajan and Zingales (1995) for G-7 countries, Bevan and Danbolt(2000 and 2002) for UK and France, Hall et al.,(2004) for European SME,but there are still few literatures which focused on developing economies like Oke and Obalade (2015) in Nigeria, Hossain. I and Hossain. A (2015) in Bangladeshi ,Boakye et al.,(2013) in Ghana, Malinic et al., (2013) in Serbia , Wang (2011) in China, despite the few literatures on developing economies, but still researchers ignored the East African Stock Markets Context, to the best of my knowledge there is no any empirical study about determinants of capital structure for East African region context and this study is the first to consider determinants of Capital Structure in the East African Stock Markets Context, the study consider this East Africa region due to the following reasons (1) To fill the gap in existing literatures about capital structure determinants because there no any empirical evidence as up to date on East Africa Stock Market while this region is recently experiencing a rapid stock market developments (2) To help managers of firms operating in East Africa region to make appropriate capital structure decisions, as accordance and appropriate to their operating region in order to maximize the value of their firm and enhance shareholders wealth (3) To help Securities markets regulators in

East Africa region such as East African securities regulatory authority to formulate policies relating to securities markets (4) To provide a platform for further research in capital structure decisions especially for East Africa region and developing economies in general.

The rest of this paper is organized as follows: Section 2 presents relevant literatures review and research hypotheses, Section 3 is about research methodology, Section 4 presents results and discussion and finally Section 5 concludes the paper and give out recommendations.

## **2. Relevant Literatures Review and Research Hypotheses**

### **2.1 Capital Structure Theories**

Capital structure theories are corporate finance models (theories) which are explaining about the financing behavior of firms, hence capital structure theories are explaining on how the firm choose between debt and equity as financing decision is concerned. According to Myers (2003) there is no universal theory of capital structure and no reason to expect one and all capital structure models are conditional. Capital structure theories includes theories such as Modigliani and Miller theory, trade-off theory, pecking order theory, agency theory, market timing theory etc, but this study will limit its discussion on the most three (3) dominant theories such as Modigliani Miller theory, Trade off theory and Pecking order theory, the reasons for choosing these theories is because Modigliani Miller theory is the first and original source of all other capital structure theories and because of the widespread use of cross-sectional tests and variable in recent empirical studies that can be justified using either trade off theory or pecking order theory (Huang and Song,2006;Khan et al.,2014)

#### **2.1.1 Modigliani and Miller Theory (MM Theory)**

MM Theory was first issued by Franco Modigliani and Merton Miller (1958) asserts the firm value is not influenced by capital structure choices, the theory was based on perfect market assumptions (i.e. no taxes, no transactions cost, no agency cost, no bankruptcy cost, absence of information asymmetry, equivalence in borrowing cost for both companies and investors, bond and stock trades in perfect market, no effect of debt on company's earnings before interest and taxes).According to MM theory, the company value is determined by optimal investments (Modigliani and Miller (1958), (1961), Focardi and Fabozzi (2004); Igbinosa and Chijuka (2014) but in real life situation those assumptions are not realistic, then after Modigliani and Miller (1963) considered the effect of taxes and recommended firms to use as much debt as possible due to tax benefits as interest expenses is tax deductible, hence they concluded that the levered firm (firm with debt) will have a high value as compared to unlevered firm (firm without debt) due to amount of taxes saved by levered firm.

#### **2.1.1 Trade-Off Theory**

According to Kraus and Litzenberger (1973), there are benefits and costs when using debt to finance the company (See Kant, 2014), hence a firm will be financed partly with debt and partly with equity, the generally idea under trade off theory is about optimal capital structure and that a value maximizing firm will achieve this optimal capital structure by balancing the appropriate portion of debt and equity. According to trade off theory, the benefits of debts to a firm includes tax shield benefits while cost of debts to a firm includes agency cost and cost of financial distress to a firm, like bankruptcy cost . Ideally a firm will keep borrowing because of tax advantages the firm is getting from debts, and this will goes up to a point where tax advantages from tax shield benefit will be equally to financial distress cost, this means always the managers of the firms will struggle to trades off between this two extremes (i.e. debt benefits and debt costs),According to Myers (1984),the underlying principle of trade off theory is existence of target leverage and deviation from target could be eliminated via adjustment(Oke and Obalade,2015).

#### **2.1.2 Pecking Order Theory**

Pecking order theory is based under asymmetric information concepts, hence managers of the firm knows much about their firm as compared to investors, the theory argued that, in order to finance the company managers applied the hierarchy of financing by starting with internal funds such as retained earnings to external financing where debts will be preferred first and equity will be the last resort of financing. Pecking order theory was first argued with Donaldson (1961) and later Myers and Majluf (1984) modified the theory, as according to Myres

(1984) internal sources of financing have a lower level of information asymmetry cost and seem to be safety, for that case will be given first order then after utilization of internal source then debt (borrowing) will be the second order and lastly to externally equity (new issue of shares) and this will be the last due to the highest cost of information asymmetry. According to this theory there is no targeted debt ratio but managers are just observing the order of financing as capital structure decision is concerned.

## **2.2 Empirical Evidences Relating to Capital Structure Determinants and Research Hypotheses**

### **2.2.1 Capital Structure and Profitability**

The influence of profitability in determining the capital structure of the firm is still questionable especially in developing economies, the empirical researches from prior studies did not come with the same results.

As per trade-off theory, the profitable firm (Firms with higher performance) will have higher taxable income and hence they will end up with higher amount of tax savings from interest tax shields, for that case this kind of firms will prefer to borrow so as to benefit from this tax advantages, but also the profitable firms are mostly preferred by lenders because profitability is a good indicator of future good performances hence lenders are willing to offer them debts, so for this case profitable firms will have a large amount of tax savings with low cost of financial distress, therefore they will have a large portion of debt so as to achieve a targeted leverage, so as per trade-off theory there is a significant positive relationship between debt and profitability some of empirical results concluded this positive relationship like Petersen and Rajan (1994), Givoly et al., (1992); Malanic et al.,(2013).

According to pecking order theory, the profitable firms will have high amount of retaining earnings and this will boost their internal source of financing, so they will prefer to finance their operations through internal financing because its cheap as compared to external source of financing like debts, hence as per pecking order theory there is a significant negative relationship between debt and profitability, as per previous empirical studies, some researchers proved out this negative relationship like Crnigol and Mramor (2009), Klapper and Tzioumis (2008), Dragota and Smenescu (2008), Song (2005), Chen (2004), Bauer (2004), Hall et al (2004), Deesomsak (2004), Cassar and Holmes (2003), Esperanca et al.,(2003), Nivorozhkin (2002), Shyam-Sunder and Myers (1999), Friend and Lang (1988) ;Malanic et al.,(2013).

H1a: There is a positive relationship between long term debt and profitability.

H1b: There is a positive relationship between short term debt and profitability.

H1c: There is a positive relationship between total debt and profitability.

### **2.2.2 Capital Structure and Size of the Firm**

The size of the firm is one of the key determinant of capitals structure as suggested by previous researchers in different contexts, but the relationship between capital structure and size of the firm is still unanswered as per previous empirically studies

As suggested by trade-off theory, the size of the firm has a positive relationship with the debt of the firm, the ground for this positive relationship is because large firm is more diversified (e.g. in form of area of operations, products or services etc.) this make them to have stable cash flows and their risk of bankruptcy to be low hence the targeted leverage of the firm will be achieved by increasing the portion of debt, hence this kind of firms will prefer debt as a source of financing, also in broadly speaking the larger the firm the high possibility of influencing the lenders, because their possibility of serving the debt is high and these will make the larger firms to negotiate for good credit terms, because of their favored credit ratings. Some of researchers concluded this positive relationship between debt and firm size like Abor (2008), Hovakimian et al., (2004), Al-Sakran (2001), Kim et al., (1998), Barclay and Smith (1996), Mackie-Mason (1990), Barton et al., (1989), Friend and Lang (1988); Crnigoj and Mramor (2009), Dragota and Smenescu (2008), Joeveer (2006), Bauer (2004), Hall et al.,(2004) on long term debt, Esperanca et al.,(2003) on long term debt, Cassar and Holmes (2003) on long term debt, Bevan and Danbolt (2002) on short term debt, Klapper et al., (2002), Booth et al.,(2001), Rajan and Zingales (1995), Marsh (1982); Malanic et al.,(2013).

As per pecking order theory, the larger the firm size the less affected with the information asymmetry problems,

hence the firm is able to issue equity at low cost. For the that case the firm will prefer equity as compared to debt, therefore these kind of firms will end up with higher portion of debt in their capital structure, so as per pecking order theory there is a negative relationship between debt and firm size, some of the empirical studies in literature proved this negative relationship like Hall et al., (2004) on short term debt, Esparanca et al.,(2003) on short term debt,Cassar and Holmes (2003) on short term debt,Chen (2003),Bevan and Danbolt (2002) on long term debt; Malanic et al.,(2013).

H2a: There is a positive relationship between long term debt and size of the firm.

H2b: There is a positive relationship between short term debt and size of the firm.

H2c: There is a positive relationship between total debt and size of the firm.

### 2.2.3 Capital Structure and Tangibility of Assets

Tangibility of firm assets has been mentioned by many researchers on their studies as among the main determinants of capital structures, but still there no clear results about its relationship with capital structure.

As per trade off theory, the relationship between debt and tangibility of assets is positive because the firm with more tangible assets will be highly preferred by lenders due to their tangible assets (non-current assets ), and these tangible assets will act as collateral during acquiring of debts and this will provide a security to lenders that, the borrower (firm) will repay the given amount of debt at a given time, but also the firms with more tangible assets will have a very big bargaining power to lenders and this will help these firms to borrow at the lowest cost (cheap cost ) and hence these kind of firms will prefer external financing (debts).

According to pecking order theory, tangibility of firm assets has a negative relationship with debt, and this relationship is due to the facts that, the firm with more tangible assets is less affected with the information asymmetry problems , these kind of firms with low information asymmetry prefers to issue equity, because the cost will be lower as a results they will have small portion of debt in their capital structure as compared to firms with few tangible assets, as per pecking order theory the relationship between debt and tangibility of firm assets is negative.

For years now, many researchers were come up with contradictory results from their empirical studies, some researchers come with a positive relationship between asset tangibility and debt, like Klapper and Tzioumis (2008),Hovakimian et al.,(2004),Chen (2003),Esperanca et al.,(2003),Rajan and Zingales (1995),Friend and Lang (1988),Long and Maltiz (1985),Marsh (1982) ;Malanic et al.,(2013).

But still other researchers found a negative relationship between tangibility of assets and debt like Crnigoj and Mramor (2009), Dragota and Smenescu (2008), Joeveer (2006), Berk (2005), Klapper et al., (2002), Nivorozhkin (2002),Booth et al.,(2001),Cornelli et al.,(1998);Malanic et al.,(2013).

H3a: There is a positive relationship between long term debt and tangibility of assets.

H3b: There is a positive relationship between short term debt and tangibility of assets.

H3c: There is a positive relationship between total debt and tangibility of assets.

### 2.2.4 Capital Structure and Liquidity of the Firm

Liquidity is a measure of the firm ability to meet its short term obligations, therefore the firm with a very good liquidity position is the one with higher current assets as compared to its current liabilities. Liquidity position had been used in previous empirical studies but its finding still contradicts and it relationship toward capital structure is still questionable.

According to trade-off theory, its argued that a firm with a very good liquidity position is healthy financially so its financial distress cost is very low, hence a firm will prefer to take a lot of debts so as to attain the targeted debt ratio, and lenders will be ready to offer the loans (debt) because of their good liquidity position, therefore as per trade-off theory there is a significant positive relationship between liquidity and debt. Some previous empirically results proved a positive relation between liquidity and debt like Awan and Amin (2014), (Sibilkov (2004); Malanic et al., (2013)).

As per pecking order theory, a firm with a very good liquidity position means that a firm is rich in terms of cash

inflows and this will boost its internal financing, hence it will prefer to finance its investment by using internal funds before they decide to use external fund like debts, therefore there is a significant negative relationship between liquidity and debt. Some previous results in literature are consistent with this relationship like Sheikh and Wang (2011), Eriotis (2007) (Sarlijia and Harc (2012), Lipson and Mortal (2009), Suhaila et al., (2008), De Jong et al., (2008),; Malanic et al.,(2013)).

H4a: There is a positive relationship between long term debt and liquidity.

H4b: There is a positive relationship between short term debt and liquidity.

H4c: There is a positive relationship between total debt and liquidity.

### 2.2.5 Capital Structure and Non Debt Tax Shield

Non debt tax shield is one of the inconclusive and contradictory determinant of capital structure, as per previous empirically studies, the relationship between non debt tax shield and debt is still confusing.

According to trade-off theory, the relationship between non debt tax shield and debt can be viewed under two situations, the first situation is a positive relationship between non debt tax shield and debt, this is due the reason that, the firms with higher amount of non-debt tax shield will have large portion of depreciable assets (non-current assets) and they can use these non-current assets to secure debts (borrowings) from lender at cheap cost, because lenders prefers to borrowers with securities, hence these kind of firms will borrow so as to attained a targeted capital structure. But also the relationship between non debt tax shield and debt can be viewed as a negative relationship because non debt tax shield will reduce the amount taxable income and hence reduce the expected tax benefits, hence firms with large amount of non-debt tax shields will not prefer to borrow so as to attain their target capital structure because their tax advantage is decreased.

As per pecking order theory, the relationship between non debt tax shield and debt is negative, this is due to the reason that, these firms with large amount of non-debt tax shield implied to have large amount of depreciable assets (non-current assets ) in their statement of financial position, so these kind of firms with large amount of non-current assets tends to be less affected with the information asymmetry problems , so these firms will prefer to issue equity as opposed to debt, hence non debt tax shield have got a negative relationship with debts.

Some previous studies in literature found a positive relationship between non debt tax shield and debt like Delcoure (2007), Chaplinsky and Niehaus (1993), Titman and Wessels (1988), Bradley et al., (1984); Malanic et al., (2013)

But still other studies found a negative relationship between non debt tax shield and debt like Huang and Song (2006), Berk (2005), Bauer (2004), Chen (2003), Wald (1999); Malanic et al., (2013)

H5a: There is a negative relationship between long term debt and non-debt tax shield.

H5b: There is a negative relationship between short term debt and non-debt tax shield.

H5c: There is a negative relationship between total debt and non-debt tax shield.

## 3. Research Methodology

### 3.1 Scope, Population and Sample Size

The study examine the determinants of Capital Structure in developing economies with the evidence from East African Stock Markets. East Africa region comprises of five (5) countries such as Tanzania, Kenya, Uganda, Rwanda and Burundi. This study will exclude Rwanda and Burundi because, the study period covers eight (08) years from 2006-2013, but in Rwanda there is only one principal stock market and this stock market, Rwanda Stock Exchange (RSE) was incorporated on 07<sup>th</sup> October 2005 and for that reason financial data from RSE will not fulfill the requirements of the study time frame (i.e. eight (8) years ) and also we exclude Burundi because up to now (July,2015) there is no stock market in Burundi. Therefore, the population for this study will includes three (3) countries only such as Tanzania, Kenya and Uganda and using data for firms listed in Dar Es Salaam Stock Exchange (DSE) in Tanzania, Nairobi Securities Exchange (NSE) in Kenya and Uganda Securities Exchange (USE) in Uganda, for the whole study period of eight ( 08) years, from 2006-2013.

The population for this study consisted of all 58 listed companies from the three (3) stock markets (DSE, NSE

and USE) and for a period of eight (08) years (2006-2013). This study excluded all financial institutions, including all banks and insurance companies listed in East Africa Stock Markets, because the capital structure of these financial institutions is regulated by central banks. Moreover, cash is trading assets of bank and hence the levels of cash holding are expected to be significant higher than for firms in other sectors (Mwangi et al., 2014) then the study further excludes the mining companies due to their big different in capital structures and operations as compares to other companies, then after all newly listed firms, delisted firms were also excluded so as to remove any anomalies and lastly the study eliminate some listed East African companies due to unavailability of data. Finally our sample size consisted of 30 non-financial listed firms.

### 3.2 Data Sources

The study used secondary data which was extracted from various sources, the main source was OSIRIS database and supplemented with East African Stock Market websites (DSE, NSE and USE) and firms websites (including firm annual reports) for the period under consideration (2006-2013), this study also consisted a critical review of academic literature from financial journals, books and articles to form a foundation of the study.

### 3.3 Data Analysis

The study analyzed data by employing both descriptive and inferential statistics. Descriptive statistics of variables were calculated from 2006-2013, then correlation analysis was analyzed to examine the extent of relationship among variables used in this study and panel multiple regression to identify the most significant and influential independent variables on dependent variable, the panel methodology was done by STATA 10 and E-VIEWS 8 statistical packages and this panel data comprises of 240 observations.

### 3.4 Capital Structure Variables Measurement (Proxy) and References

This study used three (3) dependent variables and five (5) independent variables on analyzing what are the determinants of capital structure on East African Stock Market context, the study used book values for all of these variables in calculations due to the fact that this study is based on Annual reports of firms (i.e. financial statements) (See also Khan et al., 2014).

#### 3.4.1 Dependent Variables

This study uses three (3) dependent variables such as Long term debt ratio (LTDR), Short term debt ratio (STDR) and Total debt ratio (TDR), because East African Stock Markets are not highly developed in term of capital markets, therefore many firms are depending on short term finances, therefore in order to figure out the determinants of capitals structure the study separates debts into two (2) parts, short term and long term. The measurements of dependent variables and respective references are shown here below.

*Long term debt ratio (LTDR)* = Non-Current liabilities / Total Assets  
(See Michaelas (1999), Bevan and Danbolt (2002); Vinasithamby (2014))

*Short term debt ratio (STDR)* = Current liabilities / Total Assets  
(See Michaelas (1999), Bevan and Danbolt (2002); Vinasithamby (2014))

*Total debt ratio (TDR)* = Total liabilities / Total Assets  
(See Michaelas (1999), Bevan and Danbolt (2002); Vinasithamby (2014))

#### 3.4.2 Independent Variables

This study uses five (5) independent variables, such as Profitability (PROF), Size of the firm (SIZ), Tangibility of assets (TANG), Liquidity of the firm (LIQ) and Non debt tax shield (NDTS), this study uses these independent variables because of three (3) main reasons; (1) these variables are firm -level determinants of firm capital structure, hence these factors are within managerial decisions, (2) These variables were mostly employed in previous empirical studies and shows a significant effects on capital structure determination of firms and also it will be possible for the results from East African Stock Market to be easily comparable with other studies in developing economies and other contexts (3) East African Stock Markets faced a problem of data limitation in terms of time and measurement for other variables, so it's not possible to include some other determinants in the study. The measurements of independent variables and respective references are shown here below.

*Profitability (PROF)* = Earnings Before Interest and Tax (EBIT) / Total Assets  
(See Banchuenvijit (2011), Hossain. I and Hossain. A (2015))

*Size (SIZ)* = Natural logarithm of total assets  
(See Ooi (1999), Tang & Jang (2007),; Khan (2014), Banchuenvijit (2011),)

*Tangibility of Assets (TANG)* = Non-Current assets / Total Assets  
(See Rajan and Zingales (1995), Vinasithamby (1995), Banchuenvijit (2011))

*Liquidity (LIQ)* = Total Current Assets / Total Current Liabilities  
(See Kant, 2014, Hossain. I and Hossain. A (2015))

*Non Debt Tax Shield (NDTS)* = Depreciation Expenses / Total Assets  
(See Viviani (2008), Karadeniz et al., (2009), Sheikh and Wang (2011); Awan and Amin (2014), Rajan and Zingales (1995); Vinasithamby (2014))

### 3.5 Capital Structure Variables and Model Specification

This study will decompose long term and short term debts so as to come with actual situation of East African Stock Markets context, the reason behind this decomposition is due to the fact that East African Stock Market as one of developing economies, their capital markets are still growing and therefore many firms are depending on short term debt (like banks borrowings) as compared to long term debt (like corporate bond). This study define three(3) models for our three(3) measures of leverage (LTDR, STDR, TDR) like what Vinasithamby (2014) uses in his study for firms in Sri Lanka, but this study excludes growth opportunities as an independent variable in the model due to uniqueness of East African Region, in order for the model to fit and come with efficient results.

#### 3.5.1 Pooled Ordinary Least Square (OLS) Model

OLS model assume that the intercept coefficient ( $\beta_0$ ) is the same for firms in East African Stock market and also the coefficients of concerned variables ( $\beta_1$ - $\beta_5$ ) is the same for all firms operating in East Africa region, hence there is no difference between and among the firms operating in East Africa region.

*Model 1-long term debt ratio (LTDR)*

$$LTDR_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 SIZ_{it} + \beta_3 TANG_{it} + \beta_4 LIQ_{it} + \beta_5 NDTS_{it} + \epsilon_{it}$$

*Model 2-short term debt ratio (STDR)*

$$STDR_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 SIZ_{it} + \beta_3 TANG_{it} + \beta_4 LIQ_{it} + \beta_5 NDTS_{it} + \epsilon_{it}$$

*Model 3-total debt ratio (TDR)*

$$TDR_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 SIZ_{it} + \beta_3 TANG_{it} + \beta_4 LIQ_{it} + \beta_5 NDTS_{it} + \epsilon_{it}$$

#### 3.5.2 Fixed Effects Model

Fixed effects model assume that the intercept coefficient ( $\beta_0i$ ) for each East Africa firm is different with each other and does not vary over time but also coefficients of concerned variables ( $\beta_1$ - $\beta_5$ ) are invariant across East Africa region firm over time.

*Model 1-long term debt ratio (LTDR)*

$$LTDR_{it} = \beta_0i + \beta_1 PROF_{it} + \beta_2 SIZ_{it} + \beta_3 TANG_{it} + \beta_4 LIQ_{it} + \beta_5 NDTS_{it} + \mu_{it}$$

*Model 2-short term debt ratio (STDR)*

$$STDR_{it} = \beta_0i + \beta_1 PROF_{it} + \beta_2 SIZ_{it} + \beta_3 TANG_{it} + \beta_4 LIQ_{it} + \beta_5 NDTS_{it} + \mu_{it}$$

*Model 3-total debt ratio (TDR)*

$$TDR_{it} = \beta_0i + \beta_1 PROF_{it} + \beta_2 SIZ_{it} + \beta_3 TANG_{it} + \beta_4 LIQ_{it} + \beta_5 NDTS_{it} + \mu_{it}$$

#### 3.5.3 Random Effects Model

Random effects model breaks ( $\beta_0i$ ) of fixed effect model into ( $\beta_0$ ) and ( $\epsilon_{it}$ ), it assumes that the intercept is a random variable with a mean value of ( $\beta_0$ ), As per this model, ( $\epsilon_{it}$ ) shows the cross section or individual firms error component whereas ( $\mu_{it}$ ) shows the time series and individual firms error component. (Awan and Amin, 2014)

*Model 1-long term debt ratio (LTDR)*

$$LTDR_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 SIZ_{it} + \beta_3 TANG_{it} + \beta_4 LIQ_{it} + \beta_5 NDTS_{it} + \epsilon_{it} + \mu_{it}$$

*Model 2-short term debt ratio (STDR)*

$$STDR_{it} = \beta_0 + \beta_1PROF_{it} + \beta_2SIZ_{it} + \beta_3TANG_{it} + \beta_4LIQ_{it} + \beta_5NDTS_{it} + \epsilon_{it} + \mu_{it}$$

*Model 3-total debt ratio (TDR)*

$$TDR_{it} = \beta_0 + \beta_1PROF_{it} + \beta_2SIZ_{it} + \beta_3TANG_{it} + \beta_4LIQ_{it} + \beta_5NDTS_{it} + \epsilon_{it} + \mu_{it}$$

Where:

LTDR<sub>it</sub>= Long term debt ratio of firm i at time t

STDR<sub>it</sub>= Short term debt ratio of firm i at time t

TDR<sub>it</sub>= Total debt ratio of firm i at time t

PROF<sub>it</sub>= Profitability of firm i at time t

SIZ<sub>it</sub>= Size of firm i at time t

TANG<sub>it</sub>= Tangibility of firm i at time t

LIQ<sub>it</sub>= Liquidity of firm i at time t

NDTS<sub>it</sub>=Non debt tax shields of firm i at time t

$\beta_0$ =Intercept coefficient

$\beta_1$ - $\beta_5$ =Coefficients of the concerned independent variables

$\epsilon_{it}$  =Error term of firm i at time t

$\mu_{it}$  = Error term of firm i at time t

## 4. Result and Discussion

### 4.1 Descriptive Statistics

As per Table No 1 below, the descriptive statistics of independent and dependent variables are presented, According to the table, the descriptive information of sample companies in East African region shows the mean total debt ratio (TDR) of 49.19%, this implies that the debt financing in East Africa region is 49.19% and equity financing is 50.81%, but of 49.19 % (total debt ratio), the mean long term debt ratio (LTDR ) is 20.55% and the mean short term debt ratio (STDR) is 28.64 %,this mean that, the corporate debt structure of East African region companies is much depending on short term liabilities (like overdrafts etc. ) as compared to long term liabilities, this results support the fact that the capital markets in East African region is less developed. The mean liquidity ratio (LIQ) is 1.75 times (1.75: 1), this means that most companies in East African region are highly liquid and their able to meet their short term liabilities when falls due, so these companies are able to access short term liabilities easily. The mean ratio of tangibility (TANG) is 59.81%, this means out of total assets, non-current assets comprises of 59.81% and current assets is 43.19%, this is beneficial to East African companies for easily access of long term debt at a reasonable cost because this high portion of non-current assets on their assets composition will act as security and give out a good impression to lenders regarding the going concern of the company. The mean profitability (PROF) is 16.66% which indicates that most of East African companies reports a profitability ratio (as indicator of performance) of 16.67% and this shows an average financial performance of East African companies which implies that, the firms concern are going concern entities .The mean size (SIZ) as measured as natural logarithm of total assets is 22.48, this implies that East African companies are large firms as measured in terms of total assets. The mean non-debt tax shield (NDTS) is -4.21 %,which implies that non-debt tax shield items (including depreciation of non-current assets ) accounted for only 4.21% and this mean East African companies are not highly depending on non-debt tax shield items.

**Table No 1:** The Descriptive Statistics

VARIABLE	OBSERVATION	MEAN	STD.DEV.	MIN	MAX
TDR	240	.4918973	.214446	.1219911	1.694204
LTDR	240	.2055365	.1510628	0	1.008962
STDR	240	.2863608	.1556425	.0395909	.9525023
PROF	240	.1665721	.152532	-.3911318	.6252984
SIZ	240	22.47684	1.386256	19.67238	25.93936
TANG	240	.5981129	.1808634	.1842658	.9104227
LIQ	240	1.750752	1.221638	.2494641	10.10396
NDTS	240	-.0420679	.0257116	-.2696521	0

Source: STATA 10 Analysis of Data

## 4.2 Preliminary Analysis

### 4.2.1 Testing for Multicollinearity

#### 4.2.1.1 Correlation Analysis

As per Table No 2 below, the results of Pearson correlation matrix of independent variables used in this study are presented, the pair-wise correlation coefficient on the table below test the existence or not of Multicollinearity problem, if the correlation coefficient between any two independent variables in a sample is +/- 0.80 or higher, then there is Multicollinearity problem (Lewis-Beck, 1993; Hossain. I and Hossain. A , 2015).The results on the table shows very low correlation coefficients between independent variables for East African companies which concludes that, there is no Multicollinearity problem in sample companies, the lowest correlation coefficient is + 0.0388 between Profitability (PROF) and Size of the firm (SIZ) which suggest a very weak positive correlation between the two independent variables while the highest correlation coefficient is + 0.3083 between Size (SIZ) of the firm and non-debt tax shield (NDTS) which suggest a weak positive correlation between the two independent variables.

**Table No 2:** The Correlation Analysis

	PROF	SIZ	TANG	LIQ	NDTS
PROF	1.0000				
SIZ	0.0388	1.0000			
TANG	-0.2760	0.0887	1.0000		
LIQ	0.2974	-0.0906	-0.3022	1.0000	
NDTS	-0.0485	0.3083	-0.0642	0.0513	1.0000

Source: STATA 10 Analysis of Data

#### 4.2.1.2 Variance inflation factor (VIF)

The study also computed the Variance inflation factor (VIF) of independent variables to test for Multicollinearity problem. If the VIF is 10 or less than 10 then it shows that there is no serious problem of multicollinearity to a given variable used on the study (Gujarati, 2007).

As per Table No 3 below, the result of Variance inflation factor (VIF) shows that all independent variables have got a VIF below 10, hence this results suggested that all independent variables in our study are free from multicollinearity problem, the highest VIF is 1.18 for Liquidity (LIQ) and the lowest VIF is 1.13 for Non debt tax shield (NDTS).

**Table No 3:** The Variance inflation factor analysis

VARIABLE	VIF	1/VIF
PROF	1.17	0.856320
SIZ	1.14	0.875220
TANG	1.17	0.856752
LIQ	1.18	0.846968
NDTS	1.13	0.882279
<b>MEAN VIF</b>	1.16	

Source: STATA 10 Analysis of Data

### 4.2.2 Unit Root Test

A data series which does not have a constant mean, variance and auto-covariance at various lags over time is known as non-stationary (Gujarati, 2007; Hossain. I and Hossain. A, 2015).Therefore if the data series are non-stationary then the econometric models will report misleading results, this study use Levin-Lin- Chu (LLC) to test for unit root of the data series because LLC test is appropriate for strongly balanced panel dataset and data for this study satisfy this requirement. The following hypothesis is considered for this test.

Null hypothesis (Ho): Panel data contains unit root (non-stationary).

Alternative hypothesis (H1): Panel data is stationary.

As per Table No 4 below, the results of unit test as per LLC test, shows that all variables used in this study are stationary at both individual intercept and individual intercept and trend. The variables are said to be stationary because the p-value is significant at 5% significance level, hence we reject the null hypothesis and accept the alternative hypothesis that panel data is stationary.

**Table No 4:** The Unit Root Test results-Levin, Lin and Chu (LLC) test

Null: Unit root (assumes common unit root process)

(With individual intercept) (With individual intercept and trend)

Variable	t-statistic	Probability	Process	t-statistics	Probability	Process
LTDR	-14.9408	0.0000	Stationary	-13.9521	0.0000	Stationary
STDR	-5.86646	0.0000	Stationary	-126.986	0.0000	Stationary
TDR	-10.3654	0.0000	Stationary	-31.9521	0.0000	Stationary
PROF	-6.29999	0.0000	Stationary	-19.1018	0.0000	Stationary
SIZ	-10.2511	0.0000	Stationary	-14.4703	0.0000	Stationary
TANG	-8.28069	0.0000	Stationary	-9.70832	0.0000	Stationary
LIQ	-1.65697	0.0488	Stationary	-21.5600	0.0000	Stationary
NDTS	-7.19545	0.0000	Stationary	-19.5966	0.0000	Stationary

Source: E-VIEWS 8 Analysis of Data

#### 4.2.3 Hausman Test Random Effect versus Fixed Effect Model

This study used strong balanced panel data, therefore the possibilities of having cross sectional effects on companies or group of companies is something that cannot be ignored. For this reason pooled ordinary least square (OLS) model cannot be used because OLS does not distinguish between various companies and deny heterogeneity/individuality that may exist. Therefore, the study must employed either fixed effects model or random effects model, in order to know which one is the most appropriate method for the data used under this study, the study estimated the results of fixed effects model and random effects model and then undertake the Hausman test to find which one is the most appropriate, for this case the criterion of the selection will depend on the p-value. The following hypothesis for each model (i.e. Model 1, Model 2 and Model 3) will be considered.

Null hypothesis (Ho): Random effects model is appropriate.

Alternative hypothesis (H1): Random effects model is not appropriate.

As per Table No 5, 6 and 7 below, the Hausman specification test results are reported for LTDR model, STDR model and TDR model As from the given table, the reported p value is 0.0089,0.0020 and 0.0017 for LTDR,STDR and TDR model respectively, This p value is significant at 5% significance level for all our three models, hence we reject our null hypothesis and accepted the alternative hypothesis which means that random effects model is not appropriate, as for this case the fixed effects model is appropriate and fit for the better estimation of the model.

**Table No 5:** The Hausman test results-Model 1 (LTDR)

Correlated Random Effects - Hausman Test

Equation: LTDR

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	15.381210	5	0.0089

Source-E VIEWS 8 Analysis of Data

**Table No 6:** The Hausman test results-Model 2 (STDR)

Correlated Random Effects - Hausman Test  
 Equation: STDR  
 Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	18.907825	5	0.0020

Source: E-VIEWS 8 Analysis of Data

**Table No 7:** The Hausman test results-Model 3 (TDR)

Correlated Random Effects - Hausman Test  
 Equation:TDR  
 Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	19.331141	5	0.0017

Source: E-VIEWS 8 Analysis of Data

#### 4.2.4 Heteroskedasticity Test

The presence of heteroskedasticity in the dataset will lead to misleading results, heteroskedasticity arises when errors don't have constant variance. According to Gujarati (2007), when regression is run on the dataset having heteroskedasticity, the t-test and F-test gives inaccurate results. For heteroskedasticity test, the study used White test and considered the following hypotheses below for all three models (Model 1, Model 2 and Model 3).

Null hypothesis (Ho): Absence of heteroskedasticity

Alternative hypothesis (H1): Presence of heteroskedasticity

As per Table No 8, 9 and 10, the p-value for Model 1(LTDR), Model 2(STDR) and Model 3(TDR) is 0.0001, 0.0000 and 0.0000 respectively, The p value for all three models (Model 1, Model 2 and Model 3) is significant at 5% significance level, hence we reject our null hypothesis and accepted the alternative hypothesis which means that all three models are facing heteroskedasticity problem (Presence of heteroskedasticity in all three models).

##### 4.2.4.1 Model 1-Long term debt ratio (LTDR)

**Table No 8:** Heteroskedasticity test results-Model 1 (LTDR)

Heteroskedasticity Test: White

F-statistic	3.021133	Prob. F(20,219)	0.0000
Obs*R-squared	51.89786	Prob. Chi-Square(20)	0.0001
Scaled explained SS	243.6528	Prob. Chi-Square(20)	0.0000

Source: E-VIEWS 8 Analysis of Data

#### 4.2.4.2 Model 2-Short term debt ratio (STDR)

**Table No 9:** Heteroskedasticity test results-Model 2 (STDR)

Heteroskedasticity Test: White

F-statistic	12.60962	Prob. F(20,219)	0.0000
Obs*R-squared	128.4532	Prob. Chi-Square(20)	0.0000
Scaled explained SS	484.7695	Prob. Chi-Square(20)	0.0000

Source: E-VIEWS 8 Analysis of Data

#### 4.2.4.3 Model 3-Total debt ratio (TDR)

**Table No 10:** Heteroskedasticity test results-Model 3 (TDR)

Heteroskedasticity Test: White

F-statistic	4.815791	Prob. F(20,219)	0.0000
Obs*R-squared	73.30998	Prob. Chi-Square(20)	0.0000
Scaled explained SS	481.2964	Prob. Chi-Square(20)	0.0000

Source: E-VIEWS 8 Analysis of Data

#### 4.2.5 Test for Autocorrelations

The presence of autocorrelation/serial correlations in the dataset will lead to misleading results for an econometric model, autocorrelation is when the errors associated with a given time period carry over into future time periods. Therefore, autocorrelation test is specifically to check if there is correlation between errors in period t with errors in period t-1. For autocorrelation test, the study used Breusch-Godfrey Serial correlation LM test and considered the following hypothesis below for all three models (Model 1, Model 2 and Model 3).

Null hypothesis (H<sub>0</sub>): Absence of autocorrelations

Alternative hypothesis (H<sub>1</sub>): Presence of autocorrelations

As per Table No 11, 12 and 13, the p-value for Model 1, Model 2 and Model 3 is 0.0000, 0.0000 and 0.0000 respectively, The p value for all three models (Model 1, Model 2 and Model 3) is significant at 5% significance level, hence we reject our null hypothesis and accepted the alternative hypothesis which means that all three models are facing autocorrelation problem (Presence of autocorrelation in all three models).

##### 4.2.5.1 Model 1-Long term debt ratio (LTDR)

**Table No 11:** Autocorrelation test results-Model 1 (LTDR)

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	123.5898	Prob. F(2,232)	0.0000
Obs*R-squared	123.8014	Prob. Chi-Square(2)	0.0000

Source: E-VIEWS 8 Analysis of Data

#### 4.2.5.2 Model 2-Short term debt ratio (STDR)

**Table No 12:** Autocorrelation test results-Model 2 (STDR)  
 Breusch-Godfrey Serial Correlation LM Test:

F-statistic	64.16663	Prob. F(2,232)	0.0000
Obs*R-squared	85.47638	Prob. Chi-Square(2)	0.0000

Source: E-VIEWS 8 Analysis of Data

#### 4.2.5.3 Model 3-Total debt ratio (TDR)

**Table No 13:** Autocorrelation test results-Model 3 (TDR)  
 Breusch-Godfrey Serial Correlation LM Test:

F-statistic	105.0644	Prob. F(2,232)	0.0000
Obs*R-squared	114.0638	Prob. Chi-Square(2)	0.0000

Source: E-VIEWS 8 Analysis of Data

#### 4.2.6 Panels Corrected Standard Errors (PCSEs) model specification

The study used Panel Corrected Standard Errors (PCSEs) model to determine which factors significantly influencing the capital structure in East African stock markets, The reason for using this model is due to the fact that our dataset have got heteroskedasticity and autocorrelation problems (reference to sections 4.2.4 and 4.2.5 respectively ),hence this model will correct it automatically and gives the reliable best estimates for all variables in our three models (Model 1,Model 2 and Model 3).

### 4.3 Regression Analysis

#### 4.3.1 Model 1-Long term debt ratio (LTDR)

**Table No 14:** panels corrected standard errors (PCSEs) results-Model 1 (LTDR)

Linear regression, correlated panels corrected standard errors (PCSEs)

Group variable:	<b>code</b>	Number of obs	=	240	
Time variable:	<b>year</b>	Number of groups	=	30	
Panels:	<b>correlated (balanced)</b>	Obs per group: min	=	8	
Autocorrelation:	<b>no autocorrelation</b>	avg	=	8	
		max	=	8	
Estimated covariances	=	465	R-squared	=	0.3873
Estimated autocorrelations	=	0	wald chi2(5)	=	443.90
Estimated coefficients	=	6	Prob > chi2	=	0.0000

ltdr	Panel-corrected		z	P> z	[95% Conf. Interval]	
	Coef.	Std. Err.				
prof	-.2437045	.0646947	-3.77	0.000	-.3705038	-.1169051
siz	.0130265	.002026	6.43	0.000	.0090557	.0169973
tang	.3657707	.0290004	12.61	0.000	.3089309	.4226105
liq	-.0111523	.0039501	-2.82	0.005	-.0188942	-.0034103
ndts	-.5974578	.2883271	-2.07	0.038	-1.162568	-.0323471
_cons	-.2710446	.0555471	-4.88	0.000	-.379915	-.1621742

Source: STATA 10 Analysis of Data

### 4.3.2 Model 2-Short term debt ratio (STDR)

**Table No 15:** panels corrected standard errors (PCSEs) results-Model 2 (STDR)

Linear regression, correlated panels corrected standard errors (PCSEs)

```

Group variable:   code           Number of obs   =   240
Time variable:   year           Number of groups =   30
Panels:          correlated (balanced)  Obs per group: min =   8
Autocorrelation: no autocorrelation    avg =   8
                                                max =   8
Estimated covariances =   465           R-squared       =   0.6800
Estimated autocorrelations =   0         wald chi2(5)   =  1773.12
Estimated coefficients =   6             Prob > chi2    =   0.0000
    
```

stdr	Panel-corrected			z	P> z	[95% Conf. Interval]	
	Coef.	Std. Err.					
prof	-.2234291	.0365351	-6.12	0.000	-.2950366	-.1518215	
siz	-.0059154	.0023487	-2.52	0.012	-.0105188	-.001312	
tang	-.5756983	.0181719	-31.68	0.000	-.6113145	-.5400821	
liq	-.0846398	.0081065	-10.44	0.000	-.1005283	-.0687514	
ndts	-.3288182	.2628524	-1.25	0.211	-.8439995	.1863631	
_cons	.9352207	.0584663	16.00	0.000	.8206288	1.049813	

Source: STATA 10 Analysis of Data

### 4.3.3 Model 3-Total debt ratio (TDR)

**Table No 16:** panels corrected standard errors (PCSEs) results-Model 3 (TDR)

Linear regression, correlated panels corrected standard errors (PCSEs)

```

Group variable:   code           Number of obs   =   240
Time variable:   year           Number of groups =   30
Panels:          correlated (balanced)  Obs per group: min =   8
Autocorrelation: no autocorrelation    avg =   8
                                                max =   8
Estimated covariances =   465           R-squared       =   0.4698
Estimated autocorrelations =   0         wald chi2(5)   =   177.17
Estimated coefficients =   6             Prob > chi2    =   0.0000
    
```

tdr	Panel-corrected			z	P> z	[95% Conf. Interval]	
	Coef.	Std. Err.					
prof	-.4671335	.07615	-6.13	0.000	-.6163847	-.3178823	
siz	.0071111	.0027386	2.60	0.009	.0017435	.0124786	
tang	-.2099276	.0394355	-5.32	0.000	-.2872197	-.1326355	
liq	-.0957921	.0107357	-8.92	0.000	-.1168337	-.0747504	
ndts	-.9262759	.4266824	-2.17	0.030	-1.762558	-.0899939	
_cons	.6641761	.0667771	9.95	0.000	.5332954	.7950568	

Source: STATA 10 Analysis of Data

### 4.3.4 Discussion of regression results for Model 1, Model 2 and Model 3

As per Table No 14, 15 and 16, the values of R-squared is 38.73%, 68% and 46.98% for Model 1, Model 2 and Model 3 respectively, its evident that the independent variables (Profitability, Size, Tangibility, Liquidity and Non debt tax shield ) used in the models well explain about the dependent variables (long term debt, short term debt and total debt) but also the p-value for all (Model 1, Model 2 and Model 3) is 0.0000 which proves that, the independent variables as whole are statistically significant at 5% significance level to influence the dependent

variables used in the models. The relationship of individual independent variable and debts are explain here below.

#### **4.3.4.1 Profitability (PROF) and Capital Structure**

The results indicate that, the firm profitability is statistically significant and negative influence on firm debts (long term debts, short term debts and total debts) at 5% level of significance for all three model above (Reference to Table No 14, 15 and 16), this means that profitable East African firms are using internal source of finance in their capital structure instead of external source of finance (debts), the possible reason for this tendency is because of information asymmetry problems and also financial markets in the region are still developing, so its makes difficult for profitable firms to access the external finance and therefore decided to rely on internal source of financing. This results are supporting the pecking order theory, that firm first prefers internal sources as compared to external sources, but also the results are consistent with other empirical studies like Crinigol and Mramor (2009), Dragota and Smenescu (2008), Klapper and Tzioumis, Song (2005), Hall et al., (2004), Deesomsak (2004), Chen (2004), Cassar and Holmes (2003), Esperanca et al., (2003) and Friend and Lang (1988), hence the study reject the hypotheses H1a, H1b and H1c.

#### **4.3.4.2 Size (SIZ) and Capital Structure**

The results show that, the firm size is statistically significant and negative influence on firm short term debts (Reference to Table No 15), but statistically significant and positive influence on long term debts and total debts (Reference to Table No 14 and 16) at 5% level of significance for all three model above, this results indicate that, large size East African firms prefers long term debts as compared to short term debts, this means large firms in East Africa have got a high portion of long term as compared to short term debt, the possible reason for this situation of positive and statistically significant between firm size and both long term debt and total debt is because large firms in East Africa are more diversified in terms of products and operations, and for this case they have a stable cash flows with low risk of bankruptcy and for this reasons it makes easily for lenders to give them long term loans (debt) a low cost (interest rate). This results are supporting the trade-off theory and this positive and statistically significant relationship between long term debt and firm size is consistent with other empirical studies like Hall et al., (2004), Cassar and Holmes (2003) and Esperanca et al., (2003) and the positive and statistically significant between total debt and firm size is consistent with the empirical studies like Abor (2008), Hovakimian et al., (2004), Al-Sakran (2001), Kim et al., (1998), Barclay and Smith (1996), Mackie-Mason (1990), Barton et al., (1989), Friend and Lang (1988), Crnigoj and Mramor (2009), Dragota and Smenescu (2008), Joeveer (2006), Bauer (2004), Klapper et al., (2002), Booth et al., (2001), Rajan and Zingales (1995) and Marsh (1982), but also the possible reason for a statistically significant and negative influence between firm size and short term debt is because large firm need large amount of cash to finance their large scale profitable investments so these investments cannot be funded with short term loans (debt) because in East African short term debt is mostly to fund firms operations and not for long term investments, this results are supporting pecking order theory and this negative and significant relationship between short term debt and firm size is consistent with other empirical studies like Hall et al., (2004), Cassar and Holmes (2003) and Esperanca et al., (2003), hence the study accept the hypotheses H2a and H2c and reject H2b.

#### **4.3.4.3 Tangibility (TANG) and Capital Structure**

Tangibility of firm assets is statistically significant and positive influence on firm long term debt (Reference to Table No 14) and statistically significant and negative influence on short term debt and total debt (Reference to Table No 15 and 16) at 5% level of significance for all three model above, the results show that East African firms with large portion of tangible assets (non-current assets) prefers long term debt as compared to short term debt, the possible reason for a statistically significant and positive influence of tangibility of firm assets on long term loan (debt) is due to the fact that, the firms used tangible assets (non-current assets) as security during acquiring of long term debt because lenders in East African prefers this kind of collateral in issuing of long term debt to firms, this results is consistency with trade-off theory, and some previous studies suggested the positive relationship between debt and tangibility of firm assets like Klapper and Tzioumis (2008), Hovakimian et al., (2004), Chen (2003), Esperanca et al., (2003), Rajan and Zingales (1995), Friend and Lang (1988), Long and Maltz (1985) and Marsh (1982) and the possible reason for a statistically significant and negative influence of tangibility of firm assets on short term debt is because lenders in East Africa are not considering tangibility of firm assets as a requirement for issuing short term debt while for total debt is because the information asymmetry problems, this results are consistency with the pecking order theory and some previous studies in literature shows a negative relationship between tangibility of firm assets and debts like Crnigoj and Mramor (2009),

Dragota and Smenescu (2008), Joeveer (2006), Berk (2005), Klapper et al., (2002), Nivorozhkin (2002), Booth et al., (2001) and Cornelli et al., (1998), hence the study accept the hypotheses H3a and reject H3b and H3c.

#### **4.3.4.4 Liquidity (LIQ) and Capital Structure**

The results indicate that, the firm liquidity position is statistically significant and negative influence on firm debts (long term debts, short term debts and total debts) at 5% level of significance for all three model above (Reference to Table No 14, 15 and 16), this results suggest that, in East Africa region the companies with a very good liquidity position prefer internal source of financing as compared to external sources of financing (debt), the possible reason for this situation is because in East Africa the financial markets are not well developed and also an issues of information asymmetry problem hinder liquid firms to access debt markets at a reasonable cost of financing, so this is a likely reason for liquidity firms to rely much on internal source of financing. This results are supporting the pecking order theory, that firm first ranking internal sources of financing before external sources, but also the results are consistent with other empirical studies like Sheikh and Wang (2011), Eriotis (2007) Sarlija and Harc (2012), Lipson and Mortal (2009), Suhaila et al., (2008) and De Jong et al., (2008), hence this study reject the hypotheses H4a, H4b and H4c.

#### **4.3.4.5 Non debt tax shield (NDTS) and Capital Structure**

The Non debt tax shield is statistically significant and negative influence on both firm long term debts and total debts but unfortunately the study indicate that, non debt tax shield is insignificant on short term debt (not statistically significant) at 5% level of significance for all three model above (Reference to Table No 14, 15 and 16), for this results, its suggest that in East Africa region companies with large portion of non-debt tax shield tend to have less long term debt and total debts in their capital structure but fails to prove the statistically significant influence on short term debt, the possible reason for this negative relationship between non debt tax shield and both long term debt and total debts is because companies with large portion of non-debt tax shield, means that they have large portion of non-current assets (depreciable assets) so still the problem of information asymmetry, undeveloped financial markets and large portion of non-debt tax shield reduce the tax benefits from debts so for this reason East Africa companies with large portion of non-debt tax shield tend to have less portion of debts. This results are supporting the pecking order theory and trade off theory, lastly this results are consistent with other empirical previous studies like Huang and Song (2006), Berk (2005), Bauer (2004), Chen (2003), Wald (1999), hence the study accept the hypotheses H5a and H5c and reject H5b.

## **5. Conclusion and Recommendations**

### **5.1 Conclusion**

The purposes of this study is to determine what factors are influencing corporate capital structure of listed non-financial companies in East African stock markets. The study used panel data of 240 observations including 30 East African companies for 8 years (2006-2013).The study used three (3) models with long term debt, short term debt and total debt as dependent variables and each model with five (5) independent variables (profitability, size, tangibility, liquidity and non-debt tax shield),the reason of decomposition total debt into long term and short term debts is because the financial markets in the East African region is not well developed and many companies depends much on short term debts as compared to long term debt (Reference to Table No 1),so we cannot ignore the decomposition of debts in order to determine the factors which influence capital structure in East Africa region. The study conducted preliminary tests before estimating the model, the study test for multicollinearity as per correlation matrix and VIF and found that the panel data had no multicollinearity problem for both approaches, then the study done unit root test as Levin-Lin-Chu test and found all variables are stationary at both individual intercept and individual intercept and trend, and also the hausman test suggested for fixed effects model but lastly the study conducted heteroskedasticity test as per white test and autocorrelation test as per breusch-godfrey serial correlation LM test and found both heteroscedasticity and autocorrelation problems, so the study used the Panel Corrected Standard Errors (PCSEs) regression models in order to correct those problems on the dataset and provides best results for estimation of variables.

The results shows that all variables used in the study are statistically significant at 5% significance level for all three models (Model 1, Model 2 and Model 3) except non-debt tax shield becomes insignificant on short term debt only .Further the results shows high R-squared (38.73%,68% and 46.98% for all three models and significant F-statistics for all three models (Model 1,Model 2 and Model 3 respectively) which both proved that the independent variables used in the model fit for the best estimates. For individual variables, the study indicates a negative influence for both profitability and liquidity on debts in all models, and for firm size the results shows a negative influence with short term debt and positive for both long term debt and total debt, also the results shows a positive relationship between tangibility and long term debt but a negative with both short term debt and total debt and but a negative relationship between non debt tax shield and long term debt and total

debt while the relationship between non debt tax shield with short term debt was statistically insignificant. Lastly the study proves that the pecking order theory and trade off theory of capital structure are both applied for firms listed in East Africa stock markets.

## 5.2 Recommendations

### 5.2.1 Financial Managers

This study will help managers especially financial managers for companies operating in East African region (Tanzania, Kenya, Uganda, Rwanda and Burundi ) to consider these determinants of capital structure (Profitability, Size, Tangibility, Liquidity and Non debt tax shield ) before making capital structure decisions to their firms so as to maximize the value of their firm and enhance shareholders wealth, but non debt tax shield should be taken into care because the study shows insignificant for short term debt..

### 5.2.2 Regulatory Authorities

The study will help Securities markets regulators in East Africa region such as East African securities regulatory authority (EASRA) and respective countries securities markets regulators such as capital markets and securities authority (CMSA) in Tanzania, capital market authority (CMA) in Kenya, capital market authority (CMA) in Uganda and capital market authority (CMA) in Rwanda to formulate policies relating to securities markets in general, like improving of financial markets in the region etc.

### 5.2.3 Future Research

The study will help researchers to conduct future researches after considering the limitations of this study, the future research can be extended by including some other factors which were not considered in the models like financial flexibility, credit rating, corporate governance structure etc and also the future research may take into account other capital structure theories like agency theory etc.

## References

- (1) Abor, J. (2008), "Agency Theoretic Determinants of Debt Levels": Evidence from Ghana. *Review of Accounting and Finance*, Vol 7 (2), p183-192.
- (2) Al-Sakran, S. (2001), "Leverage Determinants in Absence of Corporate Tax System": The Case of Non-financial publicly traded corporation in Saudi Arabia, *Managerial Finance*, Vol 27, p58-86.
- (3) Awan, A. and Amin, M. (2014), "Determinants of Capital Structure", *European Journal of Accounting, Auditing and Finance Research*, Vol 2 (9), pp.22-41.
- (4) Barclay, M.J., and Smith, C.W. (1996). "On Financial Architecture: Leverage, Maturity and Priority" *Journal of Applied Corporate Finance*, Vol, 8, 1, p4-17.
- (5) Barton, S.L., Hill, N.C. and Sundaram, S. (1989). "An Empirical test of Stakeholder theory predictions of capital structure", *Financial Management*, Vol, 18, 1, p36-44.
- (6) Banchuenvijit, W. (2011), "Determinants of Capital structure of Listed Companies in Thailand" "School of Business, University of the Thai Chamber of Commerce.
- (7) Bauer, P. (2004), "Determinants of Capital Structure: Empirical Evidence from the Czech Republic", *Czech Journal of Economics and Finance*, pp. 1-2.
- (8) Beck, T., Demirgüç-Kunt, A. and Maksimovic, V. (2005), "Financial and Legal Constraints to Firm Growth: Does Size Matter?" *Journal of Finance*, pp. 137-177.
- (9) Bevan, A. and Danbolt, J. (2000), "Dynamics in Determinants of Capital structure in the United Kingdom", *University of Glasgow, Working paper*, 1-10.
- (10) Bevan, A. and Danbolt, J. (2002), "Capital structure and its determinants in the United Kingdom – a decomposition analysis", *Applied Financial Economics*, 20(3), pp. 159-170.
- (11) Boakye, P., Appiah, K. Afolabi, J. (2013), "Determinants of Capital Structure: Evidence from Ghanaian Firms", *Research Journal of Finance and Accounting*. Vol 4 (4), p44-52.
- (12) Booth, L., Aivazian, V., Demirgüç-Kunt, A. and Maksimovic, V. (2001), "Capital Structures in Developing Countries", *Journal of Finance*, 56(1), pp. 87-130.
- (13) Bradley, M., Jarrell, G. and Kim, E. (1984), "On the existence of an optimal capital structure: Theory and evidence", *Journal of Finance*, Vol. 39, p. 857– 880.
- (14) Cassar, G. and Holmes, S. (2003), "Capital Structure and Financing of SMEs: Australian evidence", *Accounting and Finance*, Vol. 43, pp. 123-147.
- (15) Chaplinsky, S. and Niehaus, G. (1993), "Do inside ownership and leverage share common determinants?" *Quarterly Journal of Business and Economics*, 32(4), p. 51– 65.
- (16) Chen, J. (2004), "Determinants of Capital Structure of Chinese-Listed Firms", *Journal of Business Research*, 57(12), p. 1341–1351.
- (17) Cornelli, F., Portes, R. and Schaffer, M. (1998), "The Capital Structure of Firms in Central and Eastern Europe, in: *Different Paths to a Market Economy: China and European*
- (18) Črnigoj, M. and Mramor, D. (2009), "Determinants of Capital Structure in Emerging European Economies: Evidence from Slovenian Firms", *Emerging Markets Finance and Trade*, 45(1), pp. 72-89.
- (19) Deesomsak, R., Paudyal, K. and Pescetto, G. (2004), "The Determinants of Capital Structure: Evidence from Asia Pacific Region", *Journal of Multinational Financial Management*, Vol 14, p 387-405

- (20) De Jong, A., Kabir, R. and Nguyen, T.T. (2008), "Capital structure around the world: The roles of firm- and country – specific determinants", *Journal of Banking and Finance*, Vol. 32, pp. 1954-1969.
- (21) Delcours, N. (2007), "The Determinants of Capital Structure in Transitional Economies", *International Review of Economics and Finance*, 16(2), p. 400–415.
- (22) Donaldson. (1961), "Corporate Debt Capacity: Boston, A study of Corporate debt policy and the determination of corporate debt capacity", *Division of Research, Graduate School of Business Administration, Harvard University*.
- (23) Dragota, I. and Semenescu, A. (2008), "A Dynamic Analysis of Capital Structure Determinants Empirical Results for Romanian Capital Market", *Empirical Results for Romanian Capital Market*, Issue 4, pp. 65-80.
- (24) Eriotis, N (2007), "How Firm Characteristics Affects Capital Structure: An Empirical study, *Managerial Finance*, Vol 33 (5), p321-331.
- (25) Esperanca, J. P., Gama, A. and Gulamhussen, M. (2003), "Corporate Debt Policy of Small Firms: An Empirical (Re) Examination", *Journal of Small Business and Enterprise Development*, Vol. 10, pp. 62-80.
- (26) Friend, I. and Lang, L. (1988), "An Empirical Test of the Impact of Managerial Self-Interest on Corporate Capital Structure", *Journal of Finance*, June, pp. 271-281.
- (27) Focardi, S. and Fabozzi, F. (2004), "The Mathematics of Financial Modelling and Investment Management. Hoboken: John Wiley and Sons.
- (28) Givoly, D., Hayn, C., Ofer, A. and Sarig, S. (1992), "Taxes and capital structure: Evidence from firms' response to The Tax Reform Act of 1986, 5", *Review of Financial Studies*, Vol. 5, pp. 331-355.
- (29) Gujarati, D.N. (2007), "Basic Econometrics. India: Tata McGraw-Hill Edition.
- (30) Hall, G., Hutchinson, P. and Michaelas, N. (2004), "Determinants of the capital structures of European SMEs", *Journal of Business Finance and Accounting*, Vol. 31, p. 711–728.
- (31) Hossain, I. And Hossain, A. (2015), "Determinants of Capital Structure and Testing of Theories: A study on the Listed Manufacturing Companies in Bangladesh", *International Journal of Economics and Finance*, Vol 7, No 4, p 176-190.
- (32) Hovakimian, A., Hovakimian, G. and Tchrani, H (2004), "Determinants of Target Capital structure: The case of Dual Debt and Equity Issues. *Journal of Financial Economics*, Vol 71, p 517-540.
- (33) Huang, G. and Song, F. (2006), "The Determinants of Capital Structure: Evidence from China", *China Economic Review*, Vol. 17, p. 14– 36
- (34) Igbino, O and Chijuka, M (2014), "Determinants of Capital Structure of Listed Firms in Nigeria", *European Journal of Accounting, Auditing and Finance Research*, Vol 2, No 10, p.96-111.
- (35) Jøeveer, K., (2006). *Sources of Capital Structure: Evidence from Transition Countries*, Prague: The Center for Economic Research and Graduate Education-Economic Institute.
- (36) Karadeniz, E., Kaandir, S.Y., Balcilar, M and Onal, Y.B. (2009), "Determinants of Capital Structure": Evidence from Turkish lodging companies. *International Journal of Contemporary Hospitality Management*, Vol 21 (5), p594-609.
- (37) Kant, E. (2014), "The Determinants of Capital Structure: An Empirical Study on Dutch firms"; 4th IBA Bachelor Thesis Conference, University of Twente, Netherlands.
- (38) Kim, C., D.C. Mauer, and A.E. Sherman. The Determinants of corporate liquidity: Theory and Evidence. *Journal of Financial and Quantitative Analysis*. Vol 33, p335-59
- (39) Khalaf Taani. (2013), "Capital Structure effects on Banking Performance: A case study of Jordan", *International Journal of Economics, Finance and Management Science*, Vol 1(5), pp227-333.doi:10.11648/j.ijefm.20130105.13
- (40) Khan, .M, Shah, M.S, Haq, .F, Shah, S.Z (2014), "Determinants of Capital Structure in Non-Financial Companies of Pakistan": *Journal of Poverty, Investment and Development*, Vol 6, p20-28.
- (41) Klapper, L.F., Sarria-Allende, V. and Sulla, V. (2002), *Small- and Medium-Size Enterprise Financing in Eastern Europe*, s.l.: World Bank.
- (42) Klapper, L. and Tzioumis, K. (2008), *Taxation and capital structure: evidence from a Transition economy*, The Hellenic Observatory, London.
- (43) Kraus, A. and Litzberger, R. (1973), A State Preference Model of Optimal Financial Leverage, *the Journal of Finance*, Vol.28, pp 911-921.
- (44) Lewis-Beck, M.S. (1993), "Applied Regression: An Introduction to Regression Analysis. Singapore: Sara Miller McCune, Sage Publications Inc.
- (45) Lipson, M. L. and Mortal, S. (2009), "Liquidity and capital structure", *Journal of Financial Markets*, 12(4), pp. 611-644.
- (46) MacKie-Mason, Jeffrey K. (1990). Do Taxes Affect Corporate Financing Decisions? *Journal of Finance*. Vol 45, p1471-1493.
- (47) Malanic, D., Dencic-Mihajlov, K., LLjubenovic, E., (2013) "The Determinants of Capital Structure in Emerging Capital Markets: Evidence from Serbia", *European Research Studies*. Vol XVI (2), p98-119.
- (48) Marsh, P. (1982), "The choice between equity and debt: An empirical study", *Journal of Finance*, Vol. 37, p. 121– 144.
- (49) Michaelas, N., F. Chittenden and P.Poutziouris (1999). Financial Policy and Capital Structure Choices in UK SMEs: Empirical evidence from company panel data. *Small Business Economics*. Vol 12, p113-130.
- (50) Modigliani, F. and Miller, M. (1958), "The cost of capital, corporation finance and the theory of investment", *American Economic Review*, Vol. 48, p. 261– 275.
- (51) Miller, M and Modigliani, F. (1961), "Dividend Policy, Growth and Valuation of Shares", *The Journal of Business*, Vol. 34(4), p. 411–433.
- (52) Modigliani, F. and Miller, M. (1963), "Corporate income taxes and the cost of capital", *American Economic Review*, Vol. 53, p. 433–443.
- (53) Mwangi, L, Makau, M, Kosimbei, G. (2014) "Relationship between Capital Structure and Performance of Non-Financial Companies Listed in Nairobi Securities Exchange, Kenya" *Global Journal of Contemporary Research in Accounting, Auditing and Business Ethics (GJCRA)*, Vol 1(2), p72-90.

- (54) Myers, S. C. (1984), "The Capital Structure Puzzle", *Journal of Finance*, 39(3), p. 575–592.
- (55) Myers, S. C. and Majluf, N. S. (1984), "Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have", *Journal of Financial Economics*, 13(2), p. 187–221.
- (56) Myers, S. C. (2003), "Financing of Corporations", *Handbook of Economics of Finance*, Vol 1, p. 215-253.
- (57) Nivorozhkin, E. (2002), "Capital Structures in Emerging Stock Markets: The Case of Hungary", *the Developing Economies*, 40(2), p. 166–187.
- (58) Oke, M and Obalade, A (2015), "Test the Validity of Optimal Capital Structure Theory in Nigeria Listed Oil Firms", *the International Journal of Economics, Commerce and Management*, Vol.III, p.1-15.
- (59) Ooi, J. (1999).The Determinant of Capital Structure: Evidence on UK Property Companies. *Journal of Property Investment and Finance*.Vol 17(5):464-80.
- (60) Petersen, M. and Rajan, R. (1994), "The benefits of lending relationships: Evidence from small business data", *Journal of Finance*, Vol. 49, p. 1367–1400.
- (61) Rajan, R. and Zingales, L. (1995), "What Do We Know about Optimal Capital Structure? Some Evidence from International Data", *Journal of Finance*, 50(5), p. 1421–1460.
- (62) Saad, N.M (2010),"Corporate Governance Compliance and the Effects to Capital Structure", *International Journal of Economics and Financial*, Vol 2(1), pp105-114.
- (63) Sarlija, N. and Harc, M. (2012), "The impact of liquidity on the capital structure: a case study of Croatian firms", *Business Systems Research*, 3(1), pp. 30-36.
- (64) Sibilkov, V. (2007), *Asset liquidity and capital structure*, [Online] available at: <https://pantherfile.uwm.edu/sibilkov/www/liquidity.pdf> [accessed 17 June 2015].
- (65) Sheikh, N.A., and Wang (2011), "Determinants of Capital Structure": An Empirical study of firms in manufacturing industry of Pakistan. *Managerial Finance*, Vol 21 (5), p594-609.
- (66) Song, H.S (2005), "Capital Structure Determinants": An Empirical study of Swedish Companies. No 25, Working Paper Series, CESIS-Centre of Excellence for Science, <http://www.diva-portal.org/smash/get/diva2:565199/FULLTEXT01.pdf>
- (67) Suhaila, M., Wan, M. and Wan, M. (2008), *Capital Structure and Firm Characteristics: Some Evidence from Malaysian Companies*, University Library of Munich, Germany.
- (68) Shyam-Sunder, L. and S.C., Myers (1999) "Testing Static Trade-Off against Pecking Order Models of Capital Structure", *Journal of Financial Economics*, Vol 51, p 219-244.
- (69) Tang, C.H and Jang, S. (2007),"Revisit to the Determinants of Capital Structure: A Comparison between Lodging firms and Software firms. *Hospitality Management*, Vol 26, pp 175-187.
- (70) Titman, S. and Wessels, R. (1988), "The determinants of capital structure choice", *Journal of Finance*, Vol. 43, p. 1 –19.
- (71) Vinasithamby,S.(2014),"Determinants of Capital Structure-A Study of Listed Banks Finance and Insurance Companies in Colombo Stock Exchange in Sri Lanka",*International Journal of Economics, Commerce and Management*,Vol 11,p1-18.
- (72) Wald, J. K. (1999), "How firm characteristics affect capital structure: An international Comparison", *Journal of Financial Research*, Vol. 22, p. 161–187.
- (73) Wang. (2011),"The Determinants of Capital Structure in Chinese Listed Companies", Masters of Science (Finance) Thesis, Graduate School of Business, University of Utara Malaysia, Malaysia.
- (74) Viviani, J.L (2008), "Capital Structure Determinants": An Empirical study of French companies in the wine industry. *International Journal of Wine Business Research*, Vol 20 (2), p171-194

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:

<http://www.iiste.org>

### CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

**Prospective authors of journals can find the submission instruction on the following page:** <http://www.iiste.org/journals/> All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

### MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

Academic conference: <http://www.iiste.org/conference/upcoming-conferences-call-for-paper/>

### IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

