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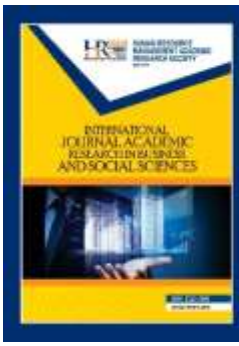
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The Dynamics of Capital Structure Determinants for Large Firms in Tanzania

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Abstract
This paper sought to examine some of the considered determinants of capital structure of large firms in Tanzania. The paper examines the dynamics of capital structure of sampled 85 unlisted firms in Tanzania by using a firm-level panel data. The regression results revealed that leverage has a positive correlation with tangibility, and tax, as well as negatively correlates to size, firm growth, and risk. The study also revealed that profitability has insignificant effect on composition of capital. For the case of dynamic panel data model, selected unlisted firms were found to adjust towards target capital structure relatively quickly. The magnitude of adjustment coefficient was high of about 67 percent. This implies that selected unlisted firms adjust relatively fast towards the target leverage ratio. The paper add to the frontier of knowledge of the existing body of literature by providing empirical evidence in a Tanzanian setting to the debate of capital gearing ratio. It also provides important policy guidelines for financial management for the firms in Tanzania. Based on these findings, it appears that firm specific-effects determine capital structures of large selected firms in Tanzania.
Keywords: Capital Structure, Pecking Order Theory, Trade-Off Theory, Agency Cost Theory, Panel Data Models.

Introduction

When firms face financial constraint that impact upon their assets and liabilities' positions, financial managers must be able to make informed financial and managerial decision so that *status quo* of the firms' net worth can be maintained. Restructuring the capital composition is one of the viable strategies, in particular, restructuring of long-term and short-term debts. However, in order for financial managers to restructure their short-term and long-term debts, they need to have necessary expertise and analytical knowledge to make rational decision. The firm's capital cost will be reduced and firm's market value will be maximized if ideal composition of firm's capital is attained. Consequently, it is very crucial that financial managers must understand capital structure theory (Chakraborty, 2010).

The firms need to finance their financial deficit or even establish new projects in order to progress and grow. Hence, it is crucial for firms to implement different theories of capital structure

in carefully choosing their capital structure for financing the current and future investments. Financial status of the firm can take into account the cost and benefit of each capital structure preferences by looking at the theories of capital structure, which is reflected by the market value of firm and the dynamics towards the optimal capital structure choice.

In order to restructure their composition of capital, financial managers also need to take into account different sources of funds they have for investment purposes. The firm's sources of funds might include highbrid securities, retained earnings, debt, and equity. The cheapest source of fund for the firms' investment include retained earnings from annual profit; because it does not have explicit cost arising from information asymmetry compared to funds obtained from outside sources such as debt and equity. The firm will have financial risk if it uses debt to finance investment. That will cost the capital structure of firm since the firm must consider its priority in composition of liabilities, decision of mixed debt to certain agents or principal, type of debt and it is maturity, as well as other types of debt contract to be considered (Maganya, 2014).

If a firm decides to use equity as its composition of liabilities or capital structure, either ordinary shares or preferred shares, then firm owners will be the shareholders. Comparing debt and equity, debt has a maturity date in which the firm has to meet, while equity does not have a maturity date. Therefore, it follows that, it is not necessary to make payment of dividends to shareholders since equities are liquidated if it happens that the firm declare bankrupt and failed to operate. Equity issuing may lower the power and authority of old firm owners. Issuance of equity by the firm has to be controlled so that it does not pass through the line of power between different investors in order to ensure control of the existing firm owner (Argawal and Knoeber, 1996). Dividend is the cost of issuing equity, which will be distributed to shareholders obtained from the firm after tax profit. Furthermore, debt issued by the company in the structure of capital can be treated as tax-deductible expenses, but equities are not tax-deductible which brings an interesting debate in capital structure theories.

A high portion of debt or equity may lead to low performance and poor growth of a firm. Therefore, it is clear that division of the firm's capital structure is a crucial decision of the management because it largely affects return of the owner's equity, the owner's risks, the shares market value, and performance of the firm. Thus, it is imperative to management of firms in Tanzania to plan and have an optimal capital structure. In this regard, a good understanding of factors that influence the dynamics of composition of capital of a firm is important. In developing countries like Tanzania, it is even more important to investigate the nature of capital structure and its determinant because financing decisions of firms have a number of policy implications. At national level, they have implications for primary and secondary financial markets' development and determination of prices of financial assets. At microeconomics level, decisions of a firm's capital composition affect its structure, potential source of finance, and ultimately, the course of its development (Maganya, 2014).

This paper attempts to contribute to efforts of identifying and reducing the gap between finance theory with practice by providing valuable insights on how firms not only choose but also how they adjust their chosen strategic mix of securities in Tanzanian context. This is achieved by observing and investigating the various aspects of capital structure practices and how they relate to the number of firm unique characteristics like size of the firm, tax paid, profitability, business risk, growth rate, and tangibility. Information obtained from this study will assist academicians to advance or modify existing finance theories in the future. Findings from the study will provide a learning base

to financial managers and policy makers on how selected large firms in Tanzania chose and adjust their composition of capital and what pitfalls need to be avoided for firms to be sustainable as well as grow over time. The study that revealed factors that determine choices for source of finance by the firms in a static and dynamic version is very relevant for effective formulation of financial policies for the increase in liquidity and profitability of firms and outreach of the financial markets for sustainable finance of private firms in the economy.

Literature Review

Theoretical Framework

In order to understand fully not only causes but also consequences of imperfections in the capital market, it is imperative first, to clearly understand the situation of a world in which there is no capital structure problems thereby will give the benchmark of the analysis. The key result is the "value irrelevance" proposition, is the fact that financing decision of the firm does not impact upon the value of the firm, in other words, the value of firm does not depend on capital structure. The key reasoning of this Modigliani and Miller (MM) argument relies mostly on the “no arbitrage opportunities assumption”, which refers to the process of purchasing a commodity in one market at the lowest possible price, and then reselling it to other financial market where homogeneous or identical commodity can be sold at a higher price in order to get profit (Modigliani and Miller, 1958). However, in the real worlds markets for financial assets are not perfect due to existence of taxes, information asymmetry among other factors; this results into different theories trying to explain the issue of capital structure.

According to Megginson (1997) arbitrage assures infinite profits for a firm, and thus, it is a very useful to make sure that price are the same in a market which is effective and efficient. Once financing and investment decisions are being undertaken by the firm the market for financial assets knows the real value of those decisions. No matter what changes can be made to the resulted cash flows in terms of divisions, this will impact upon the total value of the cash flows in present as well as in the future. Suppose a target capital structure exists, which optimizes the firms’ value, suppose further, it is obtained by taking the ratio between debt and total value of the firm. The firms’ value will be lowered by any changes in the structure of capital. If a certain firm chooses a capital structure, which is not optimal, it will create arbitrage opportunities in the capital market, which are riskless and hence structure of capital is relevant to the firms’ value.

Static Trade-off Theory

The static trade-off theory, postulates that a target capital structure, which optimizes the firms’ value looks on the costs and benefits of debt issuing by the firm. When the marginal value of the returns accompanied with debt issues exactly off-sets the discounted value increase of the costs associated with acquiring more debt such as bankruptcy, the maximum point can be reached (Myers, 2001). The marginal benefit of tax being deductible of additional debt tends to fall as debt increases, while the marginal cost of issuing more debts such as bankruptcy costs tends to increase. So if the firm wants to optimize its total value it will have to pay attention on this trade-off when deciding the level of debt and equity to apply in financing current as well as future investments. From empirical point of view, static trade-off theory may provide explanation in differences in leverage observed between industries in the economy, but it does not provide explanation of the differences of the

leverage when you look inside the industry. With trade-off theory, the substitution between debt for equity, or equity for debt, occurs until the firms' value is optimized.

Dynamic Trade-Off Theory

It is very important first to specify number of aspects that are not being taken into account in a single-period model in order to be able to construct models that will consider the role of time in financing decision. Expectations and adjustment costs of the level of debts play vital roles. In a dynamic model, the correct investment and decision of financing generally depend on the financing margin of the firm between actual and what the firm is expected in the following period. Some expect to raise funds; meanwhile other firms expect to pay out funds during the next period (Titman and Tsyplakov, 2007). If there is a need to raise funds, uses of form of debt, equity or hybrid securities may be considered. For most of the time, a firm combines these two sources.

Illustrative example of the significance of dynamics in firms' financing decisions is presented. Consider a certain firm with surplus funds at presents than what is needed for investment purposes. Assume that firm predicts it will need the funds during the next two years. The surplus funds today could be paid out to shareholders in form of dividends, suppose there are no taxes. When funds are needed in the future, firm could issue new equities. However, in the real world, taxes imposed by the government create a wedge in financing round trips. Distribution of profit in terms of dividends results into shareholders paying taxes. With taxes, that means of back and forth financing can cost the firm. Hence, a tax liability on shareholders is being imposed by offering dividends and then issuing new equity that can be avoided if firms decided to hold onto funds. This means taxes can directly encourage firms to hold onto the funds.

The given example is not complete dynamic trade-off theory. It is just highlighting the fact that dynamic trade-off models differs from static trade-off models in many ways. During a period when agency cost and adverse selection focus were at the center stage in the capital structure literatures, early attempts from scholars to model the dynamic trade-off seemed to be very hard, from technical point of view. Later on, scholars started working on observed technical difficulties that are found in dynamic models with risk, uncertainty and financial distress cots. The trade-off theory provides a much broader explanation how firms finance their activities than had been thought due to features contained in the dynamic models.

Agency Theory and Capital Structure

The observed contract agreements in corporate finance are very complex. Agency Theory explains these observed contractual arrangements by explaining that leverage is influenced by agency costs. Agency costs are due to conflict of interests among stakeholders in the organization, such as managers, investors, employees, shareholders and the government. If these problems are not being dealt with they would lead to under utilization of resources, which are not optimal within the corporate firm. The fact that organization decisions are put into the hands of agents (managers) who perform on behalf of other stakeholders is the original of the term "agency". Agency theory considers the corporate firm as an important connection among parties for different contracts (Ross, 1973). Contractual arrangements to resolve agency problems lead to evolution of corporate finance field.

The Pecking Order Theory of Capital Structure

Myers and Majluf (1984) analyzed how financing and investment decisions are interacted in a situation with uneven distribution of information, in which case they look beyond the signalling models analysis, in which the financing and investment policy of a firm as constant overtime. In financial economics, pecking order theory predicts that the cost of borrowing money to increases with asymmetric information, that is, uneven distribution of information. Normally, funds of firms come from three sources external debt, internal debt and issue of new equity. This implies that, if firms want to get more funds they will first use funds available internally such as retained earnings, there after external debts, and if necessary they will embark on issuing equity as last resort as pecking order of funds.

Empirical Evidence

Strebulaev (2007) showed that empirical test of dynamic trade-off theory of capital structure observed in literature can mislead people. We need first to identify structure of capital adjustments before examining cross-sectional changes in debt-equity ratio at any given point in time, instead of regressing debt-equity ratio on profitability of the firm and other explanatory variables using end of year firms' data. Profitability regression coefficient in standard debt-equity ratio was found to changes from negative to positive, and that was obtained by using simulated data.

Zhao and Susmei (2008) used a Kalman filter so as to test a multi-period model of firms' capital structure. The use of Kalman filter allowed them to estimate directly the unobservable optimal leverage. The trade-off model was found not to be rejected for 32 percent to 52 percent of the firms in the selected sample. They also used a regression analysis in order to test if their Kalman filter obtained optimal leverage was related to the standard variables normally proposed in the literature of corporate structure such as profitability, growth, size, and tangibility. In general, findings support their estimates.

Dang and colleagues (2012) employed a new empirical technique based on partial adjustment dynamic threshold models to study the asymmetry in firms' adjustment towards their optimal debt-equity ratios. They examined several factors proxying for differential adjustment cost that may lead to the differences in the speed of adjustment towards their optimal capital structure. They found that firms having high dividend payouts, high growth opportunities, large investment, high profitability, or a large deviation from their optimal debt-equity ratio had slower speeds of adjustment than those with opposite features.

Chernenko and colleagues (2012) showed that if equity is overvalued in the market, mispricing off-sets agency costs and can induce controlling equityholders to list equity. Higher valuations of financial securities support listings in relation with greater agency costs. They tested the predictions that follow from this idea on a sample of publicly listed corporate firms. Minority equityholders fared poorly after listing, when there was greater scope for distribution by the parent firm. Parent firms often redeemed subsidiaries at large discounts to valuations at the time of listing and experienced positive supernormal returns when repurchases were announced.

Gul and colleagues (2012) using a sample of 50 corporations, investigated the corporate governance and the role of ownership structure in accelerating agency cost. They used the proxy asset utilization ratio to measure agency cost of debt. The obtained results showed that the higher the level of institutional ownership, it tends to reduce the agency cost level of debt. Boards with

smaller size also caused fall in agency cost of debt. Furthermore, Independence of board of directors was found to directly related to asset utilization ratio.

Fathi and colleagues (2014) studied what determines capital structure for firms listed in Tehran stock exchange and selected developing countries stock exchanges. Panel data approach was used for analysis. Findings of the study suggested that excluding GDP growth, development of stock market and distance from bankruptcy, the remaining variables found to have a statistically significant relationship with leverage; in Tehran stock of exchange tangible assets and distance from bankruptcy was found to have a statistically significant relationship with leverage.

Handoo and Sharma (2014) investigated a sample of 870Indian listed firms on what determines capital structure, including both public and private sector corporations for the period of 2001 to 2010. Analysis of the study uses panel data regression model for the sampled data. Results of the study suggested that growth, profitability, asset tangibility, cost of debt, size, debt serving capacity and tax rate have statistically significant impact on the leverage of chosen corporations.

Avaravci (2015) using panel data model, investigated what determines capital structure in Turkey context. 79 manufacturing firms listed in Istanbul stock exchange were selected during the period of 1993 to 2010. Statically significant relationships between size of the firm, growth opportunities, tangibility, profitability and leverage variables were found by the study. However, the variable non-debt tax shields were found to be not statistically significant in relation to capital structure of firms. Supporting the trade-off theory Growth opportunity found to have effect on capital structure. In addition to that, profitability, size of the firm and tangibility found to have statistical significant impacts as suggested by the pecking order theory.

M'ng and others (2017) investigated capital structure determinants of public listed corporations on Malaysia, Singapore and Thailand Stock Exchanges covering the period of 2004-2013. The findings of the study suggested that capital structure theories such as pecking order and trade-off theories are consistent with obtained findings from previous empirical studies. Profitability found to have a negative statistical significant relationship with capital structure for Malaysia and Singapore but for Thailand was found not to be significant. On the other hand, size of the firm has a positive statistical significant relationship with capital structure for all countries. Findings of the study also suggest that assets tangibility has a positive statistical significant relationship with capital structure for Malaysia and Singapore while for Thailand was found to be insignificant.

Pennings and Tamirat (2018) uses a dynamic model of partial adjustment to investigate capital structure determinants and speed of adjustment, and find capital structure theories in which the leverage ratio of farming activities would support. The selected sample consists of 1500 farms in Netherland for the period of 2001 to 2015. Findings of the study suggest that external funds were less preferred compared to internal funds by farms. Profitability was found to have negative significant effect on leverage, in support of the pecking order theory, which in most cases has been rejected for firms of large size. The founded speed of adjustment towards the target capital structures varies from 8.6 percent to 63 percent and larges depends on farm age and farm size.

Cevheroglu-Acar (2018) uses panel data model regression in econometric analysis for the year of 2009 to 2016 looking at non-financial firms in Turkey. The findings of the study in this context suggest that non-debt tax shield, tangibility, liquidity, size and profitability have statistical significant effect on capital structure, firm size being the most robust one. Furthermore, volatility and growth were found to be statistically insignificantly.

Methodology

Static Panel Data Model

In this paper the proposition of Modigliani and Miller (1958), which established that leverage ratio of firms is a stochastic variable, is tested by static panel data. Particularly, the leverage ratio is regressed in a number of regressors; size, growth, profitability, tangibility, risks, and paid taxes. The static panel data is tested under the random effects and fixed effects models. The fixed effect model considers that the firms heterogeneity does not change overtime, and the random effect model considers firms heterogeneity effects to vary overtime and that it produces an impact on the regressions residuals.

The basic discussion for estimation techniques of a regression model of static panel data of the following form:

$$Y_{it} = \beta_1 + \sum_{j=2}^{k} \beta_j X_{jit} + \sum_{p=1}^{s} \gamma_p Z_{pi} + \delta t + \varepsilon_{it} \quad (1)$$

Where Y is the dependent variable, the X_j are observed explanatory variables, and the Z_p are unobserved explanatory variables, such as firm specific characteristics. The index i refers to the unit of observation, t refers to the time period, j and p are used to differentiate between different observed and unobserved explanatory variables. A trend term t has been introduced to allow for a shift of the intercept over time. ε_{it} is a disturbance term assumed to satisfy the following conditions:

$$E(\varepsilon_i) = 0$$

$$Var(\varepsilon_i) = \sigma^2 \qquad Cov(\varepsilon_i \varepsilon_j) = 0 \quad \text{for } i \neq j$$

These relationships state that the disturbance terms are assumed to have a normal distribution with mean 0 and constant variance σ^2, and that error terms must be independent. Most of the panel data applications utilize a one-way error component model for the disturbances with $\varepsilon_{it} = \mu_i + V_{it}$ Where μ_i denote the unobservable individual specific effect and V_{it} denote the remainder disturbance. Note that μ_i is not time variant and take into accounts for any individual specific effect that is not included in the regression. The remainder disturbance V_{it}, varies with individual and time and can be thought of as the usual disturbance in the regression models.

Dynamic Panel Data Model

The dynamism of debts should be considered by models that test the firms' leverage, since decisions about the level of debt are dynamic in nature. If there is an optimal level of leverage as proposed by the trade-off theory, then firms should aim at achieving this goal (Gaul *et al*., 2005).

Provided the two theories of capital structure (trade-off and pecking order) have quite different projections concerning adjustment speed experienced by companies in a given year. However, this does not imply that adjustment speed can, without any contradiction, identify which of the theories can be applied to the financial market. This is due to the fact that country's' legal and institutional framework may also impact upon the way in which and the speed with which companies (if any) move back to the target capital structure following internal or external shocks. This implies that, process of adjustment is costly for companies and considering that cots gives us a partial-adjustment process of the following form:

$$Y_{it} - Y_{it-1} = \alpha(Y^*_{it} - Y_{it-1}) \quad (2)$$

With $0 < \alpha < 1$

Where Y^*_{it} is the target leverage ratio, estimated from the equation (1).

The coefficient α is between 0 and 1, and is related inversely to the cost of adjustment. When $\alpha = 0$, then $Y_{it} = Y_{it-1}$, which means that there is no adjustment process towards the target leverage ratio, because the costs of adjustment are too high. When $\alpha = 1$, then $Y_{it} = Y^*_{it}$, so the adjustment happens without any further frictions. In this analytical framework, companies are assumed to act rationally and, thus, we rule out the situation where $\alpha > 1$ irrational firms' over adjustment or simply due to adverse selection.

Substituting equation (2) into the following equation

$$Y^*_{it} = \beta_1 + \sum_{j=2}^{k} \beta_j X_{jit} + \phi_i + \delta_t + \varepsilon_{it} \quad (3)$$

Yields

$$Y_{it} = \alpha\beta_1 + (1-\alpha)Y_{it-1} + \sum_{j=2}^{k} \alpha\beta_j X_{jit} + \alpha\phi_i + \alpha\delta_t + \alpha\varepsilon_{it} \quad (4)$$

When instrumental variables are being used in the model they have an added advantage of solving problems faced in static model of capital structure, mainly, the simultaneity bias between regressors and measure of leverage, and the issue of measurement errors. Arellano and Bond (1991) suggest estimating parameters of the regression in first differences so as to remove fixed effects of firms, hence avoiding any correlation problem between explanatory variables and unobserved firm-specific effects, for panel data with a large number of observations and a small number of years. In addition to that, lagged variables are being used in levels starting from the second lag as instruments as shown in the following equation:

$$\Delta Y_{it} = (1-\alpha)\Delta Y_{it-1} + \sum_{j=2}^{k} \alpha\beta_j \Delta X_{jit} + \alpha\delta + \alpha\Delta\varepsilon_{it} \quad (5)$$

Empirical Analysis

Panel Unit Root Tests

In this paper different types of panel unit root tests were performed:, , Fisher-type tests using ADF, Levin, Lin and Chu (2002), Im, Pesaran and Shin (2003), and PP tests (Maddala and Wu, 1999; and Choi, 2001). Table 1 in the appendices presents the results of the unit root tests for selected large firms. From the LLC test it shows that there is no unit root in the series LEV, TANG, PROFIT, and GROWTH, the rest of the series were found to have a unit root, hence null hypothesis that there is unit root is being accepted. Variables with a unit root were found to be stationery after first difference. From the IPS unit root test variables SIZE and RISK were found to have a unit root, null hypothesis that there is a unit root is being rejected at level for all remaining variables. The Fisher-ADF χ^2 and the Fisher-PP χ^2 tests show that there is no unit root in the variables LEV, TANG, GROWTH, and TAX, null hypothesis is being rejected and alternative one that there is no unit root is accepted based on this two tests .

After taking first difference of all series were subject to the unit root tests again. From the LLC and IPS tests, it shows that there is no unit root in all the variables, hence null hypothesis that, there

is unit root is being rejected. Considering two fisher type test (that is, the Fisher-ADF and the Fisher-PP), tests show that there is also evidence that all the variables are stationary, null hypothesis is being rejected and alternative one is accepted based on this two tests (see Table 2).

Panel Cointegration Tests

Cointegration result based on Kao test for selected large firms in which the null hypothesis of no Cointegration is being rejected for the two models at 1% level of statistical significance (see Table 3). This implies that based on cointegration test proposed by Kao we can conclude that the two models are cointegrated and that there is a long-run relationship between variables.

The results of seven different Pedroni cointegration tests for selected large firms in Tanzania are presented in Table 4. The null hypothesis of no cointegration is rejected in five of the seven cases for all the two models at 1% level of significance. The seven tests proposed cointegration tests by Pedroni they have different assumptions about the trends and constants of the cointegrated equations. Hence, following Pedroni cointegration tests, it can be concluded that for selected large firms all the two models are cointegrated.

Estimating Static Panel Data Models

Estimation results for static panel data models for selected large firms are reported in Tables 5. Since observations in the data set can be describe as being a random sample from a given population, both random and fixed effects regressions are being estimated and later on Hausman Test for Correlated Random Effects will be used to choose between the two.

Based on fixed effects regressions variable SIZE, TANG, and RISK are significant at a 1% level. Variable TAX and GROWTH are significant at a 5% and 10% level respectively. RISK and LEV are negatively related, and the regression coefficient is -0.1237. It means if business risk increases by 1%, LEV will decrease for about 12%. The negative relationship between risk business/earning volatility had been hypothesized by both trade-off and pecking order theories. SIZE and LEV found to have are negative relationship, which means total assets are negatively correlated with LEV. TAX had positive correlation with leverage, which means TAX and LEV are positively related as hypothesized by trade-off theory. TANG and LEV are positively related with the regression coefficient of 0.3135.

Based on random effects regressions results variable SIZE, TANG, and RISK again are significant at a 1% level. Variable TAX and GROWTH are significant at a 5% level of statistical significance. RISK and LEV again were found to be negatively related, and the regression coefficient is -0.1657. It means if business risk increases by 1%, LEV will decrease for about 17%. SIZE and LEV had a negative relationship, which means total assets are negatively correlated with LEV. TAX and LEV are positively related as hypothesized by trade-off theory just like in the fixed effects results. TANG and LEV were found to have positive relationship with the regression coefficient of 0.3003.

Hausman Test for Correlated Random Effects

There is clear distinction between random and fixed effects models. The question of interest now is which model should be used for statistical inference and policy implications. The specification test devised by Hausman (l978) is used in this paper to test for orthogonality of the independent variable and random effects. The test is being conducted under the hypothesis of no correlation, both ordinary least square (OLS) in the least square dummy variable (LSDV) model and generalized least square (GLS) are consistent, but ordinary least square is inefficient. Considering the alternative

hypothesis, ordinary least square is consistent, but generalized least square is not. It follows therefore, under the null hypothesis, the two presented estimates should not differ systematically, and a test can simply rely on the difference.

The Hausman specification test is for the fixed effects model against random effects model and results are being reported in Table 6. The test statistic in this study is 95.06 and the coefficient is not statistically significant at any level. Therefore the null hypothesis of no correlation between the individual effects and other independent variables for both models is not being rejected. Implication of the findings is that use for random effects is being preferred rather than fixed effects. Hence it can be concluded that the random effects model is the better choice in this study and is used in making policy implication and recommendations. The results of fixed effects regression is also being provided just for comparison purposes.

Estimating Dynamic Panel Data Model

Assuming that firm-specific effects are unobservable and covariance between the firm specific-effect and independent variables are nonzero OLS estimation is biased (Hsiao, 1985). In this case an instrumental variable estimation method result is consistent estimates if the error terms are serially not correlated. Given the assumption that random terms in the regression analysis are serially not correlated, the generalized method of moment, as proposed by Arellano and Bond (1991) with one and two steps, is the method which is most efficient within the class of instrumental variable estimators (Honore and Hu, 2004). The generalized method of moment method of estimation is used for the regression analysis for dynamics of leverage determinants of large firms in Tanzania. Therefore the conclusions of this paper are based on the results of the models in one-step, for comparative purposes only results in two-step models are also being presented.

Table 7 presents estimations of the one-step GMM for selected large firms in Tanzania. The Sargan test with 35 degrees of freedom suggest rejection of the null hypothesis of instruments validity at 5% level, this indicates that its fine to treat individual characteristics as predetermined. The lagged leverage ratio is 0.33 and significant at 1% level. Following the study by Ozkan (2001), it is known that $(1-LEV_{it-1})$ is the coefficient of adjustment towards optimal capital structure. Hence the adjustment speed is 67%. The magnitude of coefficient adjustment is high which implies that the selected large firms in Tanzanian adjust relatively fast towards the optimal capital structure. If the adjustment costs are lower than costs of being in disequilibrium, then the estimated coefficient should be close to zero. Therefore, implication for the high speed of adjustment of selected firms could then be that the cost of being off optimal capital structure is relatively high as compared to the adjustment cost the leverage ratio (Chakraborty, 2010).

The results of lagged regressors showed about half of them not to be statistically significant. Lagged-TANG and LEV were found to be statistically significantly and positively related. This result suggests that the previous year's tangible assets only affect firm's leverage, but do not affect long-term leverage. The relationship between tangible assets and short term debt might be weakening because they can guarantee for each other to obtain loans from financial institutions. The results of lagged-PROFIT and LEV were surprisingly found not to be statistically significant. They all have negative signs with all regressands. The result suggested that the previous year's profitability does not have statistically significant impact to the current year's leverage.

SIZE and LEV were found to be statistically significant and positively related. This implied that previous year's total assets have a negative relationship with leverage. Lagged-RISK and LEV were

found to be statistically significantly and negatively related. For taxation, lagged-TAX is again surprisingly found to be not significant and positively related. The findings suggest that the previous year's tax does not have significant impact to the current year's leverage. Table 8 presents the estimation results of two-step GMM method for the dynamics of capital structure determinants of selected firms in Tanzania. This is exclusively for comparison purposes, interpretation of estimated regression coefficients is based on one-step GMM estimates only.

Concluding Remarks

Target capital structure existence debate still continues in the literature after more than 60 years. Different theories have been developed to illustrate that the relevance of capital structure on value of the firm, since a paper published by Modigliani and Miller's (1958). Trade-off theory and the pecking order theory are two dominant theories that have emerged from this debate on optimal capital structures. In addition, researchers and academicians started to direct their intention on firm specific factors that may determine the firms' financing decisions choices. These factors comprise of both country-specific and firm specific factors. Six variables (profitability, tangibility, tax, business risk, growth and firm size) were identified for this particular study, based on prior empirical studies. Financing behavior of firms is a key aspect in the corporate finance; in this regard it is very important to be observed in order to establish sustainable large growing firms in Tanzania. Questions of choosing and adjusting strategic mix of securities in financing firms should be answered in any firm.

The findings on static and dynamic capital structure determinants obtained in this study should equip the domestic and foreign investors, firm's financial managers, academicians, researchers and other stakeholders concerning financing behavior of the Tanzanian selected large firms. The findings of this study are should held firms to fill the existed theoretical and contextual gap and lead them to improve their financing decisions making in various areas they operate. In general the obtained empirical findings suggest the idea that modern finance theory insights are portable to Tanzania as well in the sense that chosen certain firm specific characteristics and macroeconomic factors that found to be determining capital structure in the emerged markets are also relevant in Tanzania. This is true despite the fact that there is huge difference in institutional and legal frame work between Tanzania and the developed countries.

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Appendices

Table 1: Results of Panel Unit Root Tests (the Variables at Level)

	TESTS			
	LLC t*	IPS W-Stat	Fisher-ADF χ^2	Fisher-PP χ^2
LEV	-170.75	-27.13	351.47	435.19
	(0.00)	(0.00)	(0.00)	(0.00)
SIZE	-1.09	-0.55	3.75	3.78
	(0.14)	(0.29)	(0.71)	(0.70)
TANG	-1.92	-0.78	5.14	4.71
	(0.00)	(0.00)	(0.00)	(0.00)
PROFIT	-2.19	-1.71	7.91	8.24
	(0.01)	(0.04)	(0.25)	(0.22)
GROWTH	-2.76	-2.44	10.32	11.34
	(0.00)	(0.00)	(0.00)	(0.00)
RISK	-0.97	-0.62	4.39	8.80
	(0.17)	(0.27)	(0.63)	(0.19)
TAX	-2.72	-2.03	9.94	9.45
	(0.00)	(0.00)	(0.00)	(0.00)

Table 2: Results of Panel Unit Root Tests (for the 1st Difference of the Variables)

	TESTS			
	LLC t*	IPS W-Stat	Fisher-ADF χ^2	Fisher-PP χ^2
Δ LEV	-155.05	-25.74	503.00	664.68
	(0.00)	(0.00)	(0.00)	(0.00)
Δ SIZE	-33.98	-12.02	485.08	593.74
	(0.00)	(0.00)	(0.00)	(0.00)
Δ TANG	-44.73	-16.27	516.79	662.66
	(0.00)	(0.00)	(0.00)	(0.00)
Δ PROFIT	-57.63	-17.14	512.08	617.73
	(0.00)	(0.00)	(0.00)	(0.00)
Δ GROWTH	-39.27	-22.15	707.51	1014.22
	(0.00)	(0.00)	(0.00)	(0.00)
Δ RISK	-91.78	-39.24	860.19	1079.86
	(0.00)	(0.00)	(0.00)	(0.00)
Δ TAX	-20.57	-9.17	409.33	513.61
	(0.00)	(0.00)	(0.00)	(0.00)

Table 3: Results of Kao Residual Cointegration Test

Test	Results
ADF test	-4.31
	(0.00)
Remarks	Cointegration

Note: in the brackets are P values

Table 4: Results of Pedroni Residual Cointegration Test

Tests	Results
I. Panel v-statistic	
Without C and T	-8.75
	(0.93)
With C and T	-8.99
	(0.65)
II. Panel ρ -statistic	
Without C and T	10.87
	(0.96)
With C and T	15.86
	(0.61)
III. Panel PP-statistic	
Without C and T	0.90
	(0.00)
With C and T	-18.82
	(0.00)
IV. Panel ADF-statistic	
Without C and T	2.11
	(0.01)
With C and T	-7.46
	(0.00)
V. Group ρ -statistic	
Without C and T	14.69
	(0.00)
With C and T	17.53
	(0.00)
VI. Group PP-statistic	
Without C and T	-22.55
	(0.00)
With C and T	-71.14
	(0.00)
VII. Group ADF- statistic	
Without C and T	-0.71
	(0.02)
With C and T	-6.68
	(0.00)

Table 5: Static Model Regression Results

Dependent variable: LEVERAGE		
Independent variables	Fixed effects	Random effects
SIZE	-0.0883	-0.0577
	(0.0000)*	(0.0000)*
TANG	0.3135	0.3003
	(0.0000)*	(0.0000)*
PROFIT	0.0615	0.0965
	(0.3420)	(0.1050)
GROWTH	-0.0001	-0.0002
	(0.0800)***	(0.0470)**
RISK	-0.1238	-0.1657
	(0.0000)*	(0.0000)*
TAX	0.0602	0.0611
	(0.0183)**	(0.0176)**
R^2	0.2232	0.2145
Adjusted R^2	0.2014	0.1918
F-statistic(9,756)	24.13	191.64
Prob(F-statistic)	(0.0000)	(0.0000)

Given are P values in parentheses for coefficients, for random effects Wald χ^2 is given for overall significance of the model.
* Significant at 1% level.
** Significant at 5% level.
*** Significant at 10% level.

Table 6: Results of Hausman Specification Test

	Model
χ^2 (K-1)(9)	95.06
Prob > χ^2	0.46

K = number of explanatory variables in the model

Table 7: Results of One-Step GMM Estimation of the Model

Independent variables	Model
CONSTANT	0.03
	(0.00)*
LEV_{it-1}	0.33
	(0.00)*
$\Delta SIZE$	-0.21
	(0.00)*
$\Delta TANG$	0.15
	(0.00)*
$\Delta PROFIT$	-0.08
	(0.22)
$\Delta GROWTH$	-0.001
	(0.00)*
$\Delta RISK$	-0.14
	(0.00)*
ΔTAX	0.024
	(0.73)
Correlation 1	-3.91
Correlation 2	-1.66
Sargan test $\chi^2(35)$	48.01
	(0.04)**

Table 8: Results of two-Step GMM Estimation of the Model

Independent variables	Model
CONSTANT	0.02
	(0.00)*
LEV_{it-1}	0.29
	(0.00)*
$\Delta SIZE$	-0.19
	(0.00)*
$\Delta TANG$	0.05
	(0.23)
$\Delta PROFIT$	-0.02
	(0.79)
$\Delta GROWTH$	-0.005
	(0.00)*
$\Delta RISK$	-0.12
	(0.00)*
ΔTAX	-0.005
	(0.82)
Correlation 1	-2.75
	(0.11)
Correlation 2	-1.02
	(0.31)
Sargan test $\chi^2(35)$	35.58
	(0.085)**