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Dynamic Adjustment Towards Target Capital Structure: Panel Evidence of Listed Firms in Kenya

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Abstract

Trade-off theory of capital structure uses static and dynamic approach. The use of static approach has been prevalent. Despite the importance of dynamic capital structure the debate in Kenya is so far inconclusive. Therefore, to fill this gap, there was need to assess the speed & of adjustment from target capital structure of listed non-financial firms in Kenya. Causal research design was used. The population for this study was 65 listed firms with only 35 non- financial firms sampled due to exclusion of financial sector which has highly regulated capital structure. Dynamic Partial Adjustment model (DPA) was used to estimate target leverage in each industry and the study found out that, there exist a target leverage level which is different from observed leverage for each sector. Further, the study showed that, listed firms adjusted to target level with a speed of 51% meaning that, the adjustment costs are relatively low.

1. Introduction

Capital structure is possibly at the core of modern corporate finance. The debate on capital structure was triggered by the seminal contribution by Modigliani and Miller (1958,1963) which has seen a tremendous development in literature on the same (Hovakimian, Hovakimian, & Tehranian, 2004). However the debate on capital structure remains a puzzle more than half a century after Modigliani and Miller contribution (Berens & Cuny, 1995). The debate has been informed by four key approaches; the trade-off theory, pecking order theory, free cash flow theory and market timing theory (Deangelo & Roll, 2015) but the two main theories are trade-off and pecking order theories (Haas & Peeters, 2006).

Myers (1977), modelled the trade-off theory into static and dynamic framework. The static framework emphasizes that firm's trade-off between cost and benefits of debt, and this trade-off can explain the cross-section variation in leverage ratio across firms. The framework implicitly assumes the existence of target leverage but believe that all firms are already at their targets. However, the static framework is faced with two limitations. The first shortcoming is the use of observed debt as the optimal debt, which may not necessarily be the case and secondly is the use of non-dynamic approach of empirical analysis, while the firms' leverage ratios move overtime and may adjust towards target (Graham and Harvey, 2001; Drobetz and Wanzenried, 2007).

Unlike the static framework, the dynamic framework approach suggests that firms have their target debt but due to market imperfections and cost associated with adjustment, they may not operate at target, and therefore observed debt level may not be the optimal debt (Mukherjee & Mahakud, 2010). Realizing the fact that capital structure decisions are not static, recent researches of capital structure are taking in account the dynamic perspective of the capital structure and have used dynamic adjustment models (Oztekin, 2013).

The prevailing empirical studies on capital structure has shown that literature has remained pegged to static trade-off framework which assumes that observed and target leverage level are similar (Deesomsak, Paudyal & Pescetto ,2004 ; Huang & Song ,2006). This approach can only apply in developed markets with no market imperfections. However, developing securities markets like Kenya are characterized by market

imperfection and economic shocks. Therefore, a more realistic approach need to be applied to determine whether in Kenyan securities market, there exists a target leverage level, and if so, the speed & cost at which firms adjust to the target level.

2. Literature Review

The first issue of dynamic capital structure was documented by Jalilvand and Harris (1984) and proposed that there exists a firm's target debt ratio characterized by partial adjustment to long- run financial targets (Fama and French, 2002; Guney, Ling & Fairchild, 2011). To prove Jalilvand and Harris work, Pindado (2001) by endogenzing target capital structure model and concluded that firms adjust their capital structure towards an optimum level. In similar context, 81 percent of the firms sampled by Graham and Harvey (2001) reported that they either had a target range of debt ratio or a "strict" target debt ratio. This observation was consistent with the suggestions of Myers (1984) that with the presence of adjustment cost, firms may take a longer time to adjust towards their target capital structure. This results were later confirmed by Leary and Roberts (2005) who concluded that firms do rebalance their capital structure infrequently in the presence of adjustment costs.

Using a partial adjustment model, Flannery and Rangan (2006) investigated debt targeting behavior of firms and concluded that indeed firms identify a target debt level and adjust towards it. However, firms within the same industry have tax status, debt ratios and risk behaviors therefore they may have different adjustment costs and adjustment behavior towards target capital structure (MacKay and Phillips, 2005; Ovtchinnikov, 2010).

Similar to Flannery and Rangan (2006), Sulagna (2010) studied dynamic of capital structure in the context of Indian manufacturing firms using a partial adjustment framework during the periodn1993-2008. Using GMM estimation technique, he found out that manufacturing firms in India adjust to target capital structure with factors like asset tangibility, size and profitability determining target capital structure. The results had implications to financing managers in India to consider adjustment cost while altering financing decision on firms.

In addition, Gwatidzo (2012) in South Africa studied "Dynamics in capital structure determinants in South Africa." The research focused on 178 firms listed in Johannesburg Securities Exchange for the period 1998-2008. Using a GMM estimation technique, the results showed that South African firms adjusts relatively fast towards a target capital structure with size, asset tangibility and growth affecting leverage positively. Similarly Naveed, Ramakrishnan, Ahmad & Maryam (2015) focusing on listed firms at Johannesburg Stock Exchange concludes that South African firms adjust relatively fast towards a target leverage level. However, they lack inter- industry results regarding adjustment cost and behavior towards target capital structure.

2.1. Speed of Adjustment towards Target Capital Structure.

The second line of research in capital structure dynamics has concentrated on the determination of the speed of adjustment to target capital structure. Researchers have concluded that not only do firms adjust towards a target capital structure, but the adjustment cost enhance the speed at which firms adjust their capital structures towards the optimum Faulkender &Petersen, 2012; Banerjee, Heshmati & Wihlborg, 2004; Gaud, Jani, Hoesli & Bender, 2005; Drobetz and Wanzenried, 2006; Flannery and Rangan, 2006; Huang and Ritter, 2009; Frank and Goyal, 2009).

The adjustment speed towards target capital structure varies across periods and firms because of the diversity of adjustment costs Sulgana, 2010). Using US and UK data Banerjee, Heshmati & Wihlborg (2004) postulated that the speed of adjustment depended on the absolute difference from the target debt ratio, growth opportunities and firm size therefore concluding that larger firms adjusted to target capital structure more readily compared to firms with higher growth opportunities. Similarly, Loof (2004) concluded that firms in countries that equity capital dominated adjusts faster to target leverage in comparison to debt dependent countries. Investigating Taiwanese listed companies, Yeh (2011) concluded that the speed of adjustment depends on the economic cycles of the country. During boom or recovery stages the speed of adjustment is higher than during recession stages. This was confirmed by Drobetz and Wanzenried (2006) using Swiss firms Qian, Tian & Wirjanto (2007) using Chinese firms.

There are two schools of thought regarding the relationship between distance from leverage and speed of adjustment The first argument states that the speed of adjustment is expected to be positively related to the distance from target. However, Drobetz and Wanzenreid (2006), argues that this is applicable only when firms are significantly deviated from target capital structure and they strive to adjust once only. This is consistent with findings by Mahakud and Mukherjee (2011). On the other hand, second argument claims a negative relationship between distance from leverage and speed of adjustment. According to this argument, firms adjust frequently toward their desired leverage if their actual debt is not far from target debt.

The rationale that triggers behind these arguments is fixed cost of adjustment (legal fee and investment bank fee). If fixed cost of adjustment is high, most adjustments may take place without transactions in external capital markets (Drobetz and Wanzenried, 2006). In this situation, if the firms adjust internally, as opposed to employing external debt, a negative relationship is expected to exist between distance from leverage and speed of adjustment. The uniqueness or specialization of firms may also influence the speed of adjustment.

Besides understanding the speed of adjustment researchers has raised fundamental question on what factors causes/ hinders the adjustment speed towards target capital structure Faulkender &Petersen (2008). Firm level factors affecting the speed of adjustment that are commonly cited in research include profitability, firms growth, size, asset tangibility, liquidity and distance between observed and desired target capital structure (Naveed, Ramakrishnan, Ahmad & Maryam, 2015).

In relation to profitability, firms having positive cash flows reduces costs related to external financing which consequently affect positively the adjustment process towards target debt. Given their need to raise capital, they are likely to issue securities that will move them towards their target capital structure. Therefore , the firms with large positive or negative cash flows are likely to confront a relatively low marginal cost of adjusting leverage and , hence ,manifest relatively rapid adjustment speeds .Firms with free cash flows close to zero are unlikely to be issuing or repurchasing ,and will therefore confront

the largest incremental costs .They have found that adjustment speeds to be faster for the firms for whom incremental adjustment costs have been lower and the speed has been lower for the firms for whom the incremental costs have been higher (Flannery and Hankins, 2007; Faulkender &Petersen, 2008). Likewise, Mahakud and Mukherjee (2011) concluded that profitability reduces need for external financing hence facilitating fast speed of adjustment.

With respect to size Harris and Raviv (1991) postulates that firm's size is positively correlated to leverage. Since large sized firms have smaller fixed costs, are less symmetrical, employing greater amount of debt hence they can adjust to target debt faster compared to smaller firms (Mukherjee and Mahakud, 2010; Loof, 2004). Contrary to these findings there is an inverse relationship between size and speed of adjustment (Haas and Peters, 2006; Banerjee, Heshmati & Wihlborg, 2004) whereas Gonzalez and Gonzalez (2012) found no significant difference in adjustment speed between small and large sized Spanish firms.

In view of growth opportunities growth firms are usually young firms in need of external financing and Drobetz and Wanzenried (2006) concluded that such growing firms adjust faster towards target capital structure since it easier to alter their existing debt structure. Consistent with these findings are findings by Banerjee, Heshmati & Wihlborg (2004) suggesting that growing firms tend to have more flexibility in choosing the sources of finance than no-growth firms which can only change their capital structure by swapping debt against equity however they also differed in the sense that Banerjee findings show a slower adjustment speed. This could be due to the methodology used to analyze the data (least square estimation technique) which usually leads to inconsistent estimators.

In regard to distance between target leverage and observed leverage, Drobetz and Wanzenried (2006) argues that the speed of adjustment is positively related to distance from target however this argument could only be applicable when firms have deviated significantly from target capital structure and endeavor to adjust one time only. However, a negative relationship between the variables can exist when firms frequently adjust towards their target capital structure and their actual debt is not far from the target. This caused by

fixed cost e.g. legal fees and investment bank fees which constitute a major portion of the rebalancing cost hence only firms that move significantly far away from the optimal capital structure will change their capital structure (Tesfaye, 2014). In conclusion, factors affecting speed of adjustment towards target capital structure varies from country but the common firm specific factors play a major role.

However, several studies have contradicted with the dynamic capital structure model results arguing that firms "time" their market conditions so as to take advantage of different conditions hence adjusting to optimal debt ratios is not a concern for firms (Baker and Wurgler ,2002). In support Welch (2004) added that the dynamics in debt ratios are caused by various shocks rather than an attempt to adjust to target level. Using Indonesian non- financial firms Reinhard and Li (2010) used a GMM approach to determine if target capital structure models can explain the dynamic behavior of firms to adjust to target levels. Their results were negative suggesting that capital structure models whether dynamic or static cannot be used to discriminate trade-off theory from other capital structure theories.

2.2. Cost of Adjustment

Dynamic trade-off theories explicitly emphasize the idea that firms have a target that maximizes its value and deviations from target are costly. The adoption of dynamic trade-off raises pertinent questions on what is the speed of adjustment and the related cost of adjustment (Frank and Goyal, 2007).Flannery & Hankins (2013) posits that the adjustment speed towards target capital structure purely depends on the adjustment costs and the costs of deviating from target capital structure. The adjustment costs are dependent on the transaction costs and the market values of stock. Firms deviating away from target leverage may have an incentive to undertake quick adjustment, especially when they face a fixed adjustment cost. However, if the cost function is proportional rather than fixed, firms with a large deviation from target leverage may have a slower speed of adjustment than those with a small deviation(Leary & Roberts, 2005)

Assuming a fixed adjustment cost function, firms should adjust their capital structure more frequently, at the lower or upper boundaries of the target leverage range. The larger the deviation from the target, the faster the speed of adjustment(Getzmann & Lang, 2010). However, when firms have a proportional adjustment cost function an opposite prediction can be reached. In this case, firms with actual leverage deviating away from the target leverage may find it costly to revert to the target, so that their adjustment is small in magnitude and takes place more slowly (Drobetz & Wanzenried, 2015).

From the foregoing review of relevant literature, it is clear that there remain issues that are yet to be resolved. For instance, on adjustment to target capital structure, Byoun (2008) looking into whether firms adjust to target leverage level found out that though they adjust to target level, they do not do so rapidly. This was consistent with Yeh & Liu (2011) on their study on "Investigation of target capital structure for electronic listed firms in Taiwan". However, Drobetz and Wanzenried (2006) studying "What determines the speed of adjustment to the target capital structure" and Gwatidzo (2014) examining "Firm's debt choice in Africa" concluded that the adjustment speed to target level should be fast. This shows that the speed of adjustment results cannot be generalized to firms in other countries and therefore need to be determined in the case of Kenya and then compared to others.

Among the studies that have supported positive relationship between firms specific variables and financial performance include Huang & Song (2006), Lin & Chang (2011), Nieh, Yau, & Liu (2008) and Kodongo, Mokoaleli-mokoteli, & Maina (2015) among others. However, contrasting results by Lambrinoudakis, (2016), Mule & Mukras (2015) and Mwangi, Onyango &Amanya (2012) shows that growth opportunities have a negative effect on financial performance.

Furthermore, on the issue of whether to embrace the static framework or dynamic framework of capital structure has been a puzzle. The argument of static framework proponents in developed markets is that there is no difference between actual and optimal target levels (Titman & Wessels (1988); Deesomsak, Paudyal & Pescetto (2004) ; Huang & Song (2006) and Shyam-sunder & Myers (1999). This has been echoed in developing markets (Abor & Biekpe, 2007; Antwi, Fiifi, Atta, Polytechnic, & Kf, 2012 ; Chen, 2002;).

The dynamic trade-off framework has received robust support in capital structure literature mostly in developed markets: (Hovakimian, Hovakimian, & Tehranian, 2004; Leary and Roberts, 2005; Flannery and Rangan, 2006; Faulkender &Petersen,2008; Huang and Ritter, 2009; Ramakrishnan, 2012). However, there is limited work relating to dynamic trade-off framework in developing markets. In South Africa for example, Tsefaye (2014) confirms that capital structure in developing markets adjusts to a target debt level but also at varying adjustment costs and speed. However, he noted that these findings could not be generalized in other developing markets due to industrial differences. Therefore, it's key to test the dynamic framework of capital structure on listed firms in Kenya.

3. Methodology

The study population was 35 non-financial sector firms out of the 65 firms listed at the NSE, Kenya for the period 2006-2015. This was due to the exclusion of banking and insurance industry since they have a regulated debt level (Antwi, Fiifi, Atta, Polytechnic, & Kf, 2012; Chen, 2002; Deesomsak, Paudyal & Pescetto ,2004).The secondary data was collected from the audited financial statements of the listed firms in the NSE. This involved using only the audited reports maintained at the NSE and CMA since they ensure consistency of reporting and are reliable for analysis purposes

Using secondary data, Tsefaye (2014) posits there are two distinct econometric models that stands out in the study of dynamic capital structure: Two stage dynamic panel adjustment model and the dynamic partial adjustment capital structure model (DPA). Although both models are widely used in analysis, Flannery and Rangan (2006) strongly proved that the two-stage dynamic panel adjustment model is limited in that it results to unusually smaller estimates of adjustment speed than the theory predict. In addition, this model does not allow for target capital structure to vary across firms while the Dynamic Partial Adjustment (DPA) model does. Since this research required variation of target leverage over different firms listed in the NSE, the study adopted the Dynamic Partial Adjustment (DPA) model.

After Flannery and Rangan (2006) approval to use two-stage dynamic panel adjustment model, the observed leverage of a firm was used to proxy target leverage. Delcoure (2007) and Titman and Wessels (1988) argue that, observed leverage can be measured using two ways. One is by using book value of total debt and the other by using book value to long-term debt. The book value of long-term debt was used in this study since firm's leverage is largely driven by long-term debt. This measure looks at capital employed and therefore best reflects the effects of past financial decisions (Drobetz & Wanzenried, 2015).

There also exist in research the debate of whether observed leverage should be computed using book values or market value of equity. Many researcher argue that book ratios are better compared to market ratios since they reflect the target debt ratios better (Hovakimian & Li, 2012; Drobetz & Wanzenried, 2015 ; Nieh, Yau, & Liu, 2008). However, using market values is dependent on several factors which may be out of control of the organization (Nunkoo & Boateng, 2015). Memon, Rus, & Ghazali (2015) studying "Dynamism of capital structure from Pakistan" argued that the use of book value over market value was because the book value relates to financial distress cost which is important in the model.This was supported by Yinusa (2015) argument in his research on "Dynamic analysis of the impact of capital structure on firm performance in Nigeria" that book value measures are accurate and have relative ease in measurement. This study used book values to compute observed leverage.

Heshmati (2001), De Miguel and Pindado (2001) states that target leverage depends on firm's specific factors which can be expressed as follows;

$LV_{it}^{*} = \beta X_{it-1} + \varepsilon_{it}$ … ……Equation 3.0

Where LV_{it}^{*} is the target leverage ratio of firm i in time t, X_{it} are the firm characteristics determining target leverage and ε_{it} is the error term.

The equation 3.0 is estimated using the approach of Hovakimian (2009) where the β is estimated separately for each year through a historical firm fixed effect panel regression. Hence β at time t is determined by regressing leverage ratios observed in year 2 through t on firm characteristics observed in year 1 to t-1 (Lambrinoudakis, 2016). Then, the estimated coefficients are used to generate proxies for target at time t+1. This shows that the target leverage level can vary both across firms and time. Therefore, in a perfect

environment, observed leverage is equal to target leverage ratio. To control for correlation between the explanatory variables, a multicolinearity test was conducted.

Ozkan (2001) argue that, since adjustment cost is high, managers find it prudent to adjust the target level partially from the previous target level to current debt level. Considering adjustment costs Gaud, Jani, Hoesli & Bender (2005) in their study on "The Capital Structure of Swiss companies: An Empirical Analysis Using Dynamic Panel Data" formalized the DPA model as follows.

$LV_{it} - LV_{it-1} = \alpha(LV_{it}^{*} - LV_{it-1}), with\ 0 < \alpha < 1$ ……Equation 3.1

Where LV_{it} is the observed leverage ratio of firm i in time$t$, LV_{it}^{*} is the target leverage ratio of firm i in time$t$, α is the speed of adjustment between two periods. The speed of adjustment is inversely related to cost such that when $= 1$, the adjustment process is completed within one period and the firm at time t is at its target leverage level. If < 1 , the adjustment from the previous period to the current period falls short of the adjustment required to be at target level and when $\alpha > 1$, the firm has made more adjustment than it is required. As shown in equation 3.1, this model agrees with Drobetz and Wanzenried (2006) who studied 90 Swiss firms between 1991-2001 in a study titled "What Determines the Speed of Adjustment to the Target Capital Structure?" In addition, Anil & Gwatidzo (2012) who studied "Dynamic Capital Structure Determinants in South Africa" used the same model to determine speed and cost of adjustment.

With a balanced panel data and equation 3.1, Gwatidzo (2012) studying "Dynamics in Capital Structure Determinants in South Africa." and Tsefaye (2013) study titled "Determinants of the Adjustment Speed of Capital Structure: Evidence from Developing Economies" agrees that one can identify the target capital structure and the adjustment process (cost and speed).

Since the error term v_{it} in equation 3.1 may be correlated with the lagged dependent variable LV_{it-1} fixed or random effect causing bias in estimations, caution is necessary. Several estimation procedures ranging from Anderson-Hsiao (AH) to General Moments Method (GMM) exists to estimate the model. General Moments Method estimation technique uses extra instruments obtained by orthogonality conditions existing between the lagged values of dependent variables and disturbances (Ozkan, 2001). Researchers like Ozkan (2001) studying "Determinants of Capital Structure and Adjustment to Long-Run

Target: Evidence from UK Company Panel Data", Gaud, Jani, Hoesli & Bender (2005) study on "The Capital Structure of Swiss Companies: An Empirical Analysis Using Dynamic Panel Data" and Drobetz and Wanzenried (2006) study on" What Determines the Speed of Adjustment to the Target Capital Structure?" suggested using an instrumental variables (IV) estimation method where the variables that may be correlated with the error term are controlled. However, the instrumental variables IV estimation does not necessarily lead to efficient estimates of the model parameters as it fails to utilize all of the available moment conditions.

Therefore, this study adopted GMM by Arellano and Bond (1991) since it's more appropriate in estimating dynamic capital structure model. This was adopted by scholars like Anil & Gwatidzo (2012) in their study on "Dynamic Capital Structure Determinants in South Africa", Tsefaye (2014) study on "Determinants of the Adjustment Speed of Capital Structure: Evidence From Developing Economies" and Naveed, Ramakrishnan, Ahmad & Maryam (2015) studied "Factors Affecting Speed of Adjustment under Different Economic Conditions: Dynamic Capital Structure Sensitivity Analysis."

However, this estimation method is faced by misspecification on some test statistics that may make it inappropriate to treat firm -specific factors as exogenous but assumes all explanatory variables as endogenous (Drobetz & Wanzenried, 2015). This led to use of second lag of all dependent variables where the two-step GMM estimator suggested by Arellano and Bond (1991) was used. However, Miguel and Pindado (2001) states that due to endogeneity of the explanatory variables, which according to Ozkan (2001) arises due to economic shocks that could affect some regressors, all variables should be treated as endogenous. This study therefore, treated all variables as endogenous.

4. Results

4.1. Estimation of Target Leverage

To estimate for target leverage, equation 3.0 was estimated by two step Generalized Method of Moments (GMM) estimation technique for each firm across the years. The measures of leverage used were total debt ratio and long-term debt ratio. The firm characteristics used for estimation were size, growth and asset tangibility in tandem with Hovakimian and Guangzhong (2011) on their study on "Determinants of target capital structure: the case of dual debt and equity issues", Drobetz and Wanzenried (2006)

focusing on "What determines speed of adjustment to the target capital structure?" and Nunkoo and Boateng (2010) on their study on "Empirical determinants of target capital structure and adjustment to long-run target: evidence from Canadian firms". These studies also estimated target leverage using long-term debt ratio as a measure of leverage.

The econometric analysis of the coefficients in tables 4.19 & 4.20 showed that asset tangibility was significant at all levels with coefficient of 0.33 and 0.14 respectively. These results are consistent with the findings of Gwatidzo & Ojah (2012) in their study on "Corporate capital structure determinants" and Haas & Peeters (2004) studying "Dynamic adjustment towards target capital structures of firms in transition economies" who had asset tangibility significant at all levels. This confirms the trade-off theory that as proportion of tangible assets increase, the more collateral a firm can offer hence the more debt it can take. Further, firms that invest heavily in tangible assets tend to have higher financial leverage as they can borrow at lower interest rates if their debt is secured with such assets (Laeven & Perotti, 2010).

The study also finds a positive coefficient between firm size and the TDR while a negative coefficient with LDR at all levels and 10 % respectively. This is consistent with findings of Sulgana (2010) on his study on "Dynamic adjustment towards target capital structure: Evidence from Indian companies. This confirms the argument that larger firms may have access to financial markets for long-term debt as compared to small firms. In addition, large firms may have a lower ratio of bankruptcy cost to firm value compared to small firms since bankruptcy cost include fixed costs which is minimal for the former (Anil & Gwatidzo, 2012).

Regarding growth, the results further shows a positive coefficient of 0.01 and 0.02 with the leverage metrics (LDR &TDR) at 10% level of significance. This means firms listed at the NSE with substantial growth opportunities prefer using debt to finance their activities (Drobetz, 2006). These findings further agree with the signaling theory of capital structure that firms with high growth options tend to use high debt to signal good performance. On the contrary, Laeven & Perotti (2010) poses that firms with high growth prospects issue less debt because underinvestment problem leads firms to issue only risky debt that can be supported by asset-in-place. If not, managers acting on behalf of shareholders may decide

not to undertake positive net present value investments to avoid the possibility of payoffs going to debt holders.

The GMM estimations in Table 1 & 2 provided target leverage for each firm and sector respectively as shown in table 3. Using LDR as a measure of leverage to estimate target capital structure, the target leverage was negative at -0.25, -0.12, -0.09, -0.15, -0.18, -0.06 and -0.17 for commercial &services, investments, manufacturing, telecommunication, construction & allied and energy &petroleum sectors respectively. However, it was uniquely evident that agricultural sector had a positive target leverage of 0.06 using LDR. This means that LDR is not adequate measure to estimate target leverage as confirmed by findings of Anil & Gwatidzo (2012), Tsefaye (2014), Naveed, Ramakrishnan, Ahmad & Maryam (2015). They conclude that Total Debt ratio best estimates the target leverage since it accommodates short-term debt. On average Construction and Allied Sector has the highest target leverage of 21.3 % as compared to the Investments sector and Telecommunication with 6%. This means for the firms in Construction and Allied Sector, their financing using debt should be 21% so as to maximize their profits.

This finding in table 3 confirms the dynamic trade-off theory that firms have a target capital structure and will tend to deviate from it depending on the cost of adjustment and market imperfections (Mukherjee and Mahmund, 2010). The presence of target capital structure is in tandem with the findings of Flannery and Rangan (2006), Huang and Ritter (2009), Ramjee and Gwatidzo, (2012), Oztekin (2013). The discussion of target capital structure has prevailed in developed markets over the years (Ramjee and Gwatidzo, 2012) leaving the developing markets behind. Lemma and Negash (2014) attributes this to the inefficiency and incompleteness of the capital markets in the developing markets, causing financing decisions to be subject to irregularities.

Table 1: Estimation of Target Leverage using Lagged LDR

```
. xtreg LDR ASSET size growth

Random-effects GLS regression                   Number of obs      =       350
Group variable: countryid                       Number of groups   =        35

R-sq:                                           Obs per group:
     within  = 0.0674                                         min =        10
     between = 0.5215                                         avg =      10.0
     overall = 0.3633                                         max =        10

                                                Wald chi2(3)       =     50.01
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

LDR	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
ASSET	.3330333	.0569921	5.84	0.000	.2213309	.4447358
size	-.0218344	.0032349	-6.75	0.000	-.0281747	-.015494
growth	.001575	.001885	0.84	0.403	-.0021195	.0052695
_cons	.0260067	.0433722	0.60	0.549	-.0590012	.1110147
sigma_u	.12306122					
sigma_e	.12254341					
rho	.50210829	(fraction of variance due to u_i)				

Table 2: Estimation of Target Leverage using Lagged TDR

```
. xtreg TDR ASSET size growth

Random-effects GLS regression                   Number of obs      =       350
Group variable: countryid                       Number of groups   =        35

R-sq:                                           Obs per group:
     within  = 0.1286                                         min =        10
     between = 0.5251                                         avg =      10.0
     overall = 0.3335                                         max =        10

                                                Wald chi2(3)       =     62.56
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

TDR	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
ASSET	.1387451	.0329706	4.21	0.000	.0741239	.2033663
size	.003234	.001842	1.76	0.079	-.0003763	.0068442
growth	.0022688	.0010606	2.14	0.032	.00019	.0043477
_cons	.0313741	.0257342	1.22	0.223	-.0190641	.0818122
sigma_u	.08662847					
sigma_e	.07101446					
rho	.59808446	(fraction of variance due to u_i)				

Table 3: Sector Target Leverage

SECTOR	Firms	LDR	TDR
Agriculture	6	0.065595	0.173902
Automobile & Accessories	3	-0.25012	0.078671
Commercial & Services	7	-0.12148	0.16515
Investment	2	-0.09208	0.059014
Manufacturing	7	-0.15532	0.109871
Telecommunication	1	-0.18465	0.061225
Construction & Allied	5	-0.05547	0.212592
Energy and Petroleum	4	-0.17461	0.187674

4.2. Estimation of Speed and Cost of Adjustment

Firms listed at the Nairobi Securities Exchange have proved to have a target leverage level that is different from the observed leverage between 2006 and 2015. This confirms the dynamic trade-off theory and rejects the static trade-off that assumes observed leverage equals the target leverage (Mukherjee & Mahakund, 2010). This therefore means that firms listed at the Nairobi Securities Exchange may move toward the target or away the target leverage at a certain speed.

Using General Methods Moment dynamic panel estimation suggested by Arellano and Bond (1991) equation 3 was estimated to determine the speed of adjustment for each firm from the observed leverage to target leverage as show in Table 4.

Table 4: Determining Speed of Adjustment

Dependent Variable: Leverage	All Equities
Leverage: Lag 1	0.4918***
	(0.0284)
Asset Tangibility	0.017
	(0.045)
Size	0.01*
	(0.005)
Growth	0.002***
	(0.0002)
Constant	-0.063
	(0.05)
Observations	296
Wald Chi^2 test (df=4)	3038.3***
Autocorrelation Test: AR(1)	-2.52**
AR(2)	1.22
Sargan test (df=175)	30.99

*** p<0.01, ** p<0.05, * p<0.1

The coefficient of lagged leverage is 0.49 or 49% which is significant at 1% level. This suggest that on average about 51% leverage gap (Target leverage- observed leverage) is covered within a year by firms listed at the Nairobi Securities exchange.

The speed at which firms adjust from target leverage varies from study to study and from firm to firm with part of the reason have to do with the econometric methods used and the cost related to adjustment (Sulgana, 2010). Studies showing a low speed of adjustment include Reinhard and Li (2010) in Indonesia with 4%, Mukherjee and Mahakud (2010) in India with 41%, Getzmann, Lang, and Spremann (2010) in Asian firms with 39% and Getzmann, Lang, and Spremann (2010) with 41%.This high speed of adjustment is consistent with Tsefaye (2014) results which suggest two things. First, is that there exists a heterogeneity of adjustment speed across countries and second, is that the speed of

adjustment tends to be higher on developing countries as compared to developed countries. This high speed is comparable to South African firms with a speed of 66% (Gwatidzo, 2014). Since the speed of adjustment is inversely related to cost, the adjustment cost towards the target level is relatively low in Kenya and in South Africa. This could be due to the underdeveloped derivatives market in Kenya, leaving banks as a major source of corporate debt. Therefore, due to cheap financing on deposit, banks offer lower cost of corporate debt thereby lowering the transaction cost.

Further, the results shows that there exists negative first order autocorrelation as shown by significant AR(1) but there was no second order autocorrelation as shown by AR(2) statistic. According to Tsefaye (2014) this results are consistent because presence of first order correlation is expected but higher order autocorrelation should not be present. Wald test of 3038.3 was significant at 1 % proving the dependent variables are jointly significant and therefore explain the dependent variable. Sargan test of over-identification was not significant at 10 percent proving that the instruments used are valid.

The results in table 4 further shows the influence of firm characteristics on the speed of adjustments. Growth shows a significant positive effect on the speed of adjustment at 1% level. This agrees with the findings of (Authors, 2014b; J. Chen, Jiang, & Lin, 2014; Nunkoo & Boateng, 2015; Ramakrishnan, 2012). This shows that it is easier to change the debt of growing firms since they can avail alternative sources of funds as compared to small firms (Drobetz & Wanzenried, 2015).

In relation to size, the results shows that size has a positive significant effect on the speed of adjustment. These results are consistent with (Hovakimian & Li, 2012; Lambrinoudakis, 2016; Nunkoo & Boateng, 2015) that large firms will adjust more since adjustments of capital structure may require fixed costs which are less for large firms as compared to small firms (Getzmann & Lang, 2010).

With respect to tangibility the results shows a weak positive relationship. Most studies shows a positive relationship since it's easier to use tangible assets as collateral thereby reducing debt related agency costs (Leary & Roberts, 2005). This means firms with more tangible assets at the Nairobi Securities Exchange can use them as collateral hence borrowing at a lower rate of interests.

5. Discussion

The results showed that firms listed at Nairobi Securities Exchange have a target debt level where they can maximize their profitability. It was evident that firms in different sectors have different levels of target leverage that they can utilize hence, it cannot be generalized to all sectors. This conforms to the trade-off theory, which states that there is an advantage of financing using debt though it should be used prudently to avoid bankruptcy. The positive relationship between target leverage and performance means that if firms operate at that level, their performance will be maximized. It was however noted that firms listed at the NSE operates below the target level hence they have more room to increase their debt level. There is therefore a crucial role that capital markets should play in setting appropriate target leverage for each sector which will enhance firms listed at the NSE are competitive and operates as a going concern.

With a target leverage, the findings shows that firms listed at the NSE do not operate at the target leverage level. Therefore, they adjust at a certain speed and cost. The study documents that firms with high growth rate adjust fast compared to slow growing firms. This findings conforms with Drobetz & Wanzenried (2015) in their study on " What determines speed of adjustment to the target capital structure". In addition, it's notable from the findings that the speed of adjustment varies from one sector to the other.

6. Conclusion

The study recommends that firms listed at the NSE should make effort to operate at the target level so that they can maximize the wealth of their shareholders. However, because of random events or other changes, firms may temporarily deviate from their target capital structure and then only gradually work back to the target level. In fact, in the presence of adjustment costs, the study recommends that it might be cheaper for firms not to fully adjust to their targets even if they recognize that their existing leverage ratios are not optimal. Therefore, firm managers need to influence the adjustment speed prudently in cognizant of the adjustment cost.

The dynamic partial adjustment model used in this study takes into account the speed of adjustment and cost of adjustment when determining whether to operate at the target leverage level. However, corporate financial managers are concerned with future

investment need and expected cash flows when setting their financial policy. Therefore, future research can be conducted to extend the empirical models which takes into account future expectations that influence financing policy.

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