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THE IMPACT OF LEVERAGE VARIANCES ON GROWTH: A Longitudinal Study of Pakistan's Corporate Sector

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Abstract

This study is an empirical investigation into the impact of leverage deviations from the target on growth of companies listed on the Karachi Stock Exchange (KSE). It is posited that leverage variance impedes the growth of firms. The role of leverage deviations from the target on firms' growth is analyzed by applying dynamic panel methodology of firms' level annual accounting data. The results indicate that size of the firm, profitability, collateral values of assets, non-debt tax shield, firm-specific interest rate and spontaneous finance are significant determinants of the target leverage. It is found that firms, seldom have actual leverage equal to the target leverage, and more often the actual leverage deviate from the target level. This deviation, adversely affects the growth of firms. The empirical results indicate that upward deviation and downward deviation affect the company's growth, differently. It is concluded that over-levered firms' growth is more sensitive to leverage variance as compared to the under-levered firms.

Key words: Capital Structure, Financial Performance, Target Leverage, Adjustment Speed.
JEL Classification: G32.

I. Introduction

This longitudinal study is an empirical investigation into the impact of leverage deviations from the target on growth of companies listed on the KSE. The capital structure is one of the three major financial decisions made by the management, namely: investing decisions, financing decisions, and resource management decisions. Firms may raise capital from numerous debt and equity sources. Debt capital include debt securities and debt covenants of various maturities with varying attributes. Every individual source of funding has a unique risk-return attributes and when combined to develop the capital-mix of firms; the resulting capital mix-yields different results analogous to the portfolio theory. Only those firms can survive in today's fierce competition which would succeed in managing the delicate balance of debt and equity financing, effectively.

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A significant portion of finance literature is littered with scholarly debate about the capital structure theories, empirical tests of theories and criticism of the underlying claims of capital structure theories. Despite all sincere efforts of finance scholars, capital structure issue and its implications for the corporate world are still unclear. One of the obvious reasons of this dichotomy is the fact that parameters of financial decisions changes, as per the changing environment. Therefore, there is no uniform and universal theory or model which could explain the capital structure issue, thoroughly and in depth.

It has become a stylized fact that capital structure of firms has great financial implications for them. The formation of optimal capital structure is one of the most complex and challenging financial decision. The inherited significance of the issue, as highlighted by Modigliani and Miller (1958) in their seminal work, has attracted the interest of many renowned finance scholars. A large number of theories have been advanced to address this issue of high importance for the corporate world. However, the complexity of issue has rendered no choice to scholars except to refer it as a puzzle [Myers and Majluf (1984)].

The continuous efforts of many decades to envisage a comprehensive single model or theory has not yet been succeeded. To address the complexities involved in capital structure decisions, it is high time to consider some other research strategies. The complexity of issue requires that it should be discussed from diverse perspectives. One can infer by viewing the literature that capital structure, as viewed previously, is not a stand-alone or mutually exclusive decision. It has many interchangeable causes and effects.

Capital structure theorists strived hard to narrate the aforementioned complexities and issues. As a result, many theories emerged to embark upon this very critical business issue. Very few of them have succeeded in attracting the attention of academia and industry. The two prominent and competing theories of capital structure are 'Trade-off Theory' and the 'Pecking Order Theory' [Serrasqueiro and Caetano (2015)]. According to the classical version of Trade-off Theory, advanced by Kraus and Litzenberger (1973), firms adjust their capital structure by substituting debt capital with equity capital to attain optimal level. The optimal capital structure is the one where aggregate cost of capital is lowest. The interest on borrowed funds is a tax deductible expense. Tax deductibility of the cost of debt dilute the cost of aggregate capital of the firms. Therefore, debt is considered a cheaper source of financing, compared to equity. According to the prediction of trade-off theory, increasing proportion of debt in capital structure reduces the cost of aggregate capital but, at diminishing rate. After a certain point, the inclusion of more debt in capital structure does not dilute the aggregate cost of capital. This point is referred to as an optimal capital structure. At the optimal level, the marginal benefit of debt is equal to the marginal cost. After this point, further inclusion of debt in capital, increases the aggregate cost of capital because increased proportion of debt gradually increases the

firm's risk; and investors expect greater return for additional risk. Myers (1984), in his presidential address at the American Finance Association, questioned the prevalence of trade-off theory and proposed a new theory which he referred to as 'pecking order theory'. As a result of this fierce criticism, the proponents of trade-off theory came up with a dynamic version of trade-off theory. It is an established fact that no other theory of capital structure has received more empirical support than the dynamic model of trade-off theory [Heider and Ljungqvist (2015)]. According to the dynamic trade-off model, firms have target capital structure and actual capital structure, which deviates from the dynamic target due to random shocks. The firms adjust their capital structure to achieve their target, if the benefit of capital structure target outweighs the cost of adjustment. The cost of adjustment includes a lot of unquantifiable factors and constraints, especially in the developing economies; like Pakistan where capital markets are not complete and efficient.

The first thing to establish the dynamic trade-off hypothesis is to find out the cost of being away from the target level of leverage. The investigation into the impact of capital structure deviations from the target capital structure will greatly contribute to our understanding of capital structure decisions. Deviations from the target capital structure are due to random shocks, as a result of exogenous macroeconomic conditions that shift the capital structure targets to new levels [Merika, et al. (2015)]. Firms strive to eliminate or minimize variance between the actual and target capital structure. Being overleveraged or underleveraged cannot be considered a deliberate choice of firms rather than the environmental change. Over time, a well-knitted capital structure turns to overleveraged or underleveraged. This deviation from the optimal or target level of capital structure impairs the firm's value. The firms strive to undo the deviation by making an adjustment in the capital structure. The adjustments are done by issuing, retiring or swapping the securities or debt covenants. These transactions do involve the cost which firms have to tradeoff now, between the cost of adjustments and the resulting incentives. If the cost of adjustment is low the adjustment speed will be higher and vice versa. In the ideal state where there is no transaction cost, firms adjust their capital structure immediately; and where there is high transaction cost the adjustment speed is competitively slow. The capital structure adjustments are well documented in the literature. The dynamic nature of this target, require firms to adjust their capital structure consistently and continuously, in pursuit of the optimal level of capital structure. This study empirically investigates the impact of deviations from target capital structure on the growth of the companies. The prime objective of financial management is to maximiz the existing shareholders wealth. The capital structure decisions are also motivated by the incentive to magnify the returns on equity by employing the low-cost debt capital. The target leverage is one where the weighted average cost of capital is lowest and the benefit of this cost-effectiveness passes to the residual owners. We posit that deviations from this target impede the growth of firms.

This study empirically investigates the firm-specific factors which shape the dynamic capital structure targets. The existing literature mostly embarks on determinants of capital structure and only few studies have considered the determinants of target capital structure. The present study also appraises the control of firms in achieving their target capital structure by capital structure adjustments. The discrepancies between the target and actual capital structure are referred as leverage variances. The impact of leverage variance on company growth is analyzed.

After the introduction in Section I, the literature review is presented in Section II. The data and methodology is discussed in Section III while empirical results are presented Section IV. Discussion and Policy implications are given in Section V and finally, the paper is concluded in Section VI.

II. Literature Review

Starting from the Modigliani and Millers (1958) irrelevance principle; many interesting advancements took place in the field of corporate finance. Their seminal work motivated many finance scholars to expand the boundaries of finance knowledge by addressing the most significant areas of finance. However, the initial theory was based on many unrealistic assumptions which do not hold true picture in the real world. They hypothesized that value of the firm is indifferent to the capital structure provided as there are no corporate or personal taxes; the financial market is perfect and unlimited funds are available to borrow or lend without incremental cost. These assumptions seem unrealistic but they successfully isolated the factors which mediate relationship between capital structure and value of the firms. Later, scholars relaxed the assumptions of irrelevance principle and advanced with new theories and models. Donaldson (1961) suggested another way of looking into the capital structure issues and the advanced Pecking Order Theory. He claimed that firms have a pecking order of preference for various sources of finance. Firms prefer to finance their operations and growth opportunities with internally generated funds, rather than the debt financing. The issuance of new equity is the last resort if internally generated funds or debt financing is not enough or not cost effective. This theory also received considerable attention from the academia and practitioners. Modigliani and Miller (1963) reviewed and revised their initial supposition and included taxes, and came-up with the Trade-off theory; which claims that due to tax shield, debt is a comparatively cheaper source of finance than equity, and firms include debt financing to reduce the aggregate cost of capital. The incremental debt also, gradually increases the dead weight cost of bankruptcy and make debt financing costlier. The incremental cost of debt outweighs the tax benefit, after a certain level thus, leading to the existence of an optimal capital structure. Kraus and Litzenberger (1973) revisited the Static model of Trade-off, to consider the market dynamics and suggested a better model which is known as a dynamic trade-off theory. They theorized that there is no static optimal capital structure which firm's target; rather, they target a dynamic optimal

leverage. The dynamic model received wide acceptance because of its strong empirical implications. Jenson and Mackling (1976) proposed agency theory which claims that capital structure decisions are made to resolve the agency conflicts which exist between shareholders and the management. Debt is used as a control tool to limit the management's discretion to use the organizational resources for their own gain. Leland and Payle (1977) proposed market signaling theory and suggested that capital structure decisions are used to signal market in the best interest of companies. Restructuring decisions, when announced, generate strong signals to the market; and investors act according to these signals. Baker and Wurgler (2002) advocated the view that capital structure decisions are made according to the prevailing market conditions. The companies make capital structure decision by monitoring financial market conditions and try to exploit favorable market conditions when making financing decisions. The claim of all prominent theories appear very appealing and convincing but empirical evidence poses great concerns over the prevalence of these theories. The dynamic trade-off model, however, succeeded to obtain the empirical support.

1. Dynamic Trade-off Theory

The Trade-off theory posits that by adjusting the proportion of debt and equity in capital structure of the firms the aggregate cost of capital can be minimized. The point where the cost of capital is minimum, is referred to as an optimal capital structure. Fischer, et al. (1989) proposed the dynamic version of trade-off theory which claims that the optimal capital structure is not a single point capital structure, rather, it is a range of capital structure which varies over time, due to changing environment and changing firm's financial attributes [Serrasqueiro and Caetano (2015)]. The dynamic model of trade-off theory got considerable attention from the finance scholars, due to its theoretical appeal and empirically testable model [Ebrahim, et al. (2014)]. The dynamic model is widely used in the empirical studies, to estimate the adjustment speed [Elsas and Florysiak (2015)]; it has great practical applications for the corporate sector. If the firms adjust their capital structure according to the changing financial environment, the cost of doing business can be minimized [Lazzati and Menichini (2015)]. Dynamic trade-off theory also has great implications for developing economies like Pakistan, where debt securities are not very popular. Pakistan's firms heavily depend on the banking sector for their financing needs. Therefore, the dynamic target leverage is more sensitive towards macroeconomic conditions. The underdeveloped debt securities markets pose a great challenge to firms in developing countries, to structure their capital effectively [Mohamed, et al. (2015)]. The transaction cost along with the highly volatile markets, restricts the firms to structure the optimal capital mix frequently [Asongu (2014)]. This inflexibility results in suboptimal use of capital which restricts the firm's growth; therefore, it is important to investigate the impact of deviations from the target capital structure on growth of firms in the developing countries.

2. Capital Structure Adjustments

According to the dynamic model of Trade-off theory, firms have a target level of capital structure. Firms, actively pursue the target level, keeping in view the cost and benefits of restructuring [Natalia and Maria (2010)]. In the favorable economic conditions, firms adjust their capital to targets, provided the firm's specific financial conditions permit [Bancel and Mittoo (2004)].[1] The adjustment process involves a trade-off between the benefit of tax shield and the overall cost of debt which include the financial cost, administrative cost, and cost of financial distress. During good economic conditions, generally firms have more financing avenues where the cost of adjustment is comparatively low [DeAngelo and Roll (2015)]. Economic conditions play an important role in correcting capital structure deviations caused by random shocks. The underlying concept of rebalancing the capital structure is to ensure an effective use of capital by leverage. A more specific view of dynamic trade-off theory poses that by random shocks, firms gradually deviate from the optimal level of capital structure, over time, and constantly adjust their capital structure to undo the random shocks [Smith, et al. (2015)]. Firms adjust their capital structure quickly when the cost of being away from the target level of capital outweighs the cost of rebalancing. Deesomsak, et al. (2004)] probed the Asia Pacific firms' capital structure decisions and found that environmental factors along with the firm-specific factors, play a significant role in financing decisions. The existing literature suggests that capital structure adjustments are attributed to institutional setting and the environmental factors. Environmental factors in broader perspective affect rebalancing cost of capital. The convergence to the target capital structure is also referred to as adjustment speed and is considered the result of legal and financial environment. For the last two decades significant number of research studies have focused on the dynamic version of trade-off theory and found inconsistent results [Campbell and Kelly (1994), Shyam-Sunder and Myers (1999), Zwiebel (1996), Fischer, et al. (1989), Ozkan (2001), Gaud, et al. (2005), Titman and Tsyplakov (2007)].

Graham and Harvey (2001) reported that firms have a target level of capital structure and with that in mind its rebalancing is done. In their large survey, they reported that more than 80 per cent of Chief Financial Officers of the firms do have strict target capital structure or its acceptable range. They also claimed that the CFOs of the firms clearly know or acknowledge the cost and benefit for rebalancing the capital structure. Many studies found that rebalancing behavior exist and firms do adjust their capital and the speed of adjustment, depending on transaction cost of the adjustment. Leary and Roberts (2005) found that transaction cost of capital adjustment has a clustering effect on leverage rebalancing. Faulkender, et al. (2008) also concluded that the cost of adjustment is an

[1] Referring Bancel and Mittoo (2004), the authors found that although a country's legal environment is an important determinant of debt policy; it plays a minimal role in common stock policy. Also, the firms' financing policies are influenced by institutional environment and their international operations.

important factor; and faster adjustments are reported when the cost of adjustment is sunk cost. In case, the adjustment cost is incremental the adjustment is slow. The cost of adjustment is also affected by various macroeconomic and firm-specific factors. The macroeconomic conditions play an important role in forming investors' expectations about the returns. Hackbarth, et al. (2006) argued that adjustment speed of capital structure is affected by economic conditions of a country. He advocated that in the economic boom the adjustment is higher, than in the economic recession period. Cook and Tang (2010) focused on macroeconomic conditions to investigate relationship between the economic conditions of a state in which the firms operate. They found that in good economic conditions, firms adjust their capital structure faster than the bad economic conditions. The claim of trade-off theory has a logical and empirical conviction which cannot be ignored or superseded without superior arguments and theoretical support which are still awaited.

3. The Variables

a) Leverage

The existing literature shows that leverage is measured by three different capital structure-ratios: (1) debt to total assets, (2) debt to capital employed, and (3) debt to equity. Debt to total asset ratio has been widely used as a measure of financial leverage [Shah, et al. (2004), Shah and Khan (2007), Rafiq (2008), Ahmed and Wang (2011), Khan (2012), Saeed, et al. (2015)].

b) Size

The literature shows that firm-size is one of the significant explanatory variable of leverage. According to Rajan and Zingales (1995) the size of the firm is a proxy of asymmetric information which influence the capital structure decisions. Various studies have used firm-size to analyze variation in the leverage ratios across firms [e.g., Baker and Wurgler (2002), Frank and Goyal (2003), Getzmann, et al. (2010), Lemmon and Zender (2010), Sheikh and Wang (2010)].

c) Return on Assets

Profitability is another significant explanatory variable of capital structure. Profitability has been measured by various ratios such as profit margin, return on equity, return on capital employed, and return on assets [Frank and Goyal (2009), Lemmon and Zender (2010)]. Both, pecking order theory and tradeoff theory predicts that profitability influence the financing decisions of firms. Many empirical studies confirm the role of profitability in the capital structure decisions [Haas and Peeters (2006), Delcoure (2007), Shah and Khan (2007)].

d) Collateral Value of Assets

The proportion of fixed assets in the assets structure of a firm increase chances that firm may raise debt at favorable terms. The fixed assets serve as collateral against the debt. Many research studies confirm the role of collateral value of assets in financing decisions of firms [see, e.g., Morellec (2001), Qiu and La (2010), Getzmann, et al. (2010)].

e) Firm-specific Interest Rate

The availability and cost of debt are major factors in capital structure decisions [Öztekin (2015)]. Due to differences in the sources of debt in financing, with respect to the cost of capital, firm-specific interest rate varies across firms [Elsas, et al. (2014)].

f) Non-debt Tax Shield

The tax deductibility of interest, reduces the effective cost of debt. If firms can save taxes through other non-cash expenses, the appetite of firms for debt financing is less [Heider and Ljungqvist (2015)]. Therefore, the non-debt tax shield plays an important role in the capital structure decisions [Öztekin (2015)].

g) Spontaneous Finance

Spontaneous finance is also referred to as cost-free debt. If firms have an opportunity to raise funds from the non-contractual sources, such as trade creditors, the firms may avoid the cost of debt [UlHassan, et al. (2014). Therefore, the spontaneous finance adversely affect the proportion of interest-bearing contractual debt [Kwenda and Holden (2014)].

III. Data and Methodology

The data set consists of various ratios extracted from the published financial statements of non-financial companies listed on the KSE from 1999 to 2013. From various economic groups, there are more than six hundred companies listed on the KSE; out of which only one hundred and fifty companies qualified for inclusion in the sample of the study. The relationship between the considered explanatory variables and the leverage is modeled as under:

$$LEV = f(SIZE, ROA, CVA, FSIR, NDTS, SPTF)$$

where, *LEV* stands for leverage which is measured as proportion of long-term debt in the total capital of the firm, *SIZE* is the size of the firm measured as natural log of total

assets, *ROA* is the return on assets measured as ratio of net profit after taxed to total assets, *CVA* stands for collateral value of assets measured as ratio of fixed assets to total assets, *FSIR* is firm-specific interest rate measured as financial charges over the sum of fixed liabilities and negotiated finance, *NDTS* is non-debt tax shield measured as non-cash expenses over the sum of net fixed assets, *SPTF* is spontaneous finance measured as non-interest bearing liabilities over the total liabilities. All variables were computed by taking the accounting data extracted from the audited financial statements of companies listed on the KSE. Accounting data is often criticized on the grounds that it is backward looking and offer little value to predict future decisions, like capital structure. The criticism is responded with logical and strong argument that all financial decision are taken on the basis of accounting information. Therefore, the significance of accounting data for financial decisions cannot be overlooked.

Like other developing economies, capital market of Pakistan is also incomplete. The market for debt securities is at the infancy stage and the government of Pakistan is striving hard to develop a debt market to cater the financing needs of corporate sector. Therefore, the parameters of financial decisions in developing countries may not be necessarily similar to the developed economies.

This is a two-tier study, therefore, two different regressions are applied. At the first level, Generalized Method of Movements (GMM) is applied to pooled data of one hundred and fifty companies over fifteen years, to estimate the parameters of target capital structure. GMM is normally applied in statistical models where parameters are infinite dimensional. The literature suggests that parametric model yields robust results when the shape of distribution function is unknown. Estimation of target capital structure, by specifying a large number of moment conditions can produce best estimates by using semi-parametric model, if specified correctly [Hall (2005)]. Independent variables were instrumentalized by one period lagged value (*t-1*) and regressed with the capital structure at time '*t*'.

The model equation is statistically expressed as:

$$TLEV^{*}_{i,t} = \lambda_0 + \lambda_1 X1_{i,t} + \lambda_2 X2_{i,t} + \lambda_3 X3_{i,t} \ \ldots\ldots\ldots + \lambda_N XN_{i,t} + \omega_{i,t}$$

where:

$$\omega_{i,t} = \varepsilon_i + \mu_{i,t}$$

where, '$X1_{i,t}$' represents the firm specific time variant vector, λ_0 mean constant, λ_1 through λ_N are coefficients of parameters and $\mu_{i,t}$ is the error term. The subscript *i* is the *i*th cross sectional observation and t represents the time period. The parameters are estimated by applying equation on the poll of large data set.

$$TLEV^{*}_{i,t} = \lambda_0 + \lambda_1 SIZE_{i,t-1} + \lambda_2 ROA_{i,t-1} + \lambda_3 CVA_{i,t-1} + \lambda_4 FSIR_{i,t-1} + \lambda_5 NDTS_{i,t-1} + \lambda_6 SPTF_{i,t-1} + \omega_{i,t}$$

where:

$TCS^{*}_{i,t}$ = Target capital structure,
λ_0 = Mean constant coefficient,
λ_1 to λ_8 = Slope coefficient,
I = ith cross section observation,
T = t period observation,
$w_{i,t}$ = Composite error term,
$SIZE$ = Size of firm,
ROA = Profitability,
CVA = Collateral value of assets,
$FSIR$ = Firm specific interest rate,
$NDTS$ = Non-debt tax shield, and
$SPTF$ = Spontaneous finance.

By regressing one period lagged variable with capital structure of firms, the parameter coefficients are estimated. The resulting variables are used to estimate optimal capital structure which is target of a company. Then the actual capital structure is compared with the target. The absolute difference between target and the actual capital structure is used to estimate the impact of capital structure deviations from the target on growth of a firm.

$$GRTH_{i,t} = \vartheta_{i,t} (TLEV^{*}_{i,t} - ALEV_{i,t}) + \mu_{i,t}$$

where, GRTH is the annual growth in sales, measured by chain base method, $(TLEV^{*}_{i,t} - ALEV_{i,t})$ which is the absolute difference between actual and the target capital structure at time 't'. By applying simple regression the impact of capital structure deviations from target on the growth of company is estimated and analyzed. The sample is divided into two groups: the underleveraged and the overleveraged. The impact of leverage variance is analyzed for the former two groups separately, and the results are reported and compared.

IV. Empirical Results

Table 1 exhibits the descriptive statistics of model variables; the summary statistics of which shows that 47.42 per cent of the assets of non-financial corporate sector are financed by non-financial corporate sector with borrowed funds over the period of study. The debt ratio ranges from 7 per cent to 88 per cent across the firms and over the period, which provides exciting opportunity to study the impact of variation on growth. The non-financial corporate sector has experienced a moderate return on assets during the study period. Firm-specific interest rate remained 11.28 per cent per annum which is slightly higher than the developed countries, due to a variety of reasons. The cash expenses including depreciation, depletion and amortization remained 23.14 per cent of the total net assets. Non-interest bearing debt which is referred as spontaneous finance or trade credit

TABLE 1

Descriptive Statistics

	SIZE	*ROA*	*CVA*	*FSIR*	*NDTS*	*SPTF*	*LEV*
Mean	2.9647	0.0440	0.5592	0.1128	0.2650	0.2314	0.4742
Median	2.9521	0.0495	0.5639	0.0981	0.1906	0.2521	0.5101
S. Dev	0.5971	0.3444	0.1842	0.2289	0.4847	0.2374	0.5772
Minimum	0.2051	-0.3942	0.0061	0.6500	0.0063	-0.0011	0.0726
Maximum	5.9751	0.6368	0.8745	0.2106	0.8895	0.7508	0.8757

is 23.14 per cent of the total assets. Size is measured as natural log of total assets; though the average in log form is meaningless but the standard deviation value clearly indicate that there is considerably less variation in the size of firms, included in the sample.

The pair-wise correlation among the considered variables is presented in Table 2. The correlation coefficient values reveal that there is no strong correlation among the independent variables. Multivariate regression produces paradoxical results when the dependent variables are collinear. If there exist a strong correlation among variables, further investigation into the multi-collinearity problem is needed, to avoid spurious regression. Formally variance inflation factor is applied to detect the multi-collinearity where there is a doubt of its presence. The weak correlations among the explanatory variables indicate that multi-collinearity does not exist.

Results of equation are given by GMM regression method in Table 3 which indicates that all independent variables are statistically significant explaining about 67 per cent of variation in the dependent variable. The value of coefficient of determination ($R^2 = 0.6712$) indicate a good fit. In social sciences 67 per cent is considered a good indication of fitness of the model. Even the number of explanatory variables are relatively high; the adjusted value of the coefficient of determination (*Adjusted* $R^2 = 0.6656$) is very close to the unadjusted value. The remaining (approximately 30

TABLE 2

Pairwise Correlation Coefficients

	SIZE	*ROA*	*CVA*	*FSIR*	*NDTS*	*SPTF*
SIZE	1.000	-	-	-	-	-
ROA	0.068	1.000	-	-	-	-
CVA	-0.014	-0.253	1.000	-	-	-
FSIR	-0.020	-0.044	-0.023	1.000	-	-
NDTS	-0.068	0.016	0.210	0.030	1.000	-
SPTF	-0.163	0.007	-0.115	0.014	0.028	1.000

per cent) unexplained variation is due to exogenous factors represented by error term. This phenomenon indicates that all variables are relevant to the model and help to explain variation in the independent variable that is capital structure.

For estimation of parameters, GMM is applied. Independent variables are instrumentalized by taking one period lagged *t-1* values. GMM overcomes most of the inherited problems of time series data and relaxes some of the binding assumptions of Maximum Likelihood Regression and the Least Square parameter estimation techniques. The results indicate that *SIZE*, *CVA* and *STS* have a positive and statistically significant impact on debt leverage and negative signs of *ROA*, *FSIR*, *NDTS* and *SPTF* which indicate a negative relationship with the leverage.

The coefficients of parameter $\lambda_1 SIZE_{i,t-1} = 0.0363$ indicate a positive impact on the target leverage ratio and the corresponding value of t-stat = 3.75 signify a 99 per cent confidence interval. This result is consistent with the theory that larger firms deploy more debt in their capital as they have more transparency and symmetry of information [Rampini and Viswanathan (2013). Return on Assets (ROA) has negative and statistically significant relation with debt financing as indicated by negative value parameter coefficient $\lambda_2 ROA_{i,t-1} = -0.0020$ and the corresponding t-value = -9.8441. Collateral Value of Assets (CVA) also has a significant and positive relationship with target capital structure as value of λ_4 equal to 0.3367 and t value more than 10. Again the results are aligned with various theories and the existing literature. Firms having more collateral values are able to attract more debt by securing the debt against the assets. Firm specific interest rate $\lambda_4 FSIR_{i,t-1} = -0.001$, Non-Debt tax shield $\lambda_5 NDTS_{i,t-1} = -0.0036$, and Spontaneous Finance $\lambda_6 SPTF_{i,t-1} = -0.4085$ have negative relation on leverage targets as indicated by values of their parameter coefficients. If firms have enough space to avoid taxes by means of non-cash expenses like depreciation, amortization and depletion,

TABLE 3

Parameters Coefficients of Target Capital Structures

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Intercept	0.2348	0.0049	6.7846	0.0000
SIZE	0.0363	0.0097	3.7527	0.0002
ROA	-0.0020	0.0002	-9.8441	0.0000
CVA	0.3367	0.0308	10.9160	0.0000
FSIR	-0.0010	0.0003	-3.8836	0.0001
NDTS	-0.0036	0.0016	-2.2859	0.0224
SPTF	-0.4085	0.0235	-17.3620	0.0000
R-squared	0.6712			
Adj. R-squared	0.6656			
Durbin-Watson stat	1.7745			

the benefits of tax saving can be achieved without debt financing. Normally, spontaneous financing has lower cost as compared to long-term contracted debt or short-term negotiated finance. If firms have an opportunity to raise funds through spontaneous finance, they prefer over long-term debt *ceteris paribus*.

The estimated parameters through GMM were used to calculate the target capital structure by putting back the actual observations in the estimated equation. With the calculated value of the target capital structure, the actual capital structure is compared and the difference is taken for every observation. The absolute difference between the target capital (calculated) at time *t* of ith firm is taken for all years-company observations, ($TLEV^{*}_{i,t}$ -$ALEV_{i,t}$). The absolute difference between the estimated value of target capital structure and actual capital structure at a specific time period is referred to as variance. The variance is further divided into two categories according to the sign of the value i.e., positive or negative.

The calculated capital structure variances were regressed with the company's annual growth by three different equations. First, for an overall variance, second, with over-levered firms and third, with under levered. The results of our final model are reported in Table 4 and are reported separately for an overall variance, which is considered as the control group, over-levered firms and under levered firms. The results indicate that leverage variance has a negative impact on the growth of the firms. The negative value of parameter coefficient $\vartheta_{i,t}$ = -0.4416 along with t-Stat = -8.7380 signify the relationship. Value of R-square = 0.0784 is considerably low and shows that variation in growth is explained by the leverage variance which is about 8 per cent; rest of the variation is unexplained by this model. Since there are many other relevant factors for growths of a firm, in this study the prime interest is only as to how the capital structure variations affect the growth. The relationship is statistically significant at 99 per cent confidence level as indicated by the t-value.

In the case of over-levered firms, the results are consistent with the overall cohort value. However, the slope coefficient (-0.8808) is greater than the control group. It implies that growth is more sensitive to leverage variances in the case of over-levered

TABLE 4

Impact of Leverage Variance on Growth

	Overall Variance		Over Levered		Under Levered	
	Coeffi-cients	t Stat.	Coeffi-cients	t Stat.	Coeffi-cients	t Stat.
Intercept	3.1554	8.5824	3.5433	16.5149	3.3796	9.6346
VARN	-0.4416	-8.7380	-0.8808	-7.4031	-0.3613	-14.4782
R Square		0.1784		0.1910		0.1636
Adjusted R-square		0.1774		0.1904		0.1582

firms. This is an interesting observation that under-levered firms' growth is less sensitive to the capital structure deviations as indicated by the parameter coefficient (-0.3613). If we compare the coefficient of determination in all the three models, it is clear that in over-levered cohort firms ($R^2 = 0.1910$) the variation in growth is explained more as compared to overall cohort ($R^2 = 0.1784$) and under-levered ($R^2= 0.1636$). As a whole, the results are statistically significant and may be generalized to the population as indicated by t-values (VARN1 = -8.7380, VARN2 = -7.4031 and VARN3-14.4782). Intercept, if compared, have a trivial difference in all the three cases. The models are tested separately by running separate equations, therefore, the inherited statistical problems are avoided.

V. Discussion and Policy Implications

This study has great implications for the non-financial corporate sector of Pakistan. Like many other developing countries, Pakistan's debt securities market are not fully developed to cater the financing needs of firms. Due to such capital market constraints and volatile economic conditions, firms in Pakistan face great financial challenges. There is a great opportunity for these firms to out perform by formulating a prudent financial policy. Memon, et al. (2015a) reported the significant role of macroeconomic factors in the leverage decisions in Pakistan. Similarly, Saeed, et al. (2015) also reported the influence of political environment on the leverage decisions of firms. Memon, et al. (2015b) in another empirical study, used the partial adjustment model and concluded that firm-specific factors in addition to macroeconomic factors such as, economic growth, inflation, and interest rates, affect the capital structure adjustment speed towards the target leverage in Pakistan. Now, it is an established fact that firms' indigenous factors and macroeconomic conditions play an important role in the leverage decisions of firms. This study, based on the prediction of dynamic trade-off model, investigate the effect of leverage deviations from the target on growth of the firms. The empirical results suggest that the leverage variances adversely affect the firms' growth. Firms in Pakistan can reconcile the difference between actual and target capital structure by adjusting the proportion of debt and equity, according to the changing macroeconomic conditions. The complete adjustment to target leverage is not possible due to dynamic nature of the leverage targets as predicted by the dynamic trade-off theory and the much empirical evidence. However, firms by using proactive financial policy towards the environmental changes can minimize the leverage variance. The reduction in gap between the actual and target leverage may greatly contribute towards the achievement of growth objectives. The results also suggest that under-levered firms' growth is more sensitive as compared to the over-levered firms. The under-levered firms can accelerate their growth by increasing the proportion of debt in their capital mix for optimal utilization of the equity capital.

VI. Conclusion

It is reported on the basis of results that size of the firm, profitability, collateral value of assets, firm-specific interest rate, non-debt tax shield and spontaneous finance are significant determinants of the target capital structure. The results are consistent with the existing literature and the capital structure theories [see, e.g., Memon, et al. (2015b).

We extended our empirical investigation into the impact of leverage variance on the growth of firms and found that variance is one of the impediments to the growth of firms. Firms with less capital structure deviations grow faster than the firms with more deviations from the target level. The results also indicate that impact of capital structure deviations is different in the case of firms above the target leverage and those below the target level. It is observed that corporate growth is more sensitive to the leverage variances in cases of over-levered firms and comparatively it is less sensitive in cases of under levered firms. These findings lead to the conclusion that over-levered firms' growth which is affected more by leverage variance as compared to the under-levered firms.

The research can be further extended separately by investigating the factors responsible for upward and downward deviations. How these deviations can be reconciled in the short-term and long-term under various financial stress levels? is also an interesting area of research, and how the negative impact of leverage variance can be neutralized by making counter strategies in cases the firm is facing financial stress?

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