

# MANAGING THE GAP BETWEEN ACTUAL AND TARGET CAPITAL STRUCTURE: AN EVIDENCE FROM PAKISTAN

**ABDUL RAFAY**

FCA, Associate Professor, Department of Finance @ SBE  
University of Management & Technology (UMT)  
E-Mail: [abdul.rafay@umt.edu.pk](mailto:abdul.rafay@umt.edu.pk), [rafay.rafay@gmail.com](mailto:rafay.rafay@gmail.com)

**USMAN JAVED GILANI**

Assistant Professor, Department of Finance @ SBE, University of Management & Technology (UMT), E-Mail: [usman.gilani@umt.edu.pk](mailto:usman.gilani@umt.edu.pk), [ujgilani@gmail.com](mailto:ujgilani@gmail.com),

**FARRUKH IJAZ**

Student MS-Finance, Department of Finance @ SBE, University of Management & Technology (UMT), E-Mail: [13004096007@umt.edu.pk](mailto:13004096007@umt.edu.pk), [farrukh-ijaz@hotmail.com](mailto:farrukh-ijaz@hotmail.com)

## ABSTRACT

**Investment framework is one of the most significant components that impact the company's value. Reliable funding choices for a company generally lead to a capital structure that increases the firm's value (Abor, 2006). Early studies provide contradictory reviews about a company's capital structure decisions. This paper investigates the partial adjustment model for a company's target capital structure. The study also explores how companies operating in different sectors of Pakistani market adjust towards the target capital structure levels. The study also recognizes that an unanticipated share price change also have an effect on the target capital structure. The results indicate that companies do have target leverage and that their adjustment speed varies from sector to sector of the Pakistani market. A typical sector closes more than 50% of the gap between its actual and its target debt ratios within one year.**

## KEYWORDS

**Capital Structure, Adjustment Speed, Panel Data, GMM Estimation, Market Debt Ratio**

## INTRODUCTION

Capital Structure, in simple terms, informs the use of debt and equity by a company to raise the required funds over a certain period of time. According to Kundakchyan & Zulfakarova (2014), the Optimal Capital Structure for a company is one which offers a balance between the ideal debt-to-equity ratios and minimizes the firm's cost of capital. In other words, it is the mix of debt and equity that maximizes a firm's return on capital, thereby maximizing its value. The relationship between capital structure and firm value has been the subject of considerable debate, both in theoretical and empirical research (Hatfield, 1994). As Optimal Capital Structure influences almost every aspect of the firm financial profile from risk profile to expected returns of the company and thus it is considered as one of the most important decisions. During the last few decades, target capital structure has become one of the key concerns in the literature of modern corporate finance. Many researchers have studied the complex set of factors that are used by the companies to establish their optimal capital structure. Few of these factors include sector's leverage ratio, firm size, GDP growth, profitability, inflation and financial risk. However, Baltaci & Ayaydin (2014) suggests that capital structure of financial as well as non-financial companies is ultimately determined by the same drivers. Many researchers have also pointed out the influence of multiple factors which

affect the capital structure decisions and many vary across industries (Bevan & Danbolt, 2002; Bancel & Mittoo, 2004; Bhabra et al., 2009; Frank & Goyal, 2009). Despite extensive academic research and empirical literature, identification of factors that are generically relevant to capital structure decisions is still an ongoing task.

Modigliani and Miller (1958) derived their theorem of irrelevance between leverage and firm value through a set of assumptions. Since then various studies tried to explain the capital structure and firm value in the context of taxes, agency costs, insolvency cost, and information asymmetry. Trade-off theory, Pecking Order theory and Market-timing hypothesis were developed to find out the mechanism behind the changes in debt-equity structure. Fama & French (2002) and Huang & Ritter (2009) suggest that all these theories have limited validity in explaining financial behavior of the companies.

Target capital structure hypothesis has been tested extensively in the literature of corporate finance. In general, researchers often raise question about whether companies have an optimal capital structure? And if so, will companies choose to bridge the gap between the target and actual or just stay in disequilibrium? When optimal capital structure (target) and the actual capital structure are the same, it reflects a state of equilibrium. It would be interesting to examine this issue within the context of an emerging economy like Pakistan. This research

investigates the panel data consisting of 200 listed firms on Karachi Stock Exchange (KSE) of Pakistan covering a time span spread over 7 years from the financial year 2006 to year 2012. It would be interesting to investigate whether the sample companies have long term capital structure targets and how rapidly they adjust towards the target structure. While earlier studies that have practical experimental conditions didn't identify the potential for partial modification but according to Flannery and Rangan (2006), incomplete modification of companies leverage model specifies that they do have target capital structures.

As a corollary of the above share price performance is another factor that company managers are likely to consider while making a capital structure decision. Baker and Wurgler (2002) suggest that by issuing equity when share prices increases, managers could minimize the cost of capital implying that market conditions influence the Pecking Order. However, Hovakimian (2001) shows that the timing of equity issuance does not have any significant long-lasting impact on capital structure. Consistent with the prediction of the Pecking Order theory that managers issue shares when they are overvalued, the negative and significant effect of share price performance on both market and book leverage confirms that managers issue equity after an increase in the market price of their shares (Antoniou et al., 2008). Hovakimian et al. (2004) also report an inverse relation between target leverage and changes in share price.

### RESEARCH OBJECTIVES

This paper aims to analyze partial adjustment towards target capital structure, adjustment speed and the time to cover the gap between actual and target leverage ratios by using panel data and focusing on financial behavior of capital structure from the perspective of emerging markets. It also aims to investigate whether companies adjust their leverage targets at a relatively lower speed towards target leverage in Pakistan. The research study would further explore how companies operating in different sectors of Pakistani market adjust towards the target capital structure levels. Lastly, the paper would ascertain if anticipated price changes have an impact on company's target capital structure. In all therefore, the paper would try to empirically respond to the above specified areas.

### RESEARCH SIGNIFICANCE

This paper primarily contributes in two ways to the existing literature. Firstly, existing systematic empirical studies are based on developed countries and there are limited studies focusing on the financing behavior of capital structure from an emerging-markets perspective. Secondly, with regard to empirical analysis, the study adopts the dynamic panel data methodology with a set of firm-level characteristics instead of static approaches. The findings provide insights behind dynamics of capital structure and determine the factors that help to achieve the optimal capital structure during the long-term adjustment towards equilibrium.

### LITERATURE REVIEW

The problem of a known capital structure, which can enhance the shareholder value, is considered to be one of the most important debates in the field of finance (Kayo & Kimura, 2011). The work on the topic of "capital structure" in the field

of corporate finance was first started by the Modigliani and Miller (1958), who proposed that no impact of debt-equity can be observed on the firm's value in a perfect capital market. Later, their proposition II theory states that the risk to equity holders increases with leverage. Within the Trade Off theory conceptualization, static as well as dynamic perspective describes capital structure behavior. The Static Trade Off theory indicates that keeping the investment plans and assets constant, optimal capital structure would be established by trading off between the tax advantages and the financial distress costs of debt financing (Modigliani and Miller, 1958). On the other hand, the Dynamic Trade Off theory states that actual capital structure might differ from the optimal level and firm will rebalance its financing activities to lead capital structure back to the optimal level when the advantages prevail over the costs of adjustment (Fisher, Heinkel & Zechner, 1989).

The Trade Off theory focuses on the benefits and costs of debt and finds that a combination of optimal leverage level helps to maximize the firm's value and every firm struggles to achieve a target leverage ratio to capitalize a firm's value (Gungoraydinoglu and Oztekin, 2011). Rajan and Zingales (1995) and Titman and Wessels (1988), in their studies employed a static framework to determine the target financial leverage but they do not answer the question of whether leverage tends to revert to a target. As a result, increased leverage removes the shareholder's conflict & agency costs of equity. On the other hand, Myers (1984) Pecking Order theory proposes that firms most likely prefer to finance new investments, first with internally raised funds (retained earnings), then with external funds (debt) and issue equity as a final resort. He further argues that issuance of debt secured by collateral assists to minimize asymmetric information related to costs of financing.

Given the above brief discussion, it is questionable whether optimal capital structure really exists. First, a firm's leverage ratio may not always harmonize to optimal capital structure. Second, if firms' current leverage differs from optimal capital structures, how would a firm adjust capital structure towards the optimal leverage? To respond to this issue, a series of papers were produced on the adjustment behavior of companies towards the capital structure. Jalilav and Harris (1984) were among the first to analyze the dynamic target behavior of firms, using data from a limited sample of manufacturing firms from 1963 to 1978. They employ a partial adjustment process of firms to long-run financial targets.

Fischer, Heinkel and Zechner (1989) in their study developed a model of dynamic capital structure choice. The study used the observed debt ratio range of a firm as an empirical measure of capital structure relevance. Data of 999 firms was selected randomly from among all COMPUSTAT-listed firms with complete quarterly debt ratio data over the period of 1977-85 and regression was used. They strongly support the theoretical model of relevant capital structure choice in a dynamic setting.

Other empirical work done by Baker and Wurgler (2002) on Market Timing theory explains that there is a negative relationship between external finance-weighted average of historical market-to-book ratios with the current market

leverage, and this evidence is conceptualized as market timing. A number of studies confirm that the issuance of securities depends upon the history of firm's market value (Hovakimian, Olper & Titman, 2001; Baker & Wurgler, 2002; Welch, 2004; Flannery & Rangan, 2006; Kayhan & Titman, 2007).

Hovakimian et al. (2001), who also examine the borrowing choice of all firms from the Compustat data from 1979 to 1997 in a dynamic framework and point out that firm, would set a time-varying rather than a constant target debt ratio for which managers make financial decisions.

Loof (2003) with a sample of the 483 listed firms in US from 1989 to 1996 investigated the efficiency of financial system to reallocate resources from savings to investments and found that there were large cross-country differences in determinants of optimal capital structure and observed leverage was often different from target in both equity and debt dominated systems. Moreover, Leary and Roberts (2005) conducted a duration analysis specifically on the rebalancing behavior of non-financial and non-utility firms from annual Compustat data during the year 1962 to year 2000. They concluded that firms within the sample adjust at a frequency of once a year to keep the actual debt ratio within a target range. Furthermore, the persistent effects of shock are actually generated by adjustment costs.

Flannery and Rangan (2006) indicated that when firms' actual leverage differs from their optimal capital structure, firms partially adjust their leverage ratio towards their target capital structure. Several studies such as Lemmon & Zender (2008), Huang and Ritter (2009), Elsas and Florysiak (2010) were conducted to determine whether firms converge to their target capital structure focusing on the estimation of the speed of adjustment.

The findings specify that firms partially converge to their target capital structure, but the speeds of adjustment vary across countries and leverage proxy. (Giannetti, 2003; Bancel & Mittoo, 2004; Antoniou, 2008; Beck, 2009; Psillaki & Daskalakis, 2009; Gropp & Heider, 2010; Kayo and Kimura, 2011; Oztekin & Flannery, 2012; Joeveer, 2013). Moreover, most investigations are based on companies in developed countries, and rarely are companies rooted in developing countries, especially in Pakistan. The adjustment speeds towards target capital structure are disagreed and still need further studies. Diversified results of estimated speed towards optimal debt ratio are reported by previous literature.

Yanmin, Qian Yao, Tony and Wirjanto (2009) investigated the determinants of capital structure for 650 Chinese publicly listed companies over the period from 1999 to 2004 and observed that the Chinese firms adjust towards an equilibrium level of debt ratio in a given year at a very slow rate. In a study conducted to investigate the determinants of capital structure of firms operating in the Asia Pacific region, over the period of 1993-2001, a sample of all non-financial firms listed in the relevant national stock exchanges was used. The findings suggested that the capital structure decision of firms was influenced by the environment in which they operated (Deesomsak, Paudyal & Pescetto, 2004)

## PARTIAL ADJUSTMENT MODELS

Unfortunately, adjustment cost can't be observed, therefore, speed of adjustment acts as an important device to measure the unobserved adjustment costs and to analyze target behavior at the same time. Regularly used by existing literature (Fama & French, 2002; Flannery & Rangan, 2006; Huang & Ritter, 2009), the typical partial adjustment model is:

$$MDR_{i,t+1} - MDR_{i,t} = \beta_1 (MDR_{i,t^*} - MDR_{i,t}) + \mu_{i,t+1}$$

Where,

$MDR_{i,t}$  is firm's debt ratio at time  $t$

$MDR_{i,t^*}$  is firm  $i$ 's targeted debt ratio at the end of period  $t$

Also, a firm mostly completes  $\beta_1$  of the annual gap (Flannery and Rangan, 2006). Putting  $MDR_{i,t^*} = \beta X_{i,t}$  into above equation gives

$$MDR_{i,t+1} - MDR_{i,t} = \beta_1 X_{i,t} - \beta_1 MDR_{i,t} + \mu_{i,t+1}$$

From overhead equation estimating the target leverage according to this regression study assumes that firms reach towards their target leverage within period of time. Put  $\beta_1 = 1$ , we get

$$MDR_{i,t+1} = \beta X_{i,t} + \mu_{i,t+1} \dots \dots \dots (1)$$

Where  $MDR$  is the ratio of debt and  $X_{i,t}$  variables determine a firm's long-run target debt ratio as explained in Table 1.

Using OLS regression with Fama-MacBeth time-series standard errors, Fama and French (2002) measured adjustment speed ranging from 7% to 18% per year, which is suspiciously slow. In China, Tong & Ning (2004) first introduced the dynamic adjustment framework with panel data of 249 listed firms covering 1997-2003. He came to the conclusion that Chinese companies conduct a partial adjustment procedure at a speed of 27.75%. He also concluded that in underdeveloped economy and financial system, listed companies face higher adjustment costs, which could account for the slower targeting pace.

Flannery and Rangan (2006) reported different speed of adjustments towards the target capital structure depending on various estimation techniques, and they also demonstrated that by applying firm-specific effects, the estimation becomes much higher, reaching approximately 38% per year by market value of debt ratio. Wang, Zhou and Fang (2007) estimated the speed of adjustment towards target debt ratio as 27.3% and 41.4% with pooled OLS and firm-fixed effects in China, focusing on 620 public listed companies respectively. Qian, Tian and Wirjanto (2009) choose a sample of 3,900 firm-year observations for 650 firms over the period of 1999 to 2004. They apply generalized methods of moments (GMM) and estimated that listed companies in China rebalance to the equilibrium level of debt at a rate of 18.5%. Adopting the GMM method, Lemmon & Zender (2008) estimated speed of adjustment with book leverage, and obtain a moderate rate of 25% per year.

An incomplete adjustment model has been used to locate that American and British firms are balancing their capital structure again to target leverage ratios (Ozkan, 2001; Flannery & Rangan, 2006). In the same way, an asymmetric

partial adjustment model has been employed to estimate the capital structure of UK firms, resulting that in order to keep away from the cost of insolvency and liquidation; highly leveraged firms are efficient towards adjusting their capital structure (Dang, Garrett & Nguyen, 2011). A later study by Huang and Ritter (2009), using long differencing OLS regression with firm-fixed effects, estimates the adjustment speed of 17% for book leverage and 23.2% for market leverage. Park and Kim (2011) investigated the managerial overconfidence relationship with the firm leverage that is listed in the Korean Stock Market over the period of 1985 to 2007. Their findings stated that overconfidence of the management lead to increase the leverage of the firms.

Getzmann et al., (2010) investigated the capital structure and speed towards the ratio of target capital structure adjustments in Asia, United States, and Europe with the help of large panel data set of 2,706 companies through GMM estimations. They indicate that Trade Off theory has large explanatory power for the capital structure choices of large firms in Asia, Europe and the U.S.A. Additionally, their results provide evidence that industry-fixed effects influence capital structure choices and adjustment speeds across these major regions of the world economy.

Smith, Chen, and Anderson (2010) investigated how quickly New Zealand firms within industries adjust towards target debt ratios between 1984 and 2009. Industries that have relatively high risk are more likely to have higher levels of debt, and also to revert more quickly to a target ratio from which they have deviated. On the other hand, firms in industries that have relatively low risk are more likely to have lower levels of debt, and to feel less urgency to move rapidly back to a target ratio.

Monteforte & Raffaele (2014) examined the diversification of geography and products that are related to the capital structure individually, this diversification increased in leverage in the Italian firms. Findings of the study stated that when firms engage in these diversification strategies, debt cost of agency and problem of asymmetric information may increase, it helps the company to reduce their capacity of debt. Ovtchinnikov (2010) examined deregulations impact significantly at the operating environment and leverage decisions of the firms. Exogenous shocks affect on capital structure that response to the change in operating environment. Dang, Garrett, and Nguyen (2011) in their research work in France, Germany, Japan, UK and US concluded that firms that adjust their target leverage quickly have lower growth and profitability opportunities.

A more recent paper by Hovakimian, Opler & Titman (2011) reported the results of a full-sample OLS regression of 35.7% and 13.2% with and without firm-fixed effect for target adjustments, respectively. Tucker and Stoja (2011) examined the impact of industry membership on the capital structure dynamics of UK quoted firms over the period 1968 to 2006. They found that adjustment towards a given target is rapid, taking on average no more than four years. Chung and Shen (2011) examined the Pecking Order hypothesis and suggested that firms associated with higher information asymmetries should have higher incentives to issue debt. Information

asymmetry creates two effects on capital structure decisions and found a positive relationship between information asymmetry and debt financing.

Issler (2013) investigated the Trade Off theory of capital structure, firms issue short-term debt when the term spread is positive and they increase maturity as the term spread decreases. Firms optimally issue short-term debt to reduce the chance of bankruptcy. Findings predict that debt maturities decrease with firm risk, payout ratio, and credit rating.

Izani Ibrahim and Ruzita Abdul-Rahim (2013) found that Malaysian firms are adjusting their capital structure at a slow speed of 12.7% towards the target capital structure but over leveraged firms adjust faster (29.4%) towards the target as compared to underleveraged firms (13.1%). They also investigated that firms need to adjust faster (17.5%) that are beyond their target as compared to those firms that are close to the target (adjust at only 2.3%). The findings involve that to reduce the cost of leverage adjustment; firm should remain close to the target capital structure.

Hypothesis 1: Small companies in Pakistan adjust their leverage targets at a relatively lower speed towards target leverage and large companies in Pakistan adjust their leverage targets at a relatively higher speed towards target leverage.

Share price performance is another factor that company managers are likely to consider while making a capital structure decision. A firm's debt ratio changes either due to the managerial actions or simply due to the change in its share price. Baker and Wurgler (2002) suggested that by issuing equity when share prices increases, managers could minimize the cost of capital implying that market conditions influence the Pecking Order. According to Welch (2004), over the long time horizons, the results of stock prices are much more important in explaining debt to equity ratios. A survey result shows that a target range or a target debt ratio is judged by almost 81% of firms when building their debt decisions (Graham & Harvey's, 2001). Morellec (2004) stated by using the dynamic model target leverage effect by the change in stocks returns. However, Hovakimian, Opler & Titman (2011) shows that the timing of equity issuance does not have any significant long-lasting impact on capital structure. Consistent with the prediction of the Pecking Order theory that managers issue shares when they are overvalued, the negative and significant effect of share price performance on both market and book leverage confirms that managers issue equity after an increase in the market price of their shares (Antoniou et al., 2008). Hovakimian, Opler & Titman (2011) also report an inverse relation between target leverage and changes in share price.

Masulis (1980), Asquith and Mullins (1986), and Smith, Jianguo & Hamish (2010) found that stock prices act favorably towards announcements of leverage- increasing transactions but unfavorably towards announcements of leverage- decreasing transactions. These results are not consistent with the hypothesis that firms adjust towards the optimal (from the shareholders' point of view) capital structure when they reduce their leverage. Nevertheless, these results can be reconciled with the target leverage hypothesis once we recognize that the managerial target debt ratio may

deviate from the shareholders' optimum level. In addition, firms prior to issuing equity when stock prices increases, Masulis & Korwar (1986) indicate that firms when performs well when they reduce their leverage.

$$MDR_{i,t+1} - MDR_{i,t} = \beta_1 \Delta X_{i,t} + \beta_2 SURP + \mu_{i,t} \quad (2)$$

Where MKR is the ratio of market debt, SURP measures the impact of unanticipated share prices on MKR and  $X_{i,t}$  variables determine a firm's long-run ratio of target debt as explained in Table 1.

Hypothesis 2: Anticipated share price changes have a positive effect on company's targeted leverage.

## RESEARCH METHODOLOGY

### Research Data:

The sample data for this study is drawn from the companies present and listed on the Karachi Stock Exchange (KSE) 100 index for the financial years 2006 to 2012. Following the earlier studies, financial companies and regulated companies are not included in the analysis. This is because of the fact their capital decisions may take into consideration special factors and they have completely different regulatory frameworks when compared with the non-financial companies. The companies with less than three years of financial data are also excluded as regression specifications include a lagged dependent variable.

Finally we are left with 344 listed companies with complete information for 2,064 firm-year observations, Due to the time constraint study had collected sample of 202 firms for the years 2006 to 2012 by applying Slovin's Formula (Galero-Tejero, 2011). Some earlier studies ignore smaller companies from their analysis, because their cost of adjustment is unusually high or their determinants of leverage significantly differ. This research study includes all types of the firms and also reports estimates of the main regression model for various firm size classes. The research evaluates 2 sectors sampled listed companies on KSE-100 (Appendix – 1). Sample companies use a range of companies at the end of fiscal year and hence study states observations annually, as opposed to calendar time.

Secondary data is collected for addressing the research problems fulfilling the objectives of the study. The Karachi Stock Exchange (KSE) website, State Bank of Pakistan (SBP) five year report on Financial Analysis of non-financial firms for the period 2006-2012, and companies' annual reports, are used extensively for secondary data to gather relevant financial data.

### DATA AND VARIABLES:

The variables used in this study are comprised of two groups, dependent (predicted) and independent (predictor) variables. Market Debt Ratio and Price-Adjusted Market Debt Ratio are taken as a predicted variables, while independent variables are shown in the table below. Most of the present variables are planned according to the variables that were used in an earlier research done by Flannery and Rangan (2006) on the "Partial Adjustment toward Target Capital Structure". For data analysis, MS Excel 2007 and Stata 16 are used.

TABLE -1: Independent Variables		
Variable	Definition	Expected Effects on Target Debt Ratio
<i>EBIT_TA</i>	Earnings before interest and taxes, as a proportion of total assets	Firms with higher earnings prefer to operate with either lower or higher leverage. Lower leverage might occur as higher earnings mechanically reduce leverage. Higher leverage might reflect the firm's ability to meet debt payments out of its relatively high earnings cash flow.
<i>MB</i>	Book value of liabilities plus market value of equity divided by book value of total assets	A higher MB ratio is generally taken as a sign of more attractive future growth options.
<i>DEP_TA</i>	Depreciation as a proportion of total assets	Firms with more depreciation expenses have less need for the interest deductions associated with debt financing.
<i>lnTA</i>	Log of asset size	Larger firms tend to have more leverage, perhaps because they are more transparent, have lower asset volatility, or naturally sell large enough debt issues that the fixed costs of public borrowing are not prohibitive.
<i>FA_TA</i>	Fixed asset proportion	Firms operating with greater tangible assets have a higher debt capacity.

To model a target debt ratio, a set of firm characteristics ( $X_{i,t}$ ) that appear in the early literature (Hovakimian, 2003; Fama and French, 2002; Flannery and Rangan, 2006). Table 1 defines the variables used in this study with their expected effects on the target debt ratio.

## RESULTS AND FINDINGS

**Textile Sector:** The GMM analysis for the textile sector shows that the  $MDR_{it}$  coefficient indicates an adjustment speed of 35.44% (t value = 6.50) annually from the current debt structure. Also, the inclusion of SURP variable increases the annual speed adjustment from 35.44% to 41.39%, indicating an increment of almost 6% in the adjustment speed towards the target capital structure for the textile sector.

**Food Sector:** The GMM analysis for the food sector shows that the  $MDR_{it}$  coefficient indicates an adjustment speed of 93.62% (t value = -18.57) annually from the current debt structure. The SURP variable addition in the previous GMM method also increases the annual speed adjustment of almost 3% towards the target capital structure for the food sector.

**Chemical Sector:** The GMM analysis for the Chemical sector shows that the  $MDR_{it}$  coefficient indicates an adjustment speed of 78.87% (t value = 9.64) annually from the current debt structure. The SURP variable addition in the previous GMM method also increases the annual speed adjustment of almost 5% towards the target capital structure for the chemical sector.

**Manufacturing Sector:** The GMM analysis for the Manufacturing sector shows that the  $MDR_{it}$  coefficient indicates an adjustment speed of 35.44% (t value = 6.50) annually from the current debt structure. Also, the inclusion of SURP variable increases the annual speed adjustment from 35.44% to 41.39%, indicating an increment of almost 6% in the adjustment speed towards the target capital structure for the manufacturing sector.

**Non Metallic Sector:** The GMM analysis for the Non Metallic sector shows that the  $MDR_{it}$  coefficient indicates an adjustment speed of 93.23% (t value = -9.68) annually from the current debt structure. Also, the inclusion of SURP variable increases the annual speed adjustment from 93.23% to 99.66%, indicating an increment of almost 6% in the adjust-

ment speed towards the target capital structure for the non metallic sector.

**Motor Vehicle Sector:** The GMM analysis for the Motor sector shows that the MDRit coefficient indicates an adjustment speed of 84.41% (t value = -10.48) annually from the current debt structure. The inclusion of SURP variable increases the annual adjustment speed by 2% towards the target capital structure for the motor vehicle sector.

**Fuel Energy Sector:** The GMM analysis for the Fuel sector shows that the MDRit coefficient indicates an adjustment speed of 75.20% (t value = -8.05) annually from the current debt structure. The addition of SURP in the fuel energy sector also has a positive increment of 1% towards the target capital structure of the companies.

**Coke and Refined Sector:** The GMM analysis for the Coke and Refined sector shows that the MDRit coefficient indicates an adjustment speed of 101.44% (t value = -96.87) annually from the current debt structure. Also, the inclusion of SURP variable has a quite low impact on the change of the annual

adjustment speed.

**Paper and Board Sector:** The GMM analysis for the Paper and Board sector shows that the MDRit coefficient indicates an adjustment speed of 55.46% (t value = -4.26) annually from the current debt structure. The addition of SURP in the fuel energy sector also has a positive increment of 18% towards the target capital structure, which is very high when compared to the other sectors operating in the Pakistan.

**Electric Machinery Sector:** The GMM analysis for the Electric sector shows that the MDRit coefficient indicates an adjustment speed of 84.41% (t value = -10.48) annually from the current debt structure. The inclusion of SURP variable increases the annual adjustment speed by 2% towards the target capital structure for the motor vehicle sector.

**Services Sector:** The GMM analysis for the Services sector shows that the MDRit coefficient indicates an adjustment speed of 67.44% (t value = -4.70) annually from the current debt structure. Also, the inclusion of SURP variable has a quite low impact on the change of the annual adjustment speed.

**Table – 2: Speed of Adjustment over Model Variations**

Sectors	Technique	$\lambda_0$	$\lambda_1$	$\lambda_2$	$\lambda_3$	$\lambda_4$	$\lambda_5$	$\lambda_6$
Textile	GMM without SURP ( $\lambda_6$ )	0.3544	(0.2179)	(0.1355)	0.3645	0.0087	0.0006	0.7300
	GMM with SURP ( $\lambda_6$ )	0.4139	(0.1112)	(0.0987)	0.2171	0.0064	0.0004	
Food	GMM without SURP ( $\lambda_6$ )	(0.9362)	(0.1081)	(0.0217)	(0.5126)	0.0018	(0.0014)	1.6397
	GMM with SURP ( $\lambda_6$ )	(0.9627)	(0.1991)	(0.0144)	(1.1489)	0.0052	(0.0085)	
Chemical	GMM without SURP ( $\lambda_6$ )	(0.7887)	0.0574	(0.0013)	0.1494	(0.0088)	0.0056	1.5905
	GMM with SURP ( $\lambda_6$ )	(0.8326)	(0.0104)	0.0014	0.1847	(0.0073)	0.0059	
Manufacturing	GMM without SURP ( $\lambda_6$ )	0.3544	(0.2179)	(0.1355)	0.3645	0.0087	0.0006	0.7300
	GMM with SURP ( $\lambda_6$ )	0.4139	(0.1112)	(0.0987)	0.2171	0.0064	0.0004	
Non Metallic	GMM without SURP ( $\lambda_6$ )	(0.9339)	(0.7390)	(0.1279)	(0.2311)	0.0157	(0.0078)	1.6951
	GMM with SURP ( $\lambda_6$ )	(0.9966)	(0.4610)	(0.0826)	(0.2743)	0.0077	(0.0027)	
Motor Vehicle	GMM without SURP ( $\lambda_6$ )	(0.8441)	0.0138	(0.0518)	(0.0710)	(0.0004)	(0.0075)	1.6384
	GMM with SURP ( $\lambda_6$ )	(0.8563)	0.0123	(0.0170)	0.0410	(0.0033)	(0.0154)	
Fuel Energy	GMM without SURP ( $\lambda_6$ )	(0.7520)	(0.0921)	0.0001	(1.2775)	(0.0010)	0.0014	1.2148
	GMM with SURP ( $\lambda_6$ )	(0.7628)	(0.0585)	0.0001	(1.2306)	(0.0015)	0.0041	
Coke and Refined	GMM without SURP ( $\lambda_6$ )	(1.0144)	(0.0094)	0.0013	(0.0168)	0.0008	(0.0009)	2.0323
	GMM with SURP ( $\lambda_6$ )	(1.0173)	(0.0096)	(0.0022)	0.0219	0.0011	(0.0004)	
Paper and Paper Board	GMM without SURP ( $\lambda_6$ )	(0.5546)	0.5634	(0.0288)	(8.6268)	(0.0248)	0.0756	1.7072
	GMM with SURP ( $\lambda_6$ )	(0.7273)	0.8291	(0.0079)	(5.3382)	(0.0147)	0.0650	
Electric Machinery	GMM without SURP ( $\lambda_6$ )	(0.8441)	0.0138	(0.0518)	(0.0710)	(0.0004)	(0.0075)	1.6384
	GMM with SURP ( $\lambda_6$ )	(0.8563)	0.0123	(0.0170)	0.0410	(0.0033)	(0.0154)	
Services	GMM without SURP ( $\lambda_6$ )	(0.6744)	0.2851	0.0044	(1.0000)	(0.0102)	0.0023	1.0005
	GMM with SURP ( $\lambda_6$ )	(0.6859)	0.2903	0.0044	(0.9277)	(0.0099)	0.0024	

## CONCLUSION:

Study found that non-financial companies pursued and recognized ratio of target capital over the last 7 years from 2006-12. In addition, equal evidence was found across all the sector of companies. The adjustment speeds with or without the SURP variable are somehow very similar for all the sectors, except the paper and paper board sector where there is a high positive increment towards the target capital structure adjustment. Regardless of the specification or estimation method employed, the variables meant to capture target leverage are highly significant, both individually and collectively.

## FUTURE IMPLICATIONS

This study will provide a basis for the managers to make appropriate optimal capital structure, which will increase the profitability of firms. Study provides the ground base for the academic research in terms of understanding the level and of reaching optimal structure. Future research may open avenues for managers to understand the necessity to secure target optimal capital structure as quickly as possible given that targeted capital structure has potential impact on share price.

## REFERENCES

- Abor, J. (2005). The effect of capital structure on profitability: an empirical analysis of listed firms in Ghana. *The Journal of Risk Finance*, 6(5), 438-445.
- Abdeljawad, I., Mat-Nor, F., Ibrahim, I., & Abdul-Rahim, R. (2013). Dynamic Capital Structure Trade-off Theory: Evidence from Malaysia. *International Review of Business Research Papers*, 9(6).
- Antoniou, A., Guney, Y., & Paudyal, K. (2008). The determinants of capital structure: capital market-oriented versus bank-oriented institutions. *Journal of Financial and Quantitative Analysis*, 43(01), 59-92.
- Asquith, P., & Mullins Jr., D. W. (1986). Equity issues and offering dilution. *Journal of Financial Economics*, 15(1), 61-89.
- Arioglu, E., & Tuan, K. (2014). Speed of adjustment: Evidence from Borsa Istanbul. *Borsa Istanbul Review*. doi: 10.1016/j.bir.2014.02.002
- Baker, M., & Wurgler, J. (2002). Market Timing and Capital Structure. *The Journal of Finance*, 57, 1–32. doi: 10.1111/1540-6261.00414
- Baltacı, N., & Ayaydin, H. (2014). Firm, Country and Macroeconomic Determinants of Capital Structure: Evidence from Turkish Banking Sector. *EMAJ: Emerging Markets Journal*, 3(3). doi: 10.5195/emaj.2014.46
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2009). Financial institutions and markets across countries and over time: Data and analysis.
- Bessler, W., Drobetz, W., Haller, R., & Meier, I. (2013). The international zero-leverage phenomenon. *Journal of Corporate Finance*, 23, 196-221.
- Bhabra, G., Sood, A., Fisher, B., Cartwright, L., Saunders, M., Evans, W. H., et al. (2009). Nanoparticles can cause DNA damage across a cellular barrier. *Nature Nanotechnology*, 4(12), 876-883.
- Bancel, F., & Mittoo, U. (2004). Cross-country determinants of capital structure choice: a survey of European firms. *Financial Management* 33(4), 103-132.
- Bevan, A.A., & Danbolt, J. (2002) Capital structure and its determinants in the United Kingdom – a decompositional analysis. *Applied Financial Economics* 12(3), 159-170.
- Bauweraerts, J., & Colot, O. (2012). Pecking-Order or Static Trade-off Theory in Family Firms? Evidence from Belgium. *International Business Research*, 5(11). doi: 10.5539/ibr.v5n11p1
- Chung, K. H., & Shen, C.H. (2011). Pecking Order , Access to Public Debt Market and Information Asymmetry Pecking Order , Access to Public Debt Market and Information Asymmetry.
- Dang, V. A. (2013). Testing capital structure theories using error correction models: evidence from the UK, France and Germany. *Applied Economics*, 45(2), 171-190. doi: 10.1080/00036846.2011.597724
- Dang, V., Garrett, I., & Nguyen, C. (2011). Asymmetric partial adjustment toward target leverage: international evidence. *Unpublished Manuscript, University of Manchester*.
- Dang, V. A., Kim, M., & Shin, Y. (2012). Asymmetric capital structure adjustments: New evidence from dynamic panel threshold models. *Journal of Empirical Finance*, 19(4), 465-482.
- Deesomsak, R., Paudyal, K., & Pescetto, G. (2004). The determinants of capital structure: evidence from the Asia Pacific region. *Journal of Multinational Financial Management*, 14(4), 387-405.
- Elsas, R., & Florysiak, D. (2010). *Dynamic capital structure adjustment and the impact of fractional dependent variables*. Paper presented at the 14th Conference of the Swiss Society for Financial Market Research.
- Fama, E. F., & French, K. R. (2002). Testing trade-off and pecking order predictions about dividends and debt. *Review of Financial Studies*, 15(1), 1-33.
- Fischer, E. O., Heinkel, R. and Zechner, J. (1989), Dynamic Capital Structure Choice: Theory and Tests. *The Journal of Finance*, 44: 19–40. doi: 10.1111/j.1540-6261.1989.tb02402.x
- Flannery, M. J., & Rangan, K. P. (2006). Partial adjustment toward target capital structures. *Journal of Financial Economics*, 79(3), 469-506.
- Frank, M. Z., & Goyal, V. K. (2009). Capital structure decisions: which factors are reliably important? *Financial Management*, 38(1), 1-37.
- Getzmann, A., Lang, S., & Spremann, K. (2010). Determinants of the target capital structure and adjustment speed—evidence from Asian, European and US-capital markets: Working Paper.
- Giannetti, M., (2003). Do better institutions mitigate agency problems? Evidence from corporate finance choices. *Journal of Financial and Quantitative Analysis*, 38, 185-212.
- Graham, J. R., and C. Harvey, (2001) .The Theory and Practice of Corporate Finance: Evidence From The Field. *Journal of Financial Economics*, 60, 187-243.
- Galero-Tejero, E. (2011). *A Simplified Approach to Thesis and Dissertation Writing* (pp. 43-44). Mandaluyong City: National Book Store.
- Gropp, R., & Heider, F. (2010). The Determinants of Bank Capital Structure. *Review of Finance*, rfp030.
- Gungoraydinoglu, A., & Öztekin, Ö. (2011). Firm- and country-level determinants of corporate leverage: Some new international evidence. *Journal of Corporate Finance*, 17, 1457-1474.
- Huang, R., & Ritter, J. R. (2009). Testing theories of capital structure and estimating the speed of

- adjustment. *Journal of Financial and Quantitative Analysis*, 44(02), 237-271.
- Hatfield, G., Cheng, L., Davidson, W., (1994). The determination of optimal capital structure: The effect of firm and industry debt ratios on market value. *Journal of Financial and Strategic Decisions*, 7(3), 1-14
- Hovakimian, A., Opler, T.C., & Titman, S. (2011). The Debt-Equity Choice: An Analysis of Issuing Firms. *Journal of Financial and Quantitative Analysis*, 36(1), 1-24.
- Issler, P., & Patel, P. (2013). A trade off theory based explanation of why firms vary their debt maturity with the term spread. Available at SSRN 2363808.
- Jøeveer, K. (2013). Firm, country and macroeconomic determinants of capital structure: Evidence from transition economies. *Journal of Comparative Economics*, 41(1), 294-308.
- Jalilvand, A. & Harris, R. S. (1984). Corporate Behaviour in Adjusting to Capital Structure and Dividend Targets: An Econometric Study. *Journal of Finance*, 39(1), 127-145.
- Kayhan, A., & Titman, S. (2003). Firms. Histories and Their Capital Structure. University of Texas Working paper.
- Kayo, E. K., & Kimura, H. (2011). Hierarchical determinants of capital structure. *Journal of Banking & Finance*, 35(2), 358-371.
- Kundakchyan, R.M., & Zulfakarova, L.F. (2014). Current issues of optimal capital structure based on forecasting financial performance of the company. *Life Sci J*, (6s), 368-371
- Lepetit, L., Tarazi, A., & Zedek, N. (2012). Bank Regulatory Capital Adjustment and Ultimate Ownership Structure: Evidence from European Commercial Banks.
- Löffler, G. (2009). Incorporating the Dynamics of Leverage into Default Prediction.
- Lööf, H. (2003). *Dynamic optimal capital structure and technological change*: ZEW Discussion Papers.
- Leary, M., & Roberts, M. (2003). Do Firms Rebalance their Capital Structure. Duke University, Working paper.
- Lemmon, M.L., & Zender, J.F. (2008). Looking under the lamppost: An empirical examination of the determinants of capital structure. University of Utah and University of Arizona, working paper.
- Myers, S. C., (1984). The Capital Structure Puzzle. *The Journal of Finance*, 39(3), 575-592.
- Masulis, R. W. (1980). The effects of capital structure change on security prices: A study of exchange offers. *Journal of Financial Economics*, 8(2), 139-178.
- Masulis, R. W., & Korwar, A. N. (1986). Seasoned equity offerings: An empirical investigation. *Journal of Financial Economics*, 15(1), 91-118.
- Modigliani, F., & Miller, M. H. (1958). The Cost of Capital, Corporate Finance and the Theory of Investment. *American Economic Review*, 48, 261-97.
- Morellec, E. (2004). Can managerial discretion explain observed leverage ratios? *Review of Financial Studies*, 17(1), 257-294.
- Monteforte, D., (2010). Interactive Effect of Product and International Diversification on Capital Structure. 1-30.
- Monteforte, D., & Staglianò, R. (2014). Firm Complexity and Capital Structure: Evidence from Italian Diversified Firms. *Managerial and Decision Economics*.
- Moyo, V., Wolmarans, H., & Brümmer, L. (2013). Dynamic Capital Structure Determinants: Some Evidence From South African Firms. *Journal of Economic and Financial Sciences*, JEF, 6(3), 661-682.
- Ovtchinnikov, A. V. (2010). Capital structure decisions: evidence from deregulated industries. *Journal of Financial Economics*, 95(2), 249-274.
- Ozkan, A. (2001). Determinants of capital structure and adjustment to long run target: evidence from UK company panel data. *Journal of Business Finance and Accounting*, 28, 175-199.
- Öztekin, Ö., & Flannery, M. J. (2012). Institutional determinants of capital structure adjustment speeds. *Journal of Financial Economics*, 103(1), 88-112.
- Psillaki, M., & Daskalakis, N. (2009). Are the determinants of capital structure country or firm specific? *Small Business Economics*, 33(3), 319-333.
- Park, C., & Kim, H. (2011). The Effect Of Managerial Overconfidence On Leverage. *International Business & Economics Research Journal (IBER)*, 8(12).
- Qian, Y., Tian, Y., & Wirjanto, T. S. (2009). Do Chinese publicly listed companies adjust their capital structure toward a target level? *China Economic Review*, 20(4), 662-676.
- Rajan, R.G., & Zingales, L. (1995). What Do We Know about Capital Structure? Some Evidence from International Data. *The Journal of Finance*, 50 (5), 1421-1460
- Smith, D. J., Jianguo C., & Hamish, D. A. (2010). Partial Adjustment towards Target Capital Structure? : Evidence from New Zealand. 1-4
- Shen, C. H.-h. (2014). Pecking order, access to public debt market, and information asymmetry. *International Review of Economics & Finance*, 29, 291-306.
- Sivathaasan, N., & Rathika, S. (2013). Capital Structure and EPS: A study on Selected Financial Institutions Listed on Colombo Stock Exchange (CSE) in Sri Lanka. *European Journal of Business and Management*, 5(14), 69-73.
- Smith, D. J., Chen, J., & Anderson, H. D. (2010). Partial adjustment towards target capital structure: evidence from New Zealand. *SSRN eLibrary*.
- Sobrinho, B., Rodrigues, L., Sheng, H. H., & Lora, M. I. (2012). Country Factors and Dynamic Capital Structure in Latin American Firms. *Revista Brasileira de Finanças*, 10(2).
- Smith Jr, C. W. (1986). Investment banking and the capital acquisition process. *Journal of Financial Economics*, 15(1), 3-29.
- Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. *The Journal of Finance*, 43(1), 1-19.
- Tong, S., & Ning, Y. (2004). Does capital structure affect institutional investor choices? *The Journal of Investing*, 13(4), 53-66.
- Tucker, J., & Stoja, E. (2011). Industry membership and capital structure dynamics in the UK. *International Review of Financial Analysis*, 20(4), 207-214. doi: 10.1016/j.irfa.2011.03.002
- Welch, I. (2004). Capital structure and stock returns. *Journal of Political Economy*, 112(1), 106-132.