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Corporate Governance Quality and Capital Structure Dynamics: Evidence from Pakistan

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Abstract: Corporate governance is highlighted as an important aspect of developing economies. The literature well explained the relationship between corporate governance and capital structure, but little is known about the role of debt as a takeover defense and disciplinary tool, particularly for a debt-based economy such as Pakistan. This study used data from 173 non-financial firms listed on a stock exchange in Pakistan from 2008 to 2017. For the empirical investigation, the study incorporated the Orthogonal Generalized Method of Momentum approach to unbalanced panel data owing to endogeneity. The findings show that in over-levered firms, the adjustment speed of capital structure is slower with weak corporate governance. This result indicates that managers use debt as a takeover defense tool to protect their jobs, even at the cost of shareholders' benefits. However, for under-levered firms, the adjustment speed of capital structure with weak governance is slower. This aspect specifies that the disciplinary effect of debt is more important for managers. This study concludes that managers with weak corporate governance take benefits at the cost of shareholders' wealth. The study recommends that managers should develop an understanding of corporate governance to safeguard the rights of the shareholders.

Keywords: corporate governance, disciplinary effect, dynamics of capital structure, takeover defense tool.

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INTRODUCTION

Optimal capital structure is a point where firm trade-offs its costs and benefits of using debt (Do et al., 2020; Tekin, 2021; Ezeani et al., 2022). The firm maintains its optimal capital structure because at this point the cost of capital is the minimum, which ultimately increases the value of the firm. However, whenever the firm deviates from its optimal (i.e., target) capital structure, it can affect the firm's performance. Firms adjust toward their optimal leverage if the benefits are more than the cost (Do et al., 2022; Hegde et al., 2022). The adjustment process takes some time, specifically in cases when firms must bear adjustment costs. If firms' costs of adjustment are high, firms will take more time to adjust toward optimal leverage (Myers, 1984). It is confirmed by the existing literature that firms who deviate from their target capital structure face high adjustment costs (DeAngelo, 2022;

Morais et al. (2022). Adjustment costs are market imperfection (i.e., Agency cost, financial distress, transaction cost, and bankruptcy cost) which force firms to deviate from their optimal level. Adjustment costs directly depend on how severe the conflict exists among shareholders and managers, ultimately, affecting the adjustment speed towards their target capital structure. The literature suggests many explanations for adjustments cost (i.e., agency costs) of the capital structure that relates to self-interested managers. Thus, greater attention is needed to identify adjustment costs, which affect the adjustment speed of capital structure. It is therefore essential for managers to react to such cost adjustments rationally (Chang et al., 2014; Nguyen et al., 2021).

In this paper, we investigate the agency conflict between shareholders and managers on the adjustment speed of capital structure by considering the effect of corporate governance quality on two roles of debt, such as 1) takeover defense effect and 2) disciplinary effect. The defense effect explains how managers utilize debt against corporate attackers and invaders (Sheikh, 2019; Gyimah et al., 2021). When managers feel that their jobs are under pressure, due to the takeover attempt, they increase leverage above the optimal level, managers do that for their benefit (i.e., security of their jobs). When managers employ debt as a takeover defense, they increase the adjustment speed for the under-levered firm (i.e., when firm leverage is below the optimal capital structure) but reduces the speed of adjustment for the over-levered firm (i.e., when firm leverage is above optimal leverage) towards its optimal capital structure for securing their jobs (Chang et al., 2014). The disciplinary role explains that debt serves as a control mechanism over self-interested managers (Huang et al., 2018; Kale et al., 2019). Debt bonds the managers for future payments of interest so that managers have less control over the use of free cash flow (i.e., investing in negative NPV projects). Self-interested managers reduce the debt in firms' capital structure without considering its effect on shareholders' wealth. For obtaining their benefits, self-interested managers increase the adjustment speed of capital structure for the over-levered firm and slow the speed for under-levered firms toward their target capital structure.

This study investigated the role of debt as a takeover defense tool and disciplinary tool over the speed of adjustment of capital structure in the context of a debt-based economy like Pakistan, according to the best knowledge of researchers; no significant study was found in the literature. This study is novel in the following ways: firstly, this study advances the literature that corporate governance quality data is based on shareholders' rights instead of managers' rights (i.e., Chang et al., 2014) and supports the agency theory. Secondly, this is the first study that used the criteria to select the best GMM model either system or difference (i.e., Bond et al., 2001) is a suitable technique for the speed of adjustment of the capital structure toward its target based on corporate governance quality.

METHODS

This study used the data of non-financial listed firms in Pakistan. in 2017, the total number of listed firms on the Pakistan Stock Exchange (PSX) was 559, which included 190 financial firms. after excluding financial firms, the total non-financial listed firms were 369[1]. We selected firms listed from 2008 to 2017. This study also excluded financial firms by following the previous studies. Further, this study excluded the firms with incomplete annual reports, negative equity, missing stock price data & values of variables, and outliers. After screening the data, this study included 173 firms' panel data for final analysis. This study sample represents all non-financial sectors listed on PSX. This study sample represents 46.88 % of the total listed non-financial firms in 2017. This sample also excluded non-financial industry service sectors. This study collected data on corporate governance and firm

1 Source: Financial Statements Analysis of Companies (Non-Financial) listed at Pakistan Stock Exchange 2017

characteristics from annual reports. This study collected data on corporate governance and firm characteristics from annual reports. Further, this study collected stock price data from the publication of the Pakistan Stock Exchange.

In this study, we followed the work of Chang et al. (2014), Khan & Kouser (2019), Gyimah et al. (2021) and Nguyen et al. (2022). Table 1 shows the variables of the study and their definition.

Table 1 Variables and their definitions

Variable	Proxy	Definition
Leverage proxies		
Total debt to market ratio	TMDR	= (sum of short-term and long-term debt) / ((sum of short-term and long-term debt + price at the end of financial year × shares outstanding).
Leverage determinants		
Industry leverage (Market value)	TMDRMED	= Median of industry market debt ratio.
Tangibility	TANG	= Fixed assets of firm /total assets.
Firm size	SIZE	= Natural log of total assets in Pakistani thousands of rupees.
Market to book ratio	MBR	= (sum of short-term and long-term debt + price at the end of financial year× shares outstanding) / (short-term debt + long-term + book equity).
Governance Index of principal component 1	PC1	= Principal component analysis 1 of 13 significant measures of corporate governance codes of 2002 and 2012 of Pakistan.
Profitability ratio	EBIT	= Earnings before interest and taxes/total assets.
Depreciation expense ratio	DEP	= Depreciation expense /total assets.

Following the previous work of Chang et al. (2014), Khan & Kouser (2019), Gyimah et al. (2021) and Nguyen et al. (2022), we estimated the target leverage by regression leverage over its determinants (median value of industry leverage, tangibility, size, market/book ratio, governance index (PC1), EBIT, and depreciation). Target leverage is fitted or estimated value of regression, where residual shows the over and under levered for specific observation. For estimating target leverage, we used equation 1.

$$TMDR_{t+1} = \alpha + \beta_1 TBDRMED + \beta_2 TANG + \beta_3 SIZE + \beta_4 MBR + \beta_5 PC1 + \beta_6 EBIT + \beta_6 BEP + \mu_{t+1} \quad \ldots 1$$

For estimating the speed of adjustment of a weak, medium, and strong governance firms, we divide our data into four quartiles. The first quartile firms belong to the weak governance firms, second and third quartile firms belong to medium governance firms and fourth quartile firms belong to strong governance firms. We sorted data based on the statistical weighting index (PCA1) of variables used in this study.

We estimated the adjustment speed of capital structure towards its target of strong, medium, and weak governance firms separately by using equation 2, we also use this equation for over-levered and under-levered firms of each quartile separately. We sorted our data for the classification of the under-levered and over-levered firms by using the residual of equation 1.

$$TMDR = \alpha + (1 - \beta_1)TMDR_{t-1} + \beta_2 TMRMED + \beta_3 TANG + \beta_4 SIZE + \beta_5 MBR + \beta_6 PC1 + \beta_6 EBIT + \beta_7 DEP + \mu \quad \ldots 2$$

RESULTS AND DISCUSSION

Table 2 shows the descriptive statistics of the study. It indicates that strong corporate governance firms hold less debt and tangibility compared with weak corporate governance firms. strong corporate governance firms have more size, market-to-book value, and profitability compared with weak corporate governance firms.

Table 2 Descriptive Statistics

	TMDR	TMDRMED	TANG	SIZE	MBR	PC1	EBIT	DEP
All firms								
Mean	0.56	0.61	0.53	15.42	1.31	-0.15	0.11	0.03
Median	0.61	0.66	0.54	15.20	0.93	-0.27	0.10	0.03
Max	0.99	0.85	1.00	20.25	16.55	5.32	0.69	0.18
Min	0.03	0.09	0.00	12.09	0.23	-2.69	-0.60	0.00
Std. Dev	0.27	0.17	0.20	1.45	1.35	2.17	0.11	0.02
Obs.	1730	1730	1730	1730	1730	1730	1730	1730
Strong corporate governance firms								
Mean	0.41	0.49	0.46	16.41	1.87	3.01	0.15	0.03
Median	0.40	0.47	0.46	16.58	1.27	3.11	0.11	0.03
Max	0.94	0.83	0.99	20.19	16.55	5.36	0.69	0.18
Min	0.03	0.10	0.01	13.43	0.40	0.98	-0.16	0.00
Std.Dev.	0.24	0.15	0.20	1.60	1.99	1.24	0.13	0.02
Weak corporate governance firms								
Mean	0.69	0.73	0.57	14.79	0.99	-2.49	0.10	0.03
Median	0.77	0.80	0.57	14.81	0.84	-2.55	0.09	0.03
Max	0.99	0.85	1.00	19.15	10.89	-1.98	0.60	0.08
Min	0.03	0.31	0.00	12.22	0.28	-2.69	-0.44	0.00
Std. Dev.	0.25	0.12	0.19	1.16	0.85	0.19	0.10	0.01

TMDR is total debt/market ratio, TMDRMED is the industry median of total debt/ market ratio, TBDR is total debt/book ratio, TBDRMED is the industry median of total debt/ book ratio, TANG is tangibility, SIZE firm size, MBR is market to book ratio, PC1 is a corporate governance index of principal component analysis 1, EBIT is profitability/assets, and DEP is depreciation/assets.

There is no well-developed theoretical foundation for choosing the related corporate governance variables and their relative weights for developing a corporate governance index. The literature recommends three types of corporate governance indexes: 1) equal weightage corporate governance index which treats all provisions equally 2) expert weightage corporate governance index which assigns weightage based on expert opinions

3) statistically weightage corporate governance index which assigns weight to the index provision statistically. The first 2 indexes suffer from biases of weightage of the provisions. To avoid biases, this study performed a PCA analysis for the development of a statistically weighted corporate governance index. Principal Component Analysis permits an exploration of the unknown nature of the factor structure which is hidden behind individual governance provisions. especially, PCA shortens the information limited in the individual governance provision into one corporate governance index (Ammann et al., 2011). PCA is a statistical method to assign weight to corporate governance provisions on a statistical basis, which reduces the risk of personal biases due to the weighting index (i.e., Ordinal index). PCA is a data reduction method that divides the data into principal components. The first component explains most of the data variation, which is mostly used in literature as a corporate governance index (larker, 2007; Ammann et al, 2011). All corporate governance provisions are not important, PCA permits researchers to include only those corporate governance provisions which are most important and have a significant impact. For this objective, PCA offers two post-estimation tests 1) Squared Multiple Correlations (SMC) and 2) The Kaiser–Meyer–Olkin. After performing these two tests, we reduce our corporate governance provisions from 70 to 13, those are more important provisions for developing a corporate governance index. Among 57 corporate governance provisions, mostly all firms report regularly or very few firms report them. So, these corporate governance provisions have no significant variation in the development of the corporate governance index.

Table 3 displays the correlation analysis of corporate governance provisions for PC1 index development suggesting that there is no problem to include these provisions for the development of the index through principal component analysis 1. Most of the corporate governance provisions are highly correlated and suitable to develop the PC1 index.

Table 3 Principal Component Analysis

	b2	b5	b8	ca1	ca2	ca3	ca4	ca11	ca13	ca14	trnspt12	ics2	ics3
b2	1												
b5	0.5	1											
b8	0.43	0.67	1										
ca1	0.7	0.48	0.39	1									
ca2	0.68	0.44	0.42	0.97	1								
ca3	0.66	0.51	0.49	0.86	0.89	1							
ca4	0.63	0.46	0.54	0.84	0.88	0.99	1						
ca11	0.52	0.61	0.65	0.32	0.38	0.51	0.51	1					
ca13	0.5	0.75	0.26	0.54	0.46	0.45	0.45	0.55	1				
ca14	0.32	0.52	0.18	0.44	0.35	0.14	0.36	0.16	0.18	1			
trnspt12	0.28	0.3	0.51	0.08	0.19	0.17	0.21	0.17	0.23	0.25	1		
ics2	0.56	0.82	0.63	0.38	0.44	0.53	0.52	0.68	0.78	0.21	0.41	1	
ics3	0.58	0.83	0.65	0.41	0.45	0.55	0.56	0.7	0.78	0.21	0.32	0.99	1

Table 4 shows that principal component 1 explains most of the variation in the data, principal component 1 explains 36% variation in the data, principal component 2 explains 16% variation in the data and principal component 3 shows 9% variation in the data.

Table 4 Principal Component Analysis

Component	Eigenvalue	Difference	Proportion	Cumulative
Com1	4.72	2.65	0.36	0.36
Com2	2.06	0.95	0.16	0.52
Com3	1.1	0.14	0.09	0.61
Com4	0.96	0.03	0.08	0.69
Com5	0.93	0.23	0.07	0.76
Com6	0.7	0.03	0.06	0.82
Com7	0.67	0.05	0.05	0.87
Com8	0.61	0.1	0.05	0.92
Com9	0.51	0.13	0.03	0.95
Com10	0.37	0.22	0.03	0.98
Com11	0.14	0.04	0.01	0.99
Com12	0.1	0.03	0.01	0.99
Com13	0.08	0.01	0	1

Table 5 shows the SMC measures help identify variables that cannot be explained well by the other variables. For such variables, you should re-evaluate whether they should be included in the analysis. In our examples, none of the SMCs are so small as to warrant exclusion.

Table 5 Squared Multiple Correlations

Variable	SMC
b2	0.317
b5	0.519
b8	0.261
ca1	0.738
ca2	0.754
ca3	0.859
ca4	0.855
ca11	0.255
ca13	0.275
ca14	0.21
trnspt12	0.25
ics2	0.817
ics3	0.828

Table 6 displays the Kaiser–Meyer–Olkin measure of sampling adequacy and compares the correlations and the partial correlations between variables. If the partial correlations are relatively high compared to the correlations, the KMO measure is small, and a low-dimensional representation of the data is not possible.

Table 6 Kaiser-Meyer-Olkin measure of sampling adequacy

Variable	kmo
b2	0.961
b5	0.845
b8	0.845
ca1	0.765
ca2	0.788
ca3	0.751
ca4	0.741
ca11	0.901
ca13	0.867
ca14	0.561
trnspt12	0.64
ics2	0.742
ics3	0.74
Overall	**0.785**

Table 7 shows that there is no possibility of multicollinearity. Total debt/market ratio has a positive & significant relationship with industry median, tangibility, and depreciation, however negative and significant relationship between size, market/book ratio, corporate governance index, and profitability.

Table 7 Correlation matrix of total debt/ market ratio, corporate governance PC1 index and other independent variables

	TMDR	TMDRMED	TANG	SIZE	MBR	PC1	EBIT	DEP
TMDR	1.000							
TMDRMED	0.506***	1.000						
TANG	0.274***	0.179***	1.000					
SIZE	-0.223***	-0.271***	-0.049**	1.000				
MBR	-0.555***	-0.235***	-0.189***	0.128***	1.000			
PC1	-0.382***	-0.550***	-0.211***	0.436***	0.236***	1.000		
EBIT	-0.547***	-0.150***	-0.267***	0.208***	0.463***	0.105***	1.000	
DEP	0.074***	0.081***	0.227***	-0.145***	0.012	-0.070***	-0.045*	1.000

TMDR is total debt/market ratio, TMDRMED is the industry median of total debt/market ratio, TANG is tangibility, SIZE firm size, MBR is market to book ratio, PC1 is a corporate governance index based on principal component analysis, EBIT is profitability and DEP is depreciation.

Table 8 displays the findings of equation 1, industry median leverage is a positive and significant relationship with the total debt/market ratio. The positive relationship between industry median and total debt/market ratio shows that if the industry median of total debt/market ratio increase firm also increases its total debt/market ratio, this result supports the trade-off theory. The corporate governance index & profitability are a negative and significant relationship with the total debt/market ratio. The negative relationship between corporate governance and the total debt to market ratio indicates that if corporate governance increases total debt to market ratio decreases. The negative relationship between profitability and leverage indicates that if a firm profitability increases firm reduces its debt, this result supports the pecking order theory. Market/book ratio, depreciation, and tangibility are positive and insignificant while the size is negative and insignificant. According to the model selection criteria, the fixed effect model is preferred over the random and OLS model.

Table 8 Regression result of equation 1(Estimation of target leverage)

Dependent	$TMDR_{t+1}$		
Model	OLS	Random	Fixed
TMDRMED	0.410***	0.277***	0.260***
	(0.035)	(0.033)	(0.035)
TANG	0.069***	0.065**	0.049
	(0.026)	(0.030)	(0.033)
SIZE	0.003	-0.003	-0.006
	(0.004)	(0.007)	(0.011)
MBR	-0.050***	-0.012***	0.001
	(0.004)	(0.004)	(0.005)
PC1	-0.021***	-0.038***	-0.041***
	(0.003)	(0.002)	(0.003)
EBIT	-0.878***	-0.519***	-0.463***
	(0.051)	(0.038)	(0.039)
DEP	0.239	0.239	0.263
	(0.270)	(0.244)	(0.260)
C	0.379***	0.461***	0.508***
	(0.066)	(0.114)	(0.179)
No of obs	1557	1557	1557
R^2	0.51	0.39	0.85
Adj.R^2	0.50	0.39	0.84
Fstatics	228.52***	143.65***	45.13***
AIC	-0.42		-1.42
DW	0.47	0.92	1.04
Lagrange Multiplier Tests for Random Effects Null hypotheses: No effects	0.00		
Hausman-test Null hypotheses: Random is preferred		0.00	

$TMDR_{t+1}$ is total debt/market ratio, TMDRMED is industry median of total debt/ market ratio, TANG is tangibility, SIZE firm size, MBR is market to book ratio, PC1 is corporate governance index based on principal component analysis, EBIT is profitability and DEP is depreciation. R^2 is the coefficient of determination. AIC is Akaike Information Criteria for assessment of the best model with the lowest value being a superior model. DW is Durban Watson for assessment of autocorrelation. Lagrange Multiplier Tests for Random Effects is performed to check the random effect or OLS is the best model, Hausman-test is performed to check whether the fixed or random effect model is appropriate. For selection between OLS and fixed effect, the lowest value of F statics of fixed effect favors the selection of the fixed effect model.

Table 9 shows the summary coefficients of adjustment speed of target leverage corporate governance subsamples. Further, under-levered and over-levered sub-samples of a weak, medium, and strong corporate governance. For brevity, we here reported only adjustment speed coefficients of target leverage.

Table 9 Regression Results of Speed Adjustment Toward Target

	Dependent	TMDR			
	Model	OLS	Fixed effects	GMM-Difference	GMM-System
Strong governance	$TMDR_{t-1}$	0.815***	0.333***	0.247***	0.502***
		(0.028)	(0.058)	(0.095)	(0.086)
Under-levered		0.735***	0.141**	0.186**	0.188**
		(0.051)	(0.095)	(0.270)	(0.145)
Over-levered		0.861***	0.059	0.188***	0.270***
		(0.036)	(0.130)	(0.042)	(0.061)
Medium	$TMDR_{t-1}$	0.744***	0.323***	0.352***	0.392***
		(0.021)	(0.036)	(0.095)	(0.080)
Under-levered		0.713***	0.166***	0.202***	0.280***
		(0.035)	(0.056)	(0.053)	(0.051)
Over-levered		0.755***	0.066*	0.076*	0.02*
		(0.035)	(0.066)	(0.068)	(0.065)
Weak	$TMDR_{t-1}$	0.798***	0.235***	0.313***	0.463***
		(0.024)	(0.051)	(0.105)	(0.095)
Under-levered		0.826***	0.125**	0.318**	0.524**
		(0.054)	(0.151)	(0.201)	(0.228)
Over-levered		0.774***	0.122**	0.305*	0.370**
		(0.047)	(0.059)	(0.153)	(0.183)

($1-TMDR_{t-1}$) is coefficient of speed adjustment (higher value means low speed), TMDR is total debt/Book ratio, for brevity we display only speed coefficient instead of all regression results. We sorted data based on the PCA governance index. Bond et al. (2001) recommended that to select the best model between GMM-Difference or GMM-System, the first step is to estimate the OLS and fixed effect dynamic model. The first lag coefficient of the OLS model is considered as the upper limit and the fixed effects model's first lag coefficient as the lower limit dynamic model estimated by the Ordinary Least Square (OLS) and Fixed effects model, if GMM-Difference is close to or below the fixed effect coefficient, it means GMM-System is preferred, model.

Strong corporate governance firms' speed of adjustment toward target leverage is 0.50 (1 - 0.502), medium corporate governance firms' speed of adjustment toward target leverage is 0.61 (1 - 0.392) and weak corporate governance firms' speed of adjustment toward target leverage is 0.54 (1 - 0.463). As findings suggest, medium corporate governance adjusts faster toward target leverage and strong corporate governance firms adjust slower toward target leverage compared with weak and medium corporate governance firms.

The speed of adjustment of under-levered strong corporate governance firms is 0.81 (1 - 0.188), the speed of adjustment of under-levered medium corporate governance firms is 0.72 (1 - 0.280), speed of adjustment of under-levered weak corporate governance firms is 0.48 (1 - 0.524). The speed of adjustment of under-levered strong corporate governance firms is faster compared with weak corporate governance firms, this finding confirms that Pakistani non-financial listed under-levered firms with weak corporate governance use debt as a disciplinary tool.

The speed of adjustment of over-levered strong corporate governance firms is 0.73 (1 - 0.270), the speed of adjustment of over-levered medium corporate governance firms is 0.98 (1 - 0.02), speed of adjustment of over-levered weak corporate governance firms is 0.63 (1-0.370). The speed of adjustment of over-levered strong corporate governance firms is faster compared with weak corporate governance firms, this finding confirms that Pakistani non-financial listed over-levered firms with weak corporate governance using debt as a take-over defense tool.

Table 10 shows the robustness regression results of the study. For brevity, we show the only coefficient of the speed of adjustment toward target leverage. Strong corporate governance firms' speed of adjustment toward target leverage is 0.67 (1 - 0.326), medium corporate governance firms' speed of adjustment toward target leverage is 0.42 (1 - 0.580) and weak corporate governance firms' speed of adjustment toward target leverage is 0.70 (1 - 0. 0.301). As findings suggest, medium corporate governance adjusts faster toward target leverage and strong corporate governance firms adjust slower toward target leverage compared with weak and medium corporate governance firms.

Table 10 Robustness Regression Results of Speed Adjustment Toward Target

	Dependent	TMDR			
	Model	OLS	Fixed effects	GMM-Difference	GMM-System
Strong governance	$TMDR_{t-1}$	0.794*** (0.034)	0.275*** (0.064)	0.278* (0.164)	0.326*** (0.115)
Under-levered		0.632*** (0.054)	0.102** (0.131)	0.001** (0.057)	0.139** (0.102)
Over-levered		0.867*** (0.042)	0.037 (0.134)	0.136*** (0.049)	0.191*** (0.029)
Medium	$TMDR_{t-1}$	0.792*** (0.021)	0.313*** (0.041)	0.439*** (0.053)	0.580*** (0.049)
Under-levered		0.721*** (0.034)	0.107*** (0.066)	0.248*** (0.057)	0.283*** (0.048)
Over-levered		0.68*** (0.03)	0.152** (0.063)	0.336*** (0.057)	0.390** (0.080)
Weak	$TMDR_{t-1}$	0.773*** (0.023)	0.368*** (0.046)	0.270*** (0.044)	0.301*** (0.087)
Under-levered		0.840*** (0.043)	0.283*** (0.083)	0.469*** (0.022)	0.524*** (0.027)
Over-levered		0.674*** (0.029)	0.344*** (0.056)	0.472*** (0.078)	0.527*** (0.075)

($1-TMDR_{t-1}$) is coefficient of speed adjustment (higher value means low speed), TMDR is total debt/Book ratio, for brevity we display only speed coefficient instead of all regression results. We sorted data based on equal weightage 70 provision governance index. Bond et al. (2001) recommended that to select the best model between GMM-Difference or GMM-System, the first step is to estimate the OLS and fixed effect dynamic model. The first lag coefficient of the OLS model is considered as an upper limit and the fixed effects model's first lag coefficient is a lower limit dynamic model estimated by the Ordinary Least Square (OLS) and Fixed effects model if GMM-Difference is close to or below the fixed effect coefficient, it means GMM-System is preferred, model.

The speed of adjustment of under-levered strong corporate governance firms is 0.76 (1 - 0.139), the speed of adjustment of under-levered medium corporate governance firms is 0.72 (1 - 0.283), speed of adjustment of under-levered weak corporate governance firms is 0.48 (1 - 0.524). The speed of adjustment of under-levered strong corporate governance firms is faster compared with weak corporate governance firms, this finding confirms that Pakistani non-financial listed under-levered firms with weak corporate governance use debt as a disciplinary tool.

The speed of adjustment of over-levered strong corporate governance firms is 0.81 (1 - 0.191), the speed of adjustment of over-levered medium corporate governance firms is 0.61 (1 - 0.390), speed of adjustment of over-levered weak corporate governance firms is 0.48 (1 - 0.527). The speed of adjustment of over-levered strong corporate governance firms is faster compared with weak corporate governance firms, this finding confirms that Pakistani non-financial listed over-levered firms with weak corporate governance using debt as a take-over defense tool.

Our first and second hypotheses discuss the debt roles as takeover defense tool and disciplinary tool. Debt as a takeover defense tool discusses that managers use more debt in the capital structure for protecting their jobs rather than for the benefits of shareholders. Debt as a disciplinary tool discusses that firms use more debt to force managers for investing in profitable projects rather than wasting free cash flow.

To explore the effect that whether non-financial listed firms of Pakistan using debt as takeover defense tool or disciplinary tool, our first step was to estimate the optimal leverage by regressing the leverage ratio over its determinants. The optimal leverage ratio is estimated or predicted value of leverage through regression. We estimated optimal leverage by using equation 1 in this study. We used total debt/book ratio as leverage proxies. We used independent variables like industry median leverage, tangibility, size, market/book ratio, corporate governance index, profitability and depreciation. To select a suitable econometric model for estimating the target leverage, we have followed the approach of Onio & Ukaegbu (2015). We found that fixed effects model is appropriate for estimating the target leverage.

Results of research indicate that the corporate governance index is negatively and significantly related to leverage estimated from equation 1, which shows more the governance level, lower the leverage ratio. For measuring the governance quality, we followed the work of Khan (2016) and used principal component analysis 1 analysis of 13 key provisions of code of corporate governance of Pakistan.

After estimating the optimal leverage ratio, we divided our sample into subsamples of weak and strong corporate governance firms. Weak corporate governance is represented by lowest (i.e., 1st) quartile and strong corporate governance is symbolized by highest (i.e., 4th) quartile of corporate governance index. After segregation of subsamples of weak and strong corporate governance data, we further divided these subsamples into under-levered and over-levered firms. Under-levered is a situation when firm's actual leverage ratio is below the estimated leverage ratio. Over-levered is a situation when firm's actual leverage ratio is above the estimated leverage ratio.

We tested our first and second hypothesis by estimating the speed of adjustment of leverage towards its optimal level. For empirical investigation, we used equation 2. We followed the approach of Bond et al. (2001) to find whether difference or system GMM dynamic model is appropriate. Our results suggested that system GMM dynamic model is appropriate for estimating the speed of adjustment towards target. Study first hypothesis is about the managers of weak corporate governance firms use debt as a takeover defense tool. When debt is used as a takeover defense tool, weak corporate governance firms tend to adjust slowly toward their target

leverage when they are over-levered and adjust quickly when under-levered. Findings of the research show that the adjustment speed of leverage of over-levered weak corporate governance is slower. This indicates that managers of over-levered weak corporate governance firms use debt as a takeover defense tool for protecting their jobs at the cost of shareholders' benefits. This finding is consistent with Chang et al. (2014). Our second hypothesis discusses the disciplinary effect of debt. When debt is used as a disciplinary tool, weak corporate governance firms tend to adjust quickly toward its target leverage when they are over-levered and slowly when under-levered. Empirical investigation also shows that the adjustment speed of leverage of under-levered weak governance firms is slower, which indicates that the disciplinary effect of debt is more important for the managers of weak governance under-levered firms. For avoiding more debt as a disciplinary tool, managers of weak governance under-levered firm adjust slowly toward its target leverage. This finding is consistent with Chang et al. (2014).

CONCLUSION

This empirical study explores the effect of corporate governance quality on the speed of adjustment of the capital structure toward its target in the context of debt as a takeover defense tool and disciplinary tool. Our results suggested that the system GMM dynamic model is appropriate for estimating the speed of adjustment towards its target of non-financial listed firms belonging to Pakistan. The first hypothesis of the study discusses the managers of weak corporate governance firms who use debt as a takeover defense tool. When debt is used as a takeover defense tool, over-levered weak corporate governance firms, tend to adjust slowly toward their target leverage and under-levered adjust quickly. Findings of the research show that the adjustment speed of leverage of over-levered weak corporate governance is slower. This indicates that managers of over-levered weak corporate governance firms use debt as a takeover defense tool for protecting their jobs at the cost of shareholders' benefits. This finding is consistent with the agency theorem. Our second hypothesis discusses the disciplinary effect of debt. When debt is used as a disciplinary tool, over-levered weak corporate governance firms, tend to adjust quickly toward their target leverage and under-levered adjust slowly. The empirical investigation also shows that the adjustment speed of leverage of under-levered weak governance firms is slower, which indicates that the disciplinary effect of debt is more important for the managers of weak governance under-levered firms. For avoiding more debt as a disciplinary tool, managers of weak governance under-levered firms adjust slowly toward their target leverage. This finding is consistent with the agency theorem. Our robust results also support our findings. This study contributes to the literature in the following ways: firstly, corporate managers with weak corporate governance firms belong to the bank-based economy like Pakistan, taking advantage by influencing the speed of adjustment of the capital structure toward its target as managers do in the equity-based economy like the USA. This finding supports the agency theory predictions. Secondly, this is the first study that used PCA analysis to calculate the corporate governance quality of the firm.

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